Indiana Department of Environmental Management

The States' View of the Air

2018

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EXECUTIVE SUMMARY

Air quality across the nation has improved over the past ten years or more. Unfortunately the message often found in the press, is that the air quality is terrible. This analysis demonstrates the progress made from 2000 through 2016 for ozone and fine particles (PM-2.5).

Figures 1 through 3 show the progress made for ozone, 24-hour PM-2.5 and annual PM-2.5. The bars represent the population of each period (based on the last year in the period). The portion that is green represents the number of people living in counties that measure air quality better than the standard. The portion of the bar that is red represents the number of people living in counties that measure air quality at levels above the standard. The blue portion of the bar represents the number of people that live in counties where air quality is not measured.

These assessments have been based on results of individual monitors. For example, if a county has two ozone monitors and data for one is rated as a C and the other as a D, the population of the county is split in half and half is assigned to each category; meeting the standard and not meeting the standard.

Compliance with standards is determined on a three year basis. In 2000 – 2002 approximately 110 million people lived in counties that measured ozone air quality levels better than the standard. By 2014 – 2016 this had increased to 171 million people.

The situation for fine particles (PM-2.5) is very similar. In 2000 – 2002, 184 million people lived in counties where 24-hour PM-2.5 levels were measured below the standard. By 2014 – 2016 this had increased to 198 million people.

In the 2000 – 2002 period, 137 million people lived in counties where annual PM-2.5 levels were measured below the standard. By 2014 – 2016 this had increased to 198 million people. Approximately 6.0 million people lived in counties where annual PM-2.5 levels were measured above the standard. Much of this increase is due to the implementation of the new annual PM-2.5 standard.

Even with the improvements made in air quality, there are still areas of the country that need further improvement. Table 1 shows states that have 8 hour ozone nonattainment areas based on 2014 – 2016 data. Twenty states are included.

Table 2 shows those states that violate the 24-hour PM-2.5 standard based on 2014 – 2016 data. Only five states are included.

Table 3 shows those states that violate the annual PM-2.5 standard based on 2014 – 2016 data. Only four states are included.

Table 4 summarizes for each state, the number of counties exceeding the standard, the number of counties monitored, the total number of counties, the number of people living in counties above the standard and the total population of each state.

The bottom line is that most areas of the country were meeting the PM-2.5 standard at the 2014 – 2016 review. There are still several areas of the country that violate the current ozone standard. Many areas have made considerable progress in lowering ozone levels, but further work remains to be done. During 2016, the U.S. Environmental Protection Agency (EPA) lowered the 8-hour ozone standard. This analysis compares historical air quality levels with the appropriate standard for each time period.

Table 1
Counties Exceeding the Ozone Standard
2014 – 2016

County	State	2016 Population	Ozone DV
Gila	AZ	53,556	0.071
Maricopa	AZ	4,242,997	0.076
Yavapai	AZ	225,562	0.071
Yuma	AZ	205,637	0.074
Alameda	CA	1,647,704	0.074
Amador	CA	37,383	0.073
Butte	CA	226,864	0.075
Calaveras	CA	45,171	0.076
El Dorado	CA	185,625	0.085
Fresno	CA	979,915	0.089
Imperial	CA	180,883	0.076
Kern	CA	884,788	0.087
Los Angeles	CA	10,137,915	0.096
Mariposa	CA	17,410	0.075
Merced	CA	268,672	0.082
Nevada	CA	99,107	0.084
Orange	CA	3,172,532	0.077
Placer	CA	380,531	0.080
Riverside	CA	2,387,741	0.094
Sacramento	CA	1,514,460	0.083
San Bernardino	CA	2,140,096	0.108
San Diego	CA	3,317,749	0.080
San Joaquin	CA	733,709	0.078
San Luis Obispo	CA	282,887	0.073
Stanislaus	CA	541,560	0.081
Sutter	CA	96,651	0.075
Tehama	CA	63,276	0.079
Tulare	CA	460,437	0.089
Tuolumne	CA	53,804	0.079
Ventura	CA	849,738	0.077
Douglas	CO	328,632	0.077
Jefferson	CO	571,837	0.080
Larimer	CO	339,993	0.075
Fairfield	CT	946,127	0.083
Hartford	CT	892,389	0.074
Litchfield	CT	182,571	0.072
Middlesex	CT	163,329	0.079
New Haven	CT	856,875	0.076
New London	CT	269,801	0.072
Tolland	CT	151,118	0.073
DeKalb	GA	740,321	0.071
Fulton	GA	1,023,336	0.075
Gwinnett	GA	907,135	0.072
Henry	GA	221,768	0.074
Rockdale	GA	89,355	0.074
Cook	IL	203,499	0.072
Lake	IL	703,047	0.073
Madison	IL	265,759	0.071
Jefferson	KY	165,352	0.074
Ascension	LA	121,587	0.071
E. Baton Rouge	LA	447,037	0.072

Table 1 (Continued)

County	State	2016 Population	Ozone DV
Baltimore	MD	831,026	0.072
Cecil	MD	102,603	0.074
Harford	MD	251,032	0.072
Allegan	MI	115,548	0.075
Berrien	MI	154,010	0.074
Macomb	MI	867,730	0.072
Muskegon	MI	173,408	0.075
St. Clair	MI	159,587	0.073
Schoolcraft	MI	8,001	0.071
Wayne	MI	1,749,366	0.072
St. Charles	MO	390,918	0.072
St. Louis	MO	998,581	0.071
Clark	NV	2,155,664	0.072
Bergen	NJ	939,151	0.072
Camden	NJ	510,150	0.074
Gloucester	NJ	292,330	0.073
Hudson	NJ	677,983	0.072
Mercer	NJ	371,023	0.073
Middlesex	NJ	837,073	0.074
Ocean	NJ	592,497	0.072
Richmond	NY	476,015	0.076
Rockland	NY	326,780	0.072
Suffolk	NY	1,492,583	0.072
Westchester	NY	974,542	0.074
Butler	OH	377,537	0.072
Franklin	OH	1,264,518	0.071
Geauga	OH	94,060	0.071
Hamilton	OH	809,099	0.072
Lake	OH	228,614	0.075
Warren	OH	227,063	0.072
Bucks	PA	626,399	0.075
Delaware	PA	563,402	0.072
Philadelphia	PA	1,567,872	0.075
Bexar	TX	1,928,680	0.073
Brazoria	TX	354,195	0.071
Collin	TX	939,585	0.073
Dallas	TX	2,574,984	0.071
Denton	TX	806,180	0.076
Galveston	TX	329,431	0.076
Harris	TX	4,589,928	0.076
Johnson	TX	163,274	0.072
Montgomery	TX	556,203	0.072
Parker	TX	129,441	0.073
Tarrant	TX	2,016,872	0.074
Salt Lake	UT	1,121,354	0.075
Utah	UT	592,299	0.073
Weber	UT	247,560	0.072
Arlington	VA	230,050	0.071
Door	WI	27,587	0.072
Kenosha	WI	168,183	0.077
Manitowoc	WI	79,536	0.072
Milwaukee	WI	951,448	0.071
Ozaukee	WI	88,314	0.073
Sheboygan	WI	115,427	0.079

Table 2
Counties Exceeding the 24-Hour PM-2.5 Standard
2014 – 2016

County	State	2016 Population	24-Hr PM-2.5 DV
Fairbanks	AK	100,605	106
Fresno	CA	979,915	56
Imperial	CA	180,883	42
Kern	CA	884,788	62
Kings	CA	149,785	57
Madera	CA	154,697	44
Merced	CA	268,672	40
Plumas	CA	18,627	50
Riverside	CA	2,387,741	39
San Bernardino	CA	2,140,096	36
San Joaquin	CA	733,709	39
Siskiyou	CA	43,603	38
Stanislaus	CA	541,560	46
Tulare	CA	460,437	54
Crook	OR	22,570	38
Allegheny	PA	1,225,365	36
Salt Lake	UT	1,121,357	41

Table 3
Counties Exceeding the Annual PM-2.5 Standard
2014 – 2016

County	State	2016 Population	Annual PM-2.5 DV
Fairbanks	AK	100,605	22.1
Fresno	CA	979,915	14.5
Imperial	CA	180,883	15.8
Kern	CA	884,788	18.5
Kings	CA	149,785	15.9
Los Angeles	CA	10,137,915	12.2
Madera	CA	154,697	12.7
Plumas	CA	18,627	14.6
Riverside	CA	2,387,741	13.9
San Bernardino	CA	2,140,096	14.1
San Joaquin	CA	733,709	12.3
Stanislaus	CA	541,560	13.1
Tulare	CA	460,437	16.2
Cuyahoga	OH	1,249,352	12.2
Allegheny	PA	1,225,365	12.8
Lancaster	PA	538,500	13.1
Lebanon	PA	138,863	12.2

Table 4
Counties Exceeding the Ozone or PM-2.5 Standards
2014 – 2016

	Ozone					PM-2.5				
State	No Above	No Monit.	Total Cnts	Pop Above	Total Pop	No Above	No Monit.	Total Cnts.	Pop Above	Total Pop
AL	0	14	67	0	4,863,300	0	13	67	0	4,863,300
AK	0	3	27	0	711,894	1	4	27	100,605	711,894
AZ	4	10	15	4,920,724	6,931,071	0	7	15	0	6,931,071
AR	0	6	75	0	2,988,248	0	9	15	0	2,988,248
CA	26	46	58	30,706,608	39,250,017	13	44	58	19,038,825	39,250,017
CO	3	14	64	1,240,462	5,540,545	0	11	64	0	5,540,045
CT	7	8	8	3,460,260	3,576,452	0	5	8	0	3,576,452
DE	0	3	3	0	952,065	0	3	3	0	952,065
DC	0	1	1	0	681,170	0	1	1	0	681,170
FL	0	31	67	0	20,612,439	0	14	67	0	20,612,439
GA	5	19	159	2,981,915	10,310,371	9	20	159	0	10310,371
HI	0	1	5	0	1,428,557	0	4	5	0	1,428,557
ID	0	2	44	0	1,683,140	0	2	44	0	1,683,140
IL	3	23	102	6,172,305	12,801,539	0	8	102	0	12,801,539
IN	0	29	92	0	6,633,053	0	23	92	0	6,633,053
IA	0	10	99	0	3,134,693	0	14	99	0	3,134,693
KS	0	8	105	0	2,907,269	0	6	105	0	2,907,269
KY	1	27	120	765,352	4,436,974	0	16	120	0	4,436,974
LA	2	17	64	568,624	4,681,666	0	11	64	0	4,681,666
ME	0	10	16	0	1,331,470	0	4	16	0	1,331,470
MD	3	15	23	1,184,661	6,016,447	0	11	23	0	6,016,447
MA	0	10	14	0	6,811,779	0	8	14	0	6,811,779
MI	7	25	83	610,554	9,928,300	0	17	83	0	9,928,300
MN	0	15	87	0	5,519,952	0	15	87	0	5,519,952
MS	0	9	82	0	2,988,726	0	7	82	0	2,988,726
MO	2	18	114	615,144	6,093,000	0	8	114	0	6,093,000
MT	0	7	56	0	1,042,520	0	11	56	0	1,042,520
NE	0	3	93	0	1,907,116	0	5	93	0	1,907,116
NV	1	6	16	155,664	2,940,058	0	4	16	0	2,904,058
NH	0	6	10	0	1,334.795	0	5	10	0	1,334,795
NJ	7	15	21	4,220,207	8,944,469	0	13	21	0	8,944,469
NM	0	9	33	0	2,081,015	0	3	33	0	2,081,015
NY	4	26	62	3,269,920	19,745,289	0	14	62	0	19,745,289
NC	0	31	100	0	10,146,788	0	14	100	0	10,146,788
ND	0	6	53	0	757,952	0	9	53	0	757,952
OH	6	34	88	2,997,891	11,614,373	1	20	88	249,352	11,614,373
OK	0	15	77	0	3,923,561	0	7	77	0	3,923,561
OR	0	8	36	0	4,093,465	1	9	36	22,570	4,093,465
PA	3	35	67	2,757,673	12,784,227	3	21	67	1,902,128	12,784,227
RI	0	3	5	0	1,056,426	0	3	5	0	1,056,426
SC	0	15	46	0	4,961,119	0	9	46	0	4,961,119
SD	0	6	66	0	565,454	0	8	66	0	565,454
TN	0	15	95	0	6,651,194	0	16	95	0	6,651.194
TX	11	34	254	14,388,774	27,862,596	0	9	254	0	27,862,596
UT	3	8	29	1,961,213	3,051,217	1	4	29	1,121,354	3,051,217
VT	0	2	14	0	624,594	0	3	14	0	624,594
VA	1	19	134	230,050	8,411,808	0	17	134	0	8,411,808
WA	0	8	39	0	7,288,000	0	6	39	0	7,278,000
WV	0	9	55	0	1,831,102	0	9	55	0	1,831,102
WI	6	25	72	1,430,495	5,778,708	0	15	72	0	5,778,708
WY	0	12	23	0	585,501	0	9	23	0	585,501

Figure 1

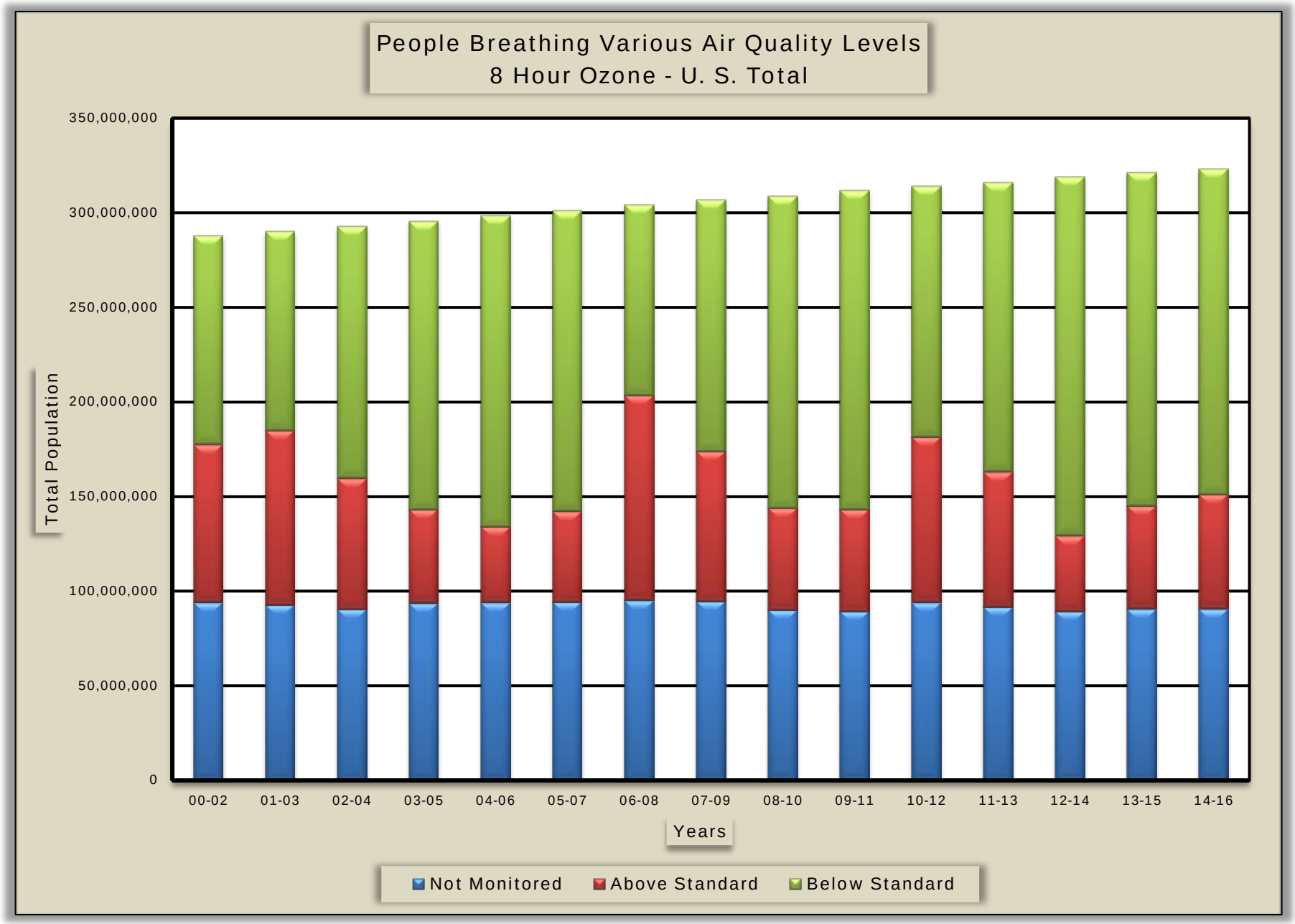

People Breathing Various Air Quality Levels
8 Hour Ozone - U. S. Total
350,000,000
300,000,000
250,000,000
200,000,000
150,000,000
100,000,000
50,000,000
0
Total Population
00-02
01-03
02-04
03-05
04-06
05-07
06-08
07-09
08-10
09-11
10-12
11-13
12-14
13-15
14-16
Years
Not Monitored
Above Standard
Below Standard

Figure 2

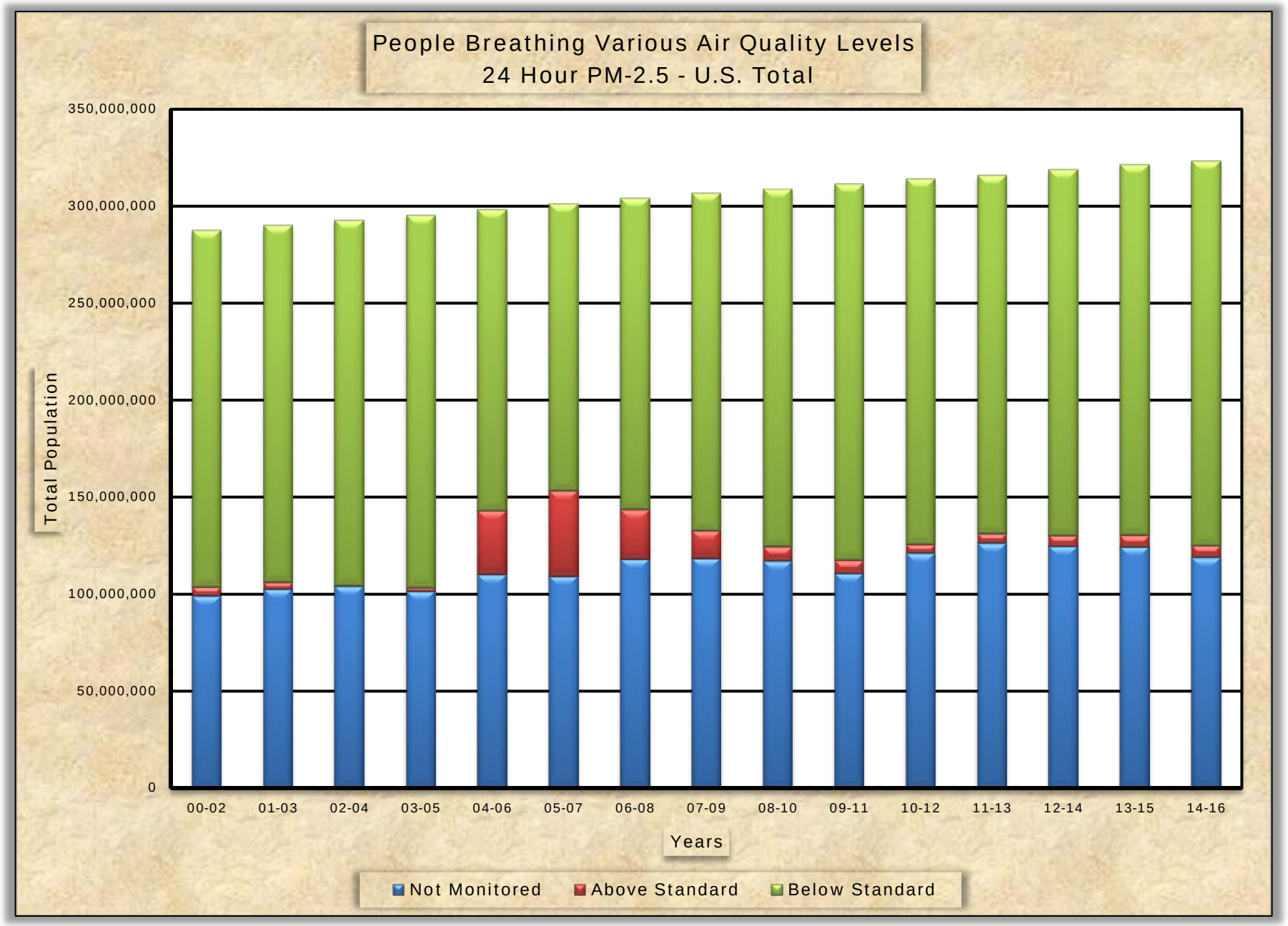
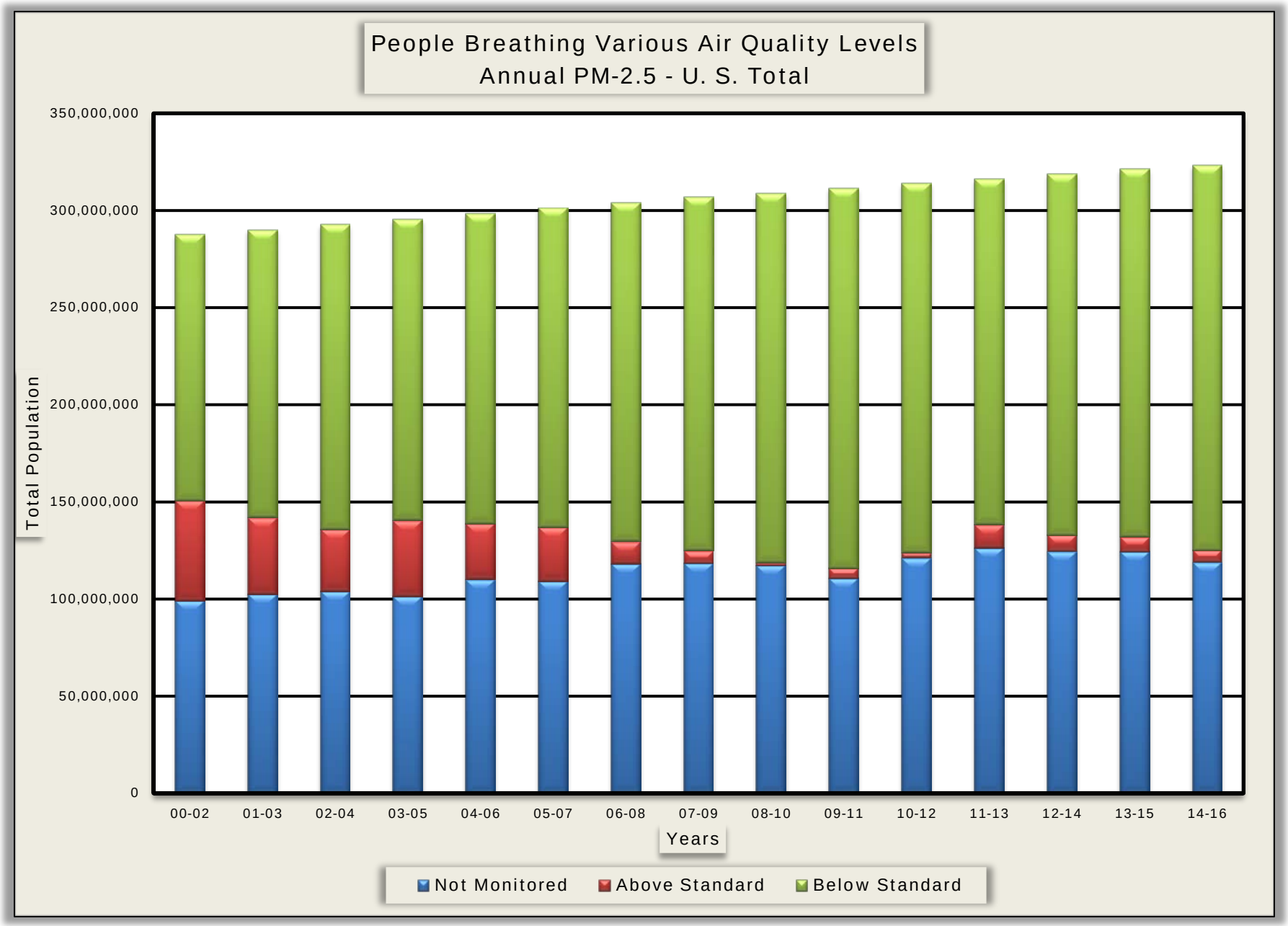

People Breathing Various Air Quality Levels
24 Hour PM-2.5 - U.S. Total
350,000,000
300,000,000
250,000,000
200,000,000
150,000,000
100,000,000
50,000,000
0
Total Population
00-02
01-03
02-04
03-05
04-06
05-07
06-08
07-09
08-10
09-11
10-12
11-13
12-14
13-15
14-16
Years
Not Monitored
Above Standard
Below Standard

Figure 3


People Breathing Various Air Quality Levels
Annual PM-2.5 - U. S. Total
350,000,000
300,000,000
250,000,000
200,000,000
150,000,000
100,000,000
50,000,000
0
Total Population
00-02
01-03
02-04
03-05
04-06
05-07
06-08
07-09
08-10
09-11
10-12
11-13
12-14
13-15
14-16
Years
Not Monitored
Above Standard
Below Standard

The States' View of the Air – 2018

This is the seventh year for this report. It was originally intended as a complimentary document to the American Lung Association's (ALA) annual report called "The State of the Air." This report starts with the same air quality data used by the ALA. For this report, it includes data for the period of 2000 – 2016.

What's New?

This report contains several revisions from previous reports. First, U.S. EPA revised the ozone standard in 2016. Previous reports had assumed that the ozone standard was constant (0.075 ppm) during the entire period. This is no longer the case. Table 5 outlines the appropriate grading scales for each year for each pollutant based upon the standard that was in place for each period.

Table 5
Grading Scales by Year
Ozone

Standard	0.085 ppm	0.075 ppm	0.070 ppm
Beginning Period	2000 - 2002	2006 -2008	2013 – 2015
Ending Period	2005 - 2007	2012 – 2014	
A	< 0.068	< 0.060	< 0.056
B	0.068 – 0.076	0.060 – 0.067	0.056 – 0.062
C	0.077 – 0.085	0.068 – 0.075	0.063 – 0.070
D	0.086 – 0.093	0.076 – 0.082	0.071 – 0.077
F	➢ 0.093	➢ 0.082	➢ 0.077

24-Hour PM-2.5

Standard	65 µg/m3	35 µg/m3
Beginning Period	2000 – 2002	2004 - 2006
Ending Period	2003 – 2005	
A	< 52	< 28
B	52 – 58	
C	59 – 65	32 – 35
D	66 – 71	36 – 38
F	➢ 71	➢ 38

Annual PM-2.5

Standard	15 µg/m3	12 µg/m3
Beginning Period	2000 – 2002	2011- 2013
Ending Period	2010 – 2012	
A	< 12.0	< 9.6
B	12.0 – 13.4	9.6 – 10.7
C	13.5 – 15.0	10.8 – 12.0
D	15.1 – 16.5	12.1 – 13.2
F	➢ 16.5	➢ 13.2

The review of data in this report differs from the ALA in a few significant ways. First, the design values used for both ozone and PM-2.5 are based on average values for each county. Average values are used to compare between cities or county ratings. However, when determining whether the population is exposed to air quality above or below the standard, the population is split based on values from individual monitors. This is an important distinction. While U.S. EPA's guidance for attainment/nonattainment designation purposes focuses on the worst design value for a county, this is not consistent with what people are breathing. For example, if a county has ten monitors and nine have design values below the

standard and one is slightly above the standard, U.S. EPA and ALA would assume that everyone in the county were breathing air at levels above the standard. That is obviously not correct. If you combine counties into metropolitan statistical areas (cities) consisting of several counties, the entire area would be assumed to be above the standard based on the one monitor described above. This report averages design values for all monitors in a county to determine the average level that is breathed by the residents of that county. This is not to say that some individuals could not be exposed to higher levels. However, not all residents in a county are exposed to levels associated with the highest monitor. This average design value is used only to compare between different states.

A second difference is that when design values for a number of counties are being grouped to determine the overall value for a metropolitan statistical area, the individual design values for each county are weighted by the population of that county to determine a population weighted average value. This value is more consistent with what the population is being exposed to and is in line with what health research professionals use in their analyses.

A grading system has been established for ozone and PM-2.5 in this report. Any grading system is arbitrary in nature. The key to this grading system is that any area meeting the national ambient air quality standards should not be rated lower than a "C". In essence, we have set the standard as a "C". Any level between 90 and 100 percent of the standard is rated a "C". Any level between 80 and 90 percent of the standard is rated as "B". Any level below 80 percent is set as an "A". Any level between 101 and 110 percent of the standard is set as a "D". Any level above 110% of the standard is rated as an "F".

This report does not report population groups by county or state (those less than 18 or 65 and older, diabetics, etc.). It is very difficult to obtain this data for each state. Also, the methodology which apportions state totals to individual counties is questionable. It is based solely upon a comparison of age distribution of the state versus the county. In many cases other variables, may be important in making these allocations more accurately.

Information on health effects is not included in this report. Instead we provide links to U.S. EPA websites that contain this information.

Ozone: **http://epa.gov/airquality/ozonepollution/health.html**

PM-2.5: **http://epa.gov/airquality/particlepollution/health.html**

The remainder of this report contains tables that are similar to those that are in the ALA report. The ALA report focuses solely on a three year block of data and does not provide any perspective. Our report looks at three year blocks of data from 2000 through 2016 so that the reader can see how the air quality is changing over time.

Ozone

In the 2000 – 2002 period approximately 110 million people (38.3% of the U.S. population) lived in counties that met the ozone standard. During the same time period approximately 94 million people (32.7%) lived in counties where ozone was not monitored. By the 2014 – 2016 period 172 million people (53.2%) lived in counties that met the ozone standard. During the same time period over 91 million people (28.2%) lived in counties where ozone was not monitored. Figure 1 shows the distribution of people by year.

24 – Hour PM-2.5

In the 2000 – 2002 period approximately 184 million people (63.9% of the U.S. population) lived in counties that met the 24-hour PM-2.5 standard. During this same time period approximately 99 million people (34.4%) lived in counties where PM-2.5 was not monitored. By the 2014 – 2016 period over 198 million people (61.3%) lived in counties that met the 24-hour PM-2.5 standard. During the same time period

nearly 119 million people (36.8%) lived in counties where PM-2.5 was not monitored. Figure 2 shows the distribution of people by year.

Annual PM-2.5

In the 2000 – 2002 period approximately 137 million people (47.6% of the U.S. population) lived in counties that met the annual PM-2.5 standard. During the same time period approximately 99 million people (34.4%) lived in counties where PM-2.5 was not monitored. By the 2014 - 2016 period nearly 198 million people (61.3%) lived in counties that met the annual PM-2.5 standard. During the same time period nearly 119 million people (36.8%) lived in counties where PM-2.5 was not monitored. Figure 3 shows the distribution of people by year.

Note:

For the state summaries, the first table shows monitoring totals at the bottom that include county totals for areas that measure either Ozone or PM-2.5. The second set of tables includes totals monitored by pollutant.

Table 6
People Breathing Ozone

Grades	2000-2002	2002-2004	2004-2006	2006-2008	2008-2010	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016
A	20,471,429	21,818,673	24,838,855	9,232,373	13,558,151	16,866,614	18,303,246	19,368,512	8,980,475	8,247,172
B	35,747,877	47,966,735	69,565,432	28,580,829	50,138,920	35,393,276	47,106,155	66,240,740	49,241,374	43,817,834
C	53,889,773	63,348,381	69,898,005	62,704,468	100,995,130	80,226,719	87,476,137	103,841,894	118,071,931	119,899,310
D	47,420,248	44,209,736	28,441,509	63,627,132	39,064,537	63,098,032	54,529,792	28,505,820	38,209,707	44,630,991
F	36,113,846	24,983,253	11,560,305	44,674,719	15,005,562	24,372,196	16,951,020	11,605,706	16,165,633	15,856,204
Subtotals	193,643,173	202,326,778	204,304,106	208,819,521	218,762,300	219,956,837	224,366,350	229,562,172	230,669,120	232,451,511
NM	93,983,020	90,478,571	94,075,816	95,274,448	89,983,238	94,047,203	91,762,290	89,294,876	90,749,700	90,682,002
Totals	287,626,193	292,805,349	298,379,922	304,093,969	308,745,538	314,004,040	316,128,640	318,857,048	321,418,820	323,133,513

Table 7
People Breathing Short-term Particle Pollution (24-hour PM-2.5)

Grades	2000-2002	2002-2004	2004-2006	2006-2008	2008-2010	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016
A	169,108,273	173,403,112	72,518,745	74,200,491	128,242,741	161,215,778	161,978,674	172,722,788	165,483,980	183,955,310
B	7,530,636	10,295,816	38,502,559	54,061,231	43,725,167	23,690,673	17,737,378	10,254,436	15,939,160	10,433,359
C	7,178,534	4,611,123	44,218,230	32,125,829	12,236,695	3,494,256	5,301,992	5,636,932	9,589,819	3,705,688
D	2,629,580	349,670	21,475,576	12,781,119	4,102,958	1,205,709	443,326	1,134,946	460,719	1,288,728
F	2,141,065	139,259	11,544,108	12,716,115	3,172,492	3,122,751	4,387,046	4,509,547	5,611,560	4,742,355
Subtotals	188,588,088	188,798,980	188,259,218	185,884,785	191,480,053	192,729,167	189,848,417	194,258,649	197,085,238	204,125,440
NM	99,038,105	104,006,369	110,120,704	118,209,184	117,265,485	121,274,873	126,280,224	124,598,399	124,333,582	119,008,073
Totals	287,626,193	292,805,349	298,379,922	304,093,969	308,745,538	314,004,040	316,128,640	318,857,048	321,418,820	323,133,513

Table 8
People Breathing Year Round Particle Pollution (Annual PM-2.5)

Grades	2000-2002	2002-2004	2004-2006	2006-2008	2008-2010	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016
A	66,662,352	85,102,824	79,877,728	99,566,055	159,917,270	171,873,326	106,652,246	126,495,698	137,088,639	157,803,914
B	33,699,590	34,165,126	44,068,553	44,713,857	22,491,224	15,926,224	48,841,463	37,421,140	32,856,467	31,924,284
C	36,472,438	37,608,751	35,436,747	30,049,147	7,635,978	2,391,571	22,208,353	21,911,492	19,515,709	8,380,880
D	24,175,664	14,825,460	15,420,277	6,595,531	489,623	1,932,071	6,845,156	5,441,356	4,633,342	3,078,166
F	27,578,044	17,096,819	13,455,913	4,960,195	945,958	605,975	5,301,199	2,988,963	2,991,081	2,938,196
Subtotals	188,588,088	188,798,980	198,259,218	185,884,785	191,480,053	192,729,167	189,848,417	194,258,649	197,085,238	204,125,440
NM	99,038,105	104,006,369	110,120,704	118,209,184	117,265,485	121,274,873	126,280,223	124,598,399	124,333,582	119,008,073
Totals	287,626,193	292,805,349	298,379,922	304,093,969	308,745,538	314,004,040	316,128,640	318,857,048	321,418,820	323,130,513

NM = Not Monitored

Table 9

High Cities - Year Round Particle Pollution (Annual PM-2.5)

(2014 - 2016)

Rank	MSA	PW DV	Grade	2015 Population
1	**Fairbanks, AK**	**18.0**	**F**	100,605
2	**Visalia-Porterville-Hanford, CA**	**16.1**	**F**	610,222
3	**Fresno-Madera, CA**	**12.7**	**D**	1,134,612
4	Modesto-Merced, CA	11.7	C	810,232
5	Bakersfield, CA	11.5	C	864,788
5	Lancaster, PA	11.5	C	538,500
7	El Centro, CA	11.1	C	180,883
8	Kokomo-Peru, IN	10.9	C	118,251
9	Johnstown-Somerset, PA	10.7	B	209,793
10	Houston-The Woodlands, TX	10.4	B	6,972,374
11	Indianapolis-Carmel-Muncie, IN	10.3	B	2,382,092
12	Altoona, PA	10.1	B	124,650
12	Birmingham-Hoover, AL	10.1	B	1,361,299
12	Weirton-Steubenville, WV-OH	10.1	B	119,271
15	Little Rock, AR	10.0	B	905,847
15	Los Angeles-Long Beach, CA	10.0	B	18,688,022
15	Pittsburgh-New Castle, PA-OH	10.0	B	2,635,228
15	Shreveport-Bossier City, LA	10.0	B	441,767
19	Baton Rouge, LA	9.9	B	845,175
19	Cincinnati, OH-KY-IN	9.9	B	2,224,231
19	Evansville, IN-KY	9.9	B	315,948
19	Rome-Summerville, GA	9.9	B	121,384
19	St. Louis-St. Charles, MO-IL	9.9	B	2,933,425
19	Wheeling, WV-OH	9.9	B	142,982

MSA = Metropolitan Statistical Area PW = Population Weighted DV = Design Value

Of the top 24 cities, three have air quality that exceeds the revised national ambient air quality standard. Five cities are rated as C and sixteen are rated as B.

Table 10
Highest Cities – Short Term Particle Pollution (24-hour PM-2.5)
(2014 - 2016)

Rank	MSA	PW DV	Grade	2015 Population
1	**Fairbanks, AK**	**70**	**F**	100,605
2	**Visalia-Porterville-Hanford, CA**	**55**	**F**	610,222
3	**Fresno-Madera, CA**	**46**	**F**	1,134,612
4	**Modesto-Merced, CA**	**41**	**F**	810,232
5	**Bakersfield, CA**	**40**	**F**	884,788
6	**Bend-Redmond-Prineville, OR**	**38**	**D**	203,877
7	**Salt Lake City-Provo, UT**	**36**	**D**	2,514,748
8	Lancaster, PA	31	B	538,500
9	El Centro, CA	30	B	180,883
10	Medford-Grants Pass, OR	29	B	302,431
10	Yakima, WA	29	B	249,636
12	Harrisburg, PA	27	A	1,252,820
12	Los Angeles-Long Beach, CA	27	A	18,688,022
14	Chico, CA	26	A	226,864
14	Johnstown-Somerset, PA	26	A	209,793
16	Fort Wayne-Auburn, IN	25	A	627,934
17	Altoona, PA	24	A	124,650
17	Brunswick, GA	24	A	116,784
17	Corpus Christi, TX	24	A	527,969
17	Detroit-Ann Arbor, MI	24	A	4,807,053
17	Indianapolis- Carmel-Muncie, IN	24	A	2,382,092
17	Philadelphia, PA-NJ-DE	24	A	5,768,377
17	South Bend-Mishawaka, IN-MI	24	A	725,087

MSA = Metropolitan Statistical Area PW = Population Weighted DV = Design Value
Of the 23 highest cities, five have ratings of F, two are D, four are B, and twelve are A.

Table 11
Highest 8-Hour Ozone Cities
(2014 - 2016)

Rank	MSA	PW DV	Grade	2015 Population
1	Fresno-Madera, CA	0.089	F	1,134,612
2	Visalia-Porterville-Hanford, CA	0.084	F	610,222
3	Bakersfield, CA	0.083	F	884,788
4	Modesto-Merced, CA	0.081	F	810,232
5	Los Angeles-Long Beach, CA	0.080	F	18,688,022
6	Sheboygan, WI	0.079	F	115,427
7	Muskegon, MI	0.075	D	173,408
8	Hartford-West Hartford, CT	0.074	D	1,473,637
8	Sacramento-Roseville, CA	0.074	D	2,567,451
8	Yuma, AZ	0.074	D	205,631
11	Salt Lake City-Provo-Orem, UT	0.073	D	2,514,748
12	Atlanta, GA	0.072	D	6,164,810
12	Norwich-New London, CT	0.072	D	269,801
12	Trenton, NJ	0.072	D	371,023
15	El Centro, CA	0.071	D	180,883
15	Fort Collins, CO	0.071	D	339,993
15	New York, NY-NJ-CT-PA	0.071	D	23,604,703
15	Phoenix-Mesa-Scottsdale, AZ	0.071	D	4,661,537
19	Chico, CA	0.070	C	226,864
19	Cincinnati, OH-KY-IN	0.070	C	2,224,231
19	Dallas-Fort Worth, TX	0.070	C	7,673,305
19	Denver-Aurora, CO	0.070	C	3,470,235
19	Houston,-The Woods, TX	0.070	C	6,972,374
19	Philadelphia, PA-NJ-DE	0.070	C	5,768,377
19	Redding-Red Bluff, CA	0.070	C	242,807
19	San Antonio, TX	0.070	C	2,429,609

MSA = Metropolitan Statistical Area PW = Population Weighted DV = Design Value
Of the 26 highest rated cities, six are rated F, twelve are rated D and eight are rated C.

Table 12
Highest Counties - Short Term Particle Pollution (24-hour PM-2.5)
(2014 - 2016)

Rank	County/State	DV	Grade	2015 Population
1	**Fairbanks, AK**	**70**	**F**	100,605
2	**Kings, CA**	**57**	**F**	149,785
3	**Tulare, CA**	**54**	**F**	460,437
4	**Fresno, CA**	**46**	**F**	979,915
5	**Madera, CA**	**44**	**F**	154,697
6	**Stanislaus, CA**	**42**	**F**	541,560
7	**Salt Lake, UT**	**41**	**F**	1,121,354
8	**Kern, CA**	**40**	**F**	884,788
8	**Merced, CA**	**40**	**F**	268,672
8	**Plumas, CA**	**40**	**F**	18,627
11	**San Joaquin, CA**	**38**	**D**	733,709
11	**Siskiyou, CA**	**38**	**D**	**43,603**
11	**Crook, OR**	**38**	**D**	**22,570**
14	Jackson, OR	33	C	216,527
15	Lebanon, PA	32	C	138,863
16	Lake, OR	31	B	7,837
16	Lancaster, PA	31	B	538,500
16	Weber, UT	31	B	247,560
19	San Bernardino, CA	30	B	2,140,086
19	Imperial, CA	30	B	180,883
19	Weld, CO	30	B	294,962
19	Northampton, PA	30	B	302,294
23	Benewah, ID	29	B	9,092
23	Dauphin, PA	29	B	273,707
23	Utah, UT	29	B	592,299
23	Yakima, WA	29	B	249,636

DV = Design Value
Of the 26 highest counties, ten are rated F, three are D, two are C and eleven are B.

Table 13
Highest Counties Year Round Particle Pollution (Annual PM-2.5)
(2014 - 2016)

Rank	County/State	DV	Grade	2015 Population
1	**Fairbanks, CA**	**18.0**	**F**	**100,605**
2	**Tulare, CA**	**16.2**	**F**	**460,437**
3	**Kings, CA**	**15.9**	**F**	**149,785**
4	**Fresno, CA**	**12.7**	**D**	**979,915**
4	**Madera, CA**	**12.7**	**D**	**154,697**
6	**Lebanon, PA**	**12.2**	**D**	**138,863**
7	Plumas, CA	11.8	C	18,627
8	Merced, CA	11.7	C	268,672
8	Stanislaus, CA	11.7	C	541,560
10	San Joaquin, CA	11.6	C	733,709
11	Kern, CA	11.5	C	884,788
11	Delaware, PA	11.5	C	563,402
11	Lancaster, PA	11.5	C	538,500
14	Northampton, PA	11.3	C	302,294
15	Imperial, CA	11.1	C	180,883
16	Armstrong, PA	11.0	C	66,486
17	Howard, IN	10.9	C	22,568
17	Madison, IN	10.9	C	129,723
17	Marion, IN	10.9	C	941,229
20	San Bernardino, CA	10.8	C	2,140,086
21	Cambria, PA	10.7	B	134,732
21	Chester, PA	10.7	B	516,312
23	Cuyahoga, OH	10.6	B	1,249,352
24	Los Angeles, CA	10.4	B	10,137,915
24	Napa. CA	10.4	B	142,166
24	Harris, TX	10.4	B	4,589,928

DV = Design Value
Of the 26 highest counties, three are rated an F and three are D. All others meet the National Ambient Air Quality Standards with fourteen being rated as C and six rated as B.

Table 14
Highest Ozone Counties
(2014 - 2016)

Rank	County/State	DV	Grade	2015 Population
1	San Bernardino, CA	0.091	F	2,140,086
2	Fresno, CA	0.089	F	979,915
3	Nevada, CA	0.084	F	99,107
3	Riverside, CA	0.084	F	2,387,741
3	Tulare, CA	0.084	F	460,437
6	El Dorado, CA	0.083	F	185,625
6	Kern, CA	0.083	F	884,788
8	Merced, CA	0.082	F	268,672
9	Stanislaus, CA	0.081	F	541,560
10	Los Angeles, CA	0.080	F	10,137,915
10	Fairfield, CT	0.080	F	944,177
12	Tehama, CA	0.079	F	63,276
12	Middlesex, CT	0.079	F	163,329
12	Tuolumne, CA	0.079	F	53,804
12	Sheboygan, WI	0.079	F	115,427
16	Douglas, CO	0.077	D	328,632
16	Kenosha, WI	0.077	D	168,183
18	Calaveras, CA	0.076	D	45,171
18	New Haven, CT	0.076	D	856,875
18	Richmond, NY	0.076	D	476,015
18	Galveston, TX	0.076	D	329,431
22	Fulton, GA	0.075	D	1,023,336
22	Allegan, MI	0.075	D	115,548
22	Muskegon, MI	0.075	D	173,408
22	Bucks, PA	0.075	D	626,399
22	Salt Lake, UT	0.075	D	1,121,354

DV = Design Value
Of the top 25 counties, fourteen are rated as F and eleven are rated as D.

Table 15
Cleanest U.S. Cities for Short-term Particle Pollution (24-hr PM-2.5)
(2014 - 2016)

Rank	MSA	PW DV	Grade	2015 Population
1	Urban-Honolulu, HI	11	A	992,605
1	St. George, UT	11	A	160,245
3	Sierra Vista-Douglas, AZ	12	A	125,770
3	Gainesville-Lake City, FL	12	A	350,007
3	Elmira-Corning, NY	12	A	96,940
6	Salinas, CA	13	A	435,232
6	Orlando-Deltona, FL	13	A	2,770,842
6	Manchester-Nashua, NH	13	A	407,761
6	Kahului-Wailuku-Lahaina, HI	13	A	165,474
6	Homosassa Springs, FL	13	A	143,621
6	Cheyenne, WY	13	A	98,136
6	Cape Coral-Fort Myers, FL	13	A	1,087,472
13	Tucson-Nogales, AZ	14	A	1,062,191
13	Pueblo-Canon City, CO	14	A	212,569
13	Lakeland-Winter Haven, FL	14	A	666,149
13	Lafayette, LA	14	A	627,504
13	Grand Island, NE	14	A	85,148
13	Burlington, VT	14	A	217,365
19	Tampa-Clearwater, FL	15	A	3,052,171
19	Syracuse-Auburn, NY	15	A	754,371
19	Raleigh-Durham-Chapel Hills, NC	15	A	2,156,253
19	Pensacola-Perry Pass, FL-AL	15	A	523,412
19	Miami-Ft. Lauderdale, FL	15	A	6,723,472
19	Lynchburg, VA	15	A	260,232
19	Johnson City, TN-VA	15	A	507,995
19	Jackson-Brownsville, TN	15	A	186,029
19	Houma-Thibodaux, LA	15	A	211,525
19	Greenville-Washington, NC	15	A	224,746
19	Colorado Springs, CO	15	A	712,327
19	Charleston, SC	15	A	761,155
19	Boston=Providence, MA-RI-NH-CT	15	A	7,316,968

MSA= Metropolitan Statistical Area PW = Population Weighted DV = Design Value
Of the 31 cleanest cities, all are rated as A.

Table 16
Cleanest U.S. Cities for Year Round Particle Pollution (Annual PM-2.5)
(2014 - 2016)

Rank	MSA	PW DV	Grade	2015 Population
1	St. George, UT	3.9	A	160,245
2	Cheyenne, WY	4.1	A	98,136
3	Urban-Honolulu, HI	4.3	A	992,605
4	Kahului-Wailuku-Lahaina, HI	4.8	A	165,474
5	Casper, WY	4.9	A	81,039
6	Elmira-Corning, NY	5.0	A	96,940
7	Anchorage, AK	5.1	A	402,557
8	Salinas, CA	5.2	A	435,232
8	Pueblo-Canon City, CO	5.2	A	212,569
8	Colorado Springs, CO	5.2	A	712,327
11	Sierra Vista-Douglas, AZ	5.4	A	125,770
11	Gainesville-Lake City, FL	5.4	A	350,007
13	Duluth, MN-WI	5.5	A	279,227
13	Bismarck, ND	5.5	A	131,635
15	Tucson-Nogales, AZ	5.6	A	1,062,191
15	Syracuse-Auburn, NY	5.6	A	754,371
15	Manchester-Nashua, NH	5.6	A	407,761
15	Fargo-Wahpeton, ND-MN	5.6	A	250,835
19	Homosassa Springs, FL	5.8	A	143,621
19	Cape Coral-Fort Myers, FL	5.8	A	1,087,472
21	Orlando, FL	5.9	A	2,770,842
21	Burlington, VT	5.9	A	217,365
23	Redding-Red Bluff, CA	6.0	A	242,807
23	Rapid City, SD	6.0	A	170,942
23	Grand Island, NE	6.0	A	85,148

MSA = Metropolitan Statistical Area PW = Population Weighted DV = Design Value
Of the 25 cleanest cities all are rated as A.

Table 17
Cleanest U.S. Cities for Ozone Air Pollution
(2014 - 2016)

Rank	MSA	PW DV	Grade	2015 Population
1	Fairbanks, AK	0.042	A	100,605
2	Anchorage, AK	0.045	A	402,557
3	Bellingham, WA	0.046	A	216,800
4	Urban-Honolulu, HI	0.051	A	992,605
5	Missoula, MT	0.053	A	116,130
6	McAllen-Edinburg, TX	0.055	A	913,968
6	Duluth, MN-WI	0.055	A	279,227
8	Fargo-Wahpeton, ND-MN	0.056	A	250,835
8	Brunswick, GA	0.056	A	116,784
10	Seattle-Tacoma, WA	0.057	A	4,684,516
10	Savannah, GA	0.057	A	539,753
10	Rapid City, SD	0.057	A	170,942
10	Naples, FL	0.057	A	365,136
10	Charleston, SC	0.057	A	761,155
10	Brownsville, TX	0.057	A	443,945
16	Salinas, CA	0.058	A	435,232
16	Portland, OR-WA	0.058	A	3,223,163
16	Minneapolis, MN-WI	0.058	A	3,894,820
16	Casper, WY	0.058	A	81,039
16	Cape Coral-Fort Myers, FL	0.058	A	1,087,472
16	Bangor, ME	0.058	A	151,806
22	Springfield, MO	0.059	A	544,712
22	Spokane. WA	0.059	A	710,945
22	Palm Bay, FL	0.059	A	579,130
22	Ocala, FL	0.059	A	349,020
22	Monroe-Bastrop, LA	0.059	A	253,286
22	Medford, OR	0.059	A	302,431
22	Lincoln, NE	0.059	A	348,720
22	Las Vegas, NV-AZ	0.059	A	2,404,336
22	Jacksonville, FL-GA	0.059	A	1,531,497
22	Gainesville, FL	0.059	A	350,007
22	Florence, AL	0.059	A	146,534
22	Elmira-Corning, NY	0.059	A	96,940
22	Dothan, AL	0.059	A	197,060
22	Columbia, SC	0.059	A	943,670
22	Bismarck, ND	0.059	A	131,635

MSA = Metropolitan Statistical Area PW = Population Weighted DV = Design Value
Of the cleanest 36 cities, all are rated A.

Table 18
Cleanest Counties – Short Term Particle Pollution (24-hour PM-2.5)
(2014 - 2016)

Rank	County/State	DV	Grade	2015 Population
1	La Plata, CO	7	A	55,623
2	La Paz, AZ	8	A	20,317
3	Bennington, VT	10	A	36,191
3	Belknap, NH	10	A	60,779
3	Fergus, MT	10	A	11,413
3	Kauai, HI	10	A	72,029
3	Lake. CA	10	A	64,116
8	Washington, UT	11	A	160,245
8	Essex, NY	11	A	38,102
8	Dona Ana, NM	11	A	214,207
8	Philips, MT	11	A	4,133
8	Honolulu, HI	11	A	992,605
13	Kitsap, WA	12	A	264,811
13	Steuben, NY	12	A	96,940
13	Richland, MT	12	A	11,482
13	Hawaii, HI	12	A	198,449
13	Alachua, FL	12	A	263,496
13	San Benito, CA	12	A	59,414
13	Nevada, CA	12	A	99,107
13	Cochise, AZ	12	A	125,770

DV = Design Value
The cleanest 20 counties are all rated as A.

Table 19
Cleanest Counties - Year Round Particle Pollution (Annual PM-2.5)
(2014 - 2016)

Rank	County/State	DV	Grade	2015 Population
1	La Paz, AZ	1.8	A	20,317
2	Custer, SD	2.7	A	8,596
3	McKenzie, ND	2.8	A	12,621
4	Bennington, VT	3.0	A	36,191
5	La Plata, CO	3.3	A	55,623
6	Lake, CA	3.4	A	64,116
7	Jackson, SD	3.7	A	3,326
7	Kauai, HI	3.7	A	72,029
9	Mercer, ND	3.8	A	8,694
9	Burke, ND	3.8	A	2,197
9	Essex, NY	3.8	A	38,102
9	Fergus, MT	3.8	A	11,413
13	Washington, UT	3.9	A	160,245
14	Park, WY	4.1	A	29,353
14	Laramie, WY	4.1	A	96,136
14	Campbell, WY	4.1	A	48,803
14	Oliver, ND	4.1	A	1,870
18	Albany, WY	4.2	A	38,256
18	Williams, ND	4.2	A	34,337
18	Billings, ND	4.2	A	934
21	Lake, MN	4.3	A	10,625
21	Honolulu, HI	4.3	A	992,605
23	Philips, MT	4.4	A	4,133
23	San Benito, CA	4.4	A	59,414
23	Nevada, CA	4.4	A	99,107

DV = Design Value
The cleanest 25 counties are all rated as A.

Table 20
Cleanest Counties - Ozone Air Pollution
(2014 - 2016)

Rank	County/State	DV	Grade	2015 Population
1	Fairbanks, AK	0.042	A	100,605
2	Humboldt, CA	0.044	A	136,646
3	Matanuska, AK	0.045	A	104,365
4	Whatcom, WA	0.046	A	216,800
5	Skagit, WA	0.048	A	123,681
6	San Francisco, CA	0.049	A	870,887
7	Honolulu, HI	0.051	A	992,605
7	Mendocino, CA	0.051	A	87,628
9	Clallam, WA	0.052	A	74,570
9	Rio Blanco, CO	0.052	A	6,545
11	Missoula, MT	0.053	A	116,130
11	Flathead, MT	0.053	A	98,082
11	Oxford, ME	0.053	A	57,517
11	Aroostook, ME	0.053	A	67,959
11	Denali, AK	0.053	A	1,953
16	Columbia, OR	0.054	A	50,785
16	Ottawa, OK	0.054	A	31,691
16	St. Louis, MN	0.054	A	199,980
19	Hidalgo, TX	0.055	A	849,843
19	Bradford, PA	0.055	A	60,770
19	Multnomah, OR	0.055	A	799,766
19	Richland, MT	0.055	A	11,482
19	Philips, MT	0.055	A	4,133
19	Fergus, MT	0.055	A	11,413
19	Sonoma, CA	0.055	A	503,070

DV = Design Value of the 25 cleanest counties, all are rated A.

Table 21
States Ranked by Population Weighted Ozone Design Values
(2014 – 2016)

Rank	State	PW Ozone Design Value
1	AK	0.044
2	HI	0.051
3	MT	0.054
4	ND	0.056
5	WA	0.057
6	OR	0.059
7	IA	0.060
7	NE	0.060
9	FL	0.061
9	ME	0.061
9	SC	0.061
9	VT	0.061
9	WY	0.061
14	KS	0.062
14	SD	0.062
16	AR	0.063
16	MS	0.063
16	NH	0.063
19	AL	0.064
19	IN	0.064
19	MA	0.064
19	OK	0.064
23	ID	0.065
23	NM	0.065
23	NC	0.065
23	TN	0.065
23	WV	0.065
28	KY	0.066
28	LA	0.066
28	MO	0.066
28	VA	0.066
32	OH	0.067
32	WI	0.067
34	DE	0.068
34	IL	0.068
34	MD	0.068
34	MN	0.068
34	NY	0.068
34	PA	0.068
34	TX	0.068
41	AZ	0.069
41	CO	0.069
41	GA	0.069
41	MI	0.069
41	NV	0.069
41	RI	0.069
47	DC	0.070
47	NJ	0.070
49	UT	0.072
50	CA	0.074
51	CT	0.076

Table 22
States Ranked by Population Weighted 24-Hour PM-2.5 Design Values
2014 – 2016)

Rank	State	PW 24-Hr Design Value
1	HI	11
2	NH	14
3	FL	15
4	MA	16
4	NM	16
4	TN	16
4	VT	16
4	WY	16
9	ME	17
9	NE	17
9	NC	17
9	ND	17
9	RI	17
9	SC	17
15	AL	18
15	AZ	18
15	MN	18
15	MS	18
15	SD	18
15	VA	18
21	CO	19
21	CT	19
21	GA	19
21	ID	19
21	NV	19
21	NY	19
21	OK	19
28	AR	20
28	KS	20
28	KY	20
28	TX	20
28	WV	20
33	DE	21
33	IL	21
33	IA	21
33	MD	21
33	MO	21
33	NJ	21
33	OH	21
33	WA	21
41	DC	22
41	MT	22
41	WI	22
44	OR	23
45	IN	24
45	LA	24
45	MI	24
48	PA	25
49	CA	26
50	AK	27
51	UT	34

Table 23

States Ranked by Population Weighted 24-Hour PM-2.5 Design Values (2014 – 2016)

Rank	State	PW Annual Design Value
1	WY	4.5
2	HI	4.7
3	ND	5.2
4	VT	6.0
5	CO	6.2
6	MA	6.3
7	NV	6.4
7	RI	6.4
9	FL	6.5
10	SD	6.7
11	WA	6.8
12	ME	6.9
12	MT	6.9
12	NH	6.9
15	ID	7.0
15	MN	7.0
17	OR	7.1
18	AZ	7.4
18	NE	7.4
20	CT	7.6
20	KS	7.6
22	NM	7.7
23	NY	7.8
23	VA	7.8
25	UT	7.9
26	IA	8.2
26	OK	8.2
28	NC	8.3
28	SC	8.3
28	WI	8.3
31	NJ	8.4
32	DE	8.6
32	TN	8.6
34	MD	8.7
35	AL	8.8
36	MI	8.9
36	MS	8.9
36	WV	8.9
39	AK	9.0
40	KY	9.1
40	MO	9.1
42	AR	9.2
43	DC	9.3
43	GA	9.3
45	CA	9.4
45	TX	9.4
47	IL	9.5
48	OH	9.6
49	IN	9.8
49	LA	9.8
51	PA	10.2

Table 24
Overall Ranking Based on Population Weighted Design Values
(2014 – 2016)

	PW Design Value			Percent of Standard				
State	Ozone	24 Hr. PM2.5	Ann. PM2.5	Ozone	24 Hr. PM2.5	Ann PM2.5	Average	Rank
HI	0.051	11	4.7	72.86	31.43	39.17	47.82	1
WY	0.061	16	4.5	87.14	45.71	37.50	56.79	2
ND	0.056	17	5.2	80.00	48.57	43.33	57.30	3
VT	0.061	16	6.0	87.14	45.71	50.00	60.95	4
FL	0.061	15	6.5	87.14	42.86	54.17	61.39	5
NH	0.063	14	6.9	90.00	40.00	57.50	62.50	6
MA	0.064	16	6.3	91.43	45.71	52.50	63.21	7
ME	0.061	17	6.9	87.14	48.57	57.50	64.40	8
SD	0.062	18	6.7	88.57	51.43	55.83	65.28	9
NE	0.060	17	7.4	85.71	48.57	61.67	65.32	10
MT	0.054	22	6.9	77.14	62.86	57.50	65.83	11
WA	0.057	21	6.8	81.43	60.00	56.67	66.03	12
RI	0.069	17	6.4	98.57	48.57	53.33	66.83	13
NM	0.065	16	7.7	92.86	45.71	64.17	67.58	14
CO	0.069	19	6.2	98.57	54.29	51.67	68.17	15
SC	0.061	17	8.3	87.14	48.57	69.17	68.29	16
ID	0.065	19	7.0	92.86	54.29	58.33	68.49	17
NV	0.069	19	6.4	98.57	54.29	53.33	68.73	18
MN	0.068	18	7.0	97.14	51.43	58.33	68.97	19
KS	0.062	20	7.6	88.57	57.14	63.33	69.68	20
OR	0.059	23	7.1	84.29	65.71	59.17	69.72	21
TN	0.065	16	8.6	92.86	45.71	71.67	70.08	22
NC	0.065	17	8.3	92.86	48.57	69.17	70.20	23
VA	0.066	18	7.8	94.29	51.43	65.00	70.24	24
AZ	0.069	18	7.4	98.57	51.43	61.67	70.56	25
IA	0.060	21	8.2	85.71	60.00	68.33	71.35	26
OK	0.064	19	8.2	91.43	54.29	68.33	71.35	27
AK	0.044	27	9.0	62.86	77.14	75.00	71.67	28
MS	0.063	18	8.9	90.00	51.43	74.17	71.87	29
AL	0.064	18	8.8	91.43	51.43	73.33	72.06	30
NY	0.068	19	7.8	97.14	54.29	65.00	72.14	31
AR	0.063	20	9.2	90.00	57.14	76.67	74.60	32
WV	0.065	20	8.9	92.86	57.14	74.17	74.72	33
CT	0.076	19	7.6	108.57	54.29	63.33	75.40	34
KY	0.066	20	9.1	94.29	57.14	75.83	75.75	35
WI	0.067	22	8.3	95.71	62.86	69.17	75.91	36
DE	0.068	21	8.6	97.14	60.00	71.67	76.27	37
MD	0.068	21	8.7	97.14	60.00	72.50	76.55	38
NJ	0.070	21	8.4	100.00	60.00	70.00	76.67	39
MO	0.068	21	9.1	94.29	60.00	75.83	76.71	40
GA	0.069	19	9.3	98.57	54.29	77.50	76.79	41
TX	0.068	20	9.4	97.14	57.14	78.33	77.54	42
OH	0.067	21	9.6	95.71	60.00	80.00	78.57	43
IL	0.068	21	9.5	97.14	60.00	79.17	78.77	11
DC	0.070	22	9.3	100.00	62.86	77.50	80.12	45
MI	0.069	24	8.9	98.57	68.57	74.17	80.44	46
IN	0.064	24	9.8	91.43	68.57	81.67	80.56	47
LA	0.066	24	9.8	94.29	68.57	81.67	81.51	48
PA	0.068	25	10.2	97.14	71.43	85.00	84.52	49
CA	0.074	26	9.4	105.71	74.29	78.33	86.11	50
UT	0.072	34	7.9	102.86	97.14	65.83	88.61	51

State By State Analyses

ALABAMA

Ozone

Significant progress has been made in ozone levels in Alabama. In the 2000 – 2002 time period, approximately 1.7 million people (38.2%) lived in counties that met the ozone standard. By 2014 – 2016 this had increased to 2.8 million people (57.7%), although the standard was lowered from 0.085 ppm to 0.070 ppm. The rest of the people in 2014 – 2016 lived in counties where ozone was not measured. Figure AL-1 shows the distribution of people by year. The population weighted ozone design value in 2000 – 2002 was 0.083 ppm. By 2014 – 2016 this had lowered to a value of 0.064 ppm, a reduction of 22.9 percent.

24-Hour PM-2.5

Significant progress has been made in 24-hour PM-2.5 levels in Alabama. In the 2000 – 2002 time period, approximately 2.4 million people (53.1%) lived in counties where 24-hour PM-2.5 levels met the standard. By 2014 - 2016 this had increased to approximately 2.6 million people (59.2%). The remainder of the people in 2014 -2016 lived in counties where PM-2.5 was not measured. The standard was lowered from 65 µg/m3 to 35 µg/m3. Figure AL-2 shows the distribution of people by year. The population weighted 24-hour PM-2.5 design value in 2000 – 2002 was 34 µg/m3. By 2014 – 2016 this had lowered to a value of 18 µg/m3, a reduction of 47.1 percent.

Annual PM-2.5

Progress has been made in annual PM-2.5 levels in Alabama. In the 2000 – 2002 time period, approximately 1.5 million people (33.01%) lived in counties where annual PM-2.5 levels met the standard. By 2014 – 2016 this had increased to approximately 2.6 million people (59.2%). The remainder of the people in 2014 – 2016 lived in counties where PM-2.5 was not measured. The standard was lowered from 15 µg/m3 to 12 µg/m3. Figure AL-3 shows the distribution of people by year. The population weighted annual PM-2.5 design value in 2000 – 2002 was 14.9 µg/m3. By 2014 – 2016 this had lowered to a value of 8.8 µg/m3, a reduction of 40.9 percent.

Table AL-1
2014 – 2016

		Ozone			Particle Pollution (PM-2.5)				
County	Population	Avg. DV	Grade	MM	Avg. 24-Hr DV	Grade	Avg. Ann DV	Grade	MM
Baldwin	208,563	0.065	C	N	16	A	8.2	A	N
Clay	13,492	ND	ND	ND	18	A	8.2	A	N
Colbert	54,216	0.059	B	N	18	A	8.5	A	N
DeKalb	70,900	0.063	C	N	17	A	8.8	A	N
Etowah	102,564	0.061	B	N	17	A	8.9	A	N
Houston	104,056	0.059	B	N	16	A	7.7	A	N
Jefferson	859,521	0.066	C	Y	21	A	10.2	B	Y
Madison	356,967	0.063	C	Y	18	A	7.2	A	N
Mobile	414,836	0.064	C	Y	18	A	8.5	A	N
Montgomery	226,349	0.062	B	N	18	A	9.0	A	N
Morgan	119,012	0.064	C	N	17	A	8.5	A	N
Russell	58,172	0.062	B	N	ND	ND	ND	ND	ND
Shelby	210,622	0.067	C	N	ND	ND	ND	ND	ND
Sumter	13,040	0.057	B	N	ND	ND	ND	ND	ND
Talladega	80,103	ND	ND	ND	18	A	9.3	A	N
Tuscaloosa	206,102	0.060	B	N	17	A	8.5	A	N

DV = Design Value ND = No Data MM = Multiple Monitors

ALABAMA

Table AL-2
Population Weighted Design Values

Period	Ozone (ppm)	24-Hour PM-2.5 (µg/m3)	Annual PM-2.5 (µg/m3)
2000 – 2002	0.083	34	14.9
2001 – 2003	0.078	30	13.8
2002 – 2004	0.076	31	13.6
2003 – 2005	0.074	33	13.8
2004 – 2006	0.075	33	13.8
2005 – 2007	0.078	31	13.8
2006 – 2008	0.077	29	13.0
2007 – 2009	0.072	26	11.7
2008 – 2010	0.069	22	10.9
2009 – 2011	0.068	22	10.7
2010 – 2012	0.071	21	10.7
2011 – 2013	0.066	21	10.0
2012 – 2014	0.068	19	9.5
2013 – 2015	0.064	19	9.2
2014 – 2016	0.064	18	8.8

ALABAMA

Table AL-3
People Breathing Ozone

Grade	2000-2002	2002-2004	2004-2006	2006-2008	2008-2010	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016
A	0	0	14,059	13,882	0	198,596	200,821	202,212	0	0
B	14,376	1,570,200	1,430,849	948,439	720,564	320,060	1,523,895	969,652	1,337,014	942,982
C	1,696,459	846,289	1,221,975	1,390,971	2,012,982	1,946,583	1,116,340	1,683,040	1,528,161	1,861,938
D	400,545	0	0	334,425	0	293,337	0	0	0	0
F	0	0	0	0	0	0	0	0	0	0
Subtotal	2,111,380	2,416,489	2,666,883	2,687,717	2,733,546	2,758,576	2,841,056	2,854,906	2,865,175	2,804,920
NM	2,368,709	2,114,240	1,962,098	2,030,489	2,046,190	2,063,447	1,992,666	1,994,471	1,993,804	2,058,380
Total	4,480,089	4,530,729	4,628,981	4,718.206	4,779,736	4,822,823	4,833,722	4,849,377	4,858,979	4,863,300

People Breathing Short-Term Particle Pollution (24-Hour PM-2.5)

Grade	2000-2002	2002-2004	2004-2006	2006-2008	2008-2010	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016
A	2,378,101	2,521,776	369,579	710,633	2,347,434	2,844,233	2,854,736	2,868,803	2,878,124	2,616,681
B	0	0	536,005	1,615,710	164,616	0	0	0	0	0
C	0	0	1,402,431	82,064	0	0	0	0	0	0
D	0	0	163,973	82,064	0	0	0	0	0	0
F	0	0	163,973	82,063	0	0	0	0	0	0
Subtotal	2,378,101	2,521,776	2,635,961	2,572,534	2,512,050	2,844,233	2,754,736	2,868,803	2,878,124	2,616,681
NM	2,101,988	2,008,953	1,993,020	2,145,672	2,267,686	1,977,790	1,978,986	1,980,574	1,980,855	2,246,619
Total	4,480,089	4,530,729	4,628,981	4,718,206	4,779,736	4,822,823	4,833,722	4,849,377	4,858,979	4,863,300

People Breathing Year Round Particle Pollution (Annual PM-2.5)

Grade	2000-2002	2002-2004	2004-2006	2006-2008	2007-2009	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016
A	147,857	435,896	369,579	409,196	1,719,057	2,456,409	1,306,081	1,840,891	2,850,716	2,089,064
B	412,925	539,308	686,458	597,379	568,296	387,824	1,054,046	637,908	697,225	263,808
C	918,977	1,309,639	1,119,532	401,831	164,610	0	494,609	390,004	330,183	263,809
D	660,991	143,216	296,419	82,064	0	0	0	0	0	0
F	237,351	93,717	163,973	82,064	0	0	0	0	0	0
Subtotal	2,378,101	2,521,776	2,635,961	2,572,534	2,451,963	2,844,233	2,854,736	2,868,803	2,878,124	2,616,681
NM	2,101,988	2,008,953	1,993,020	2,145,672	2,305,975	1,977,790	1,978,986	1,980,574	1,980,855	2,246,619
Total	4,480,089	4,530,729	4,628,981	4,718,206	4,757,938	4,802,823	4,833,722	4,849,377	4,858,979	4,863,300

NM = Not Monitored

Figure AL-1

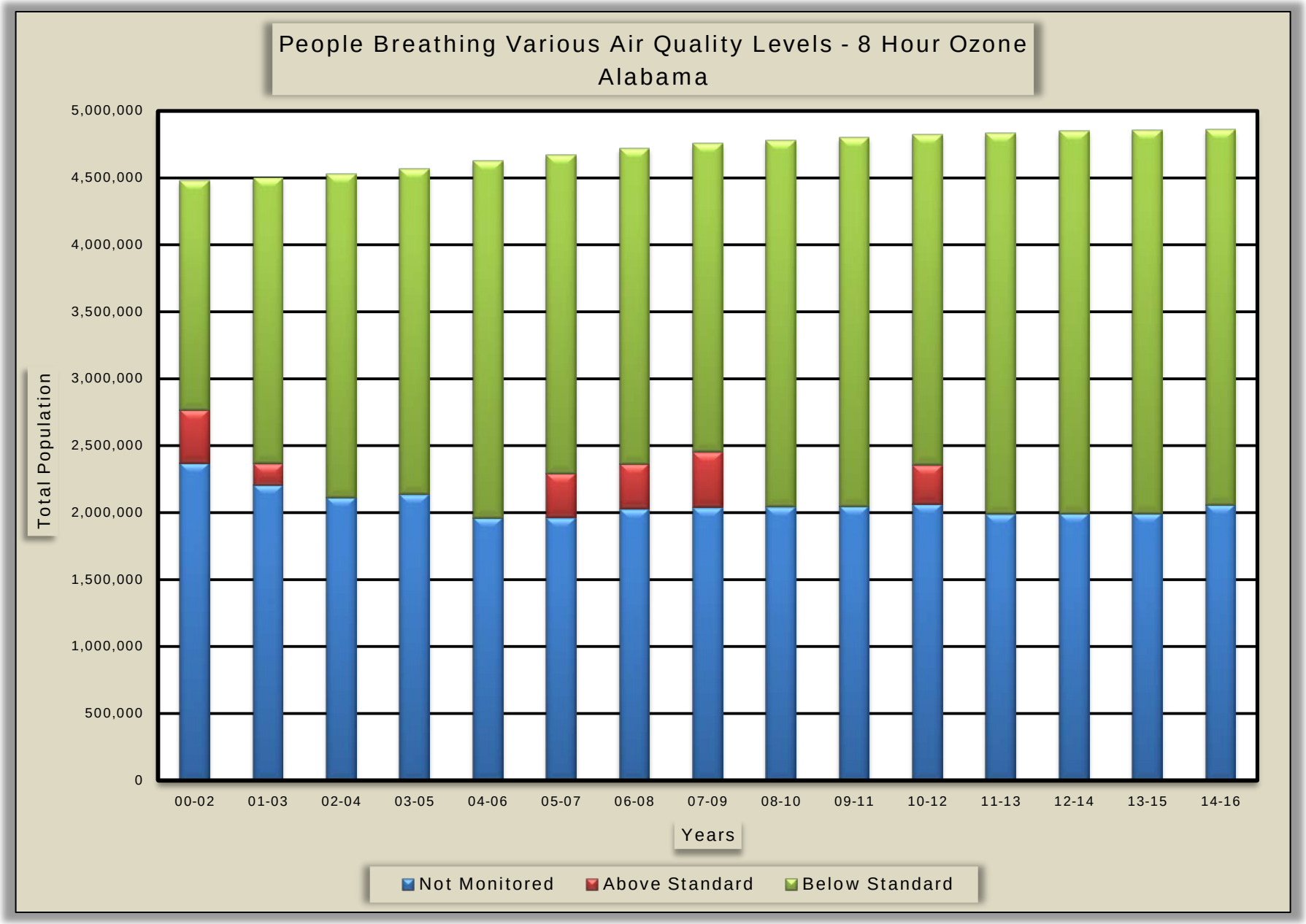

People Breathing Various Air Quality Levels - 8 Hour Ozone
Alabama
Total Population
5,000,000
4,500,000
4,000,000
3,500,000
3,000,000
2,500,000
2,000,000
1,500,000
1,000,000
500,000
0
00-02
01-03
02-04
03-05
04-06
05-07
06-08
07-09
08-10
09-11
10-12
11-13
12-14
13-15
14-16
Years
Not Monitored
Above Standard
Below Standard

Figure AL-2

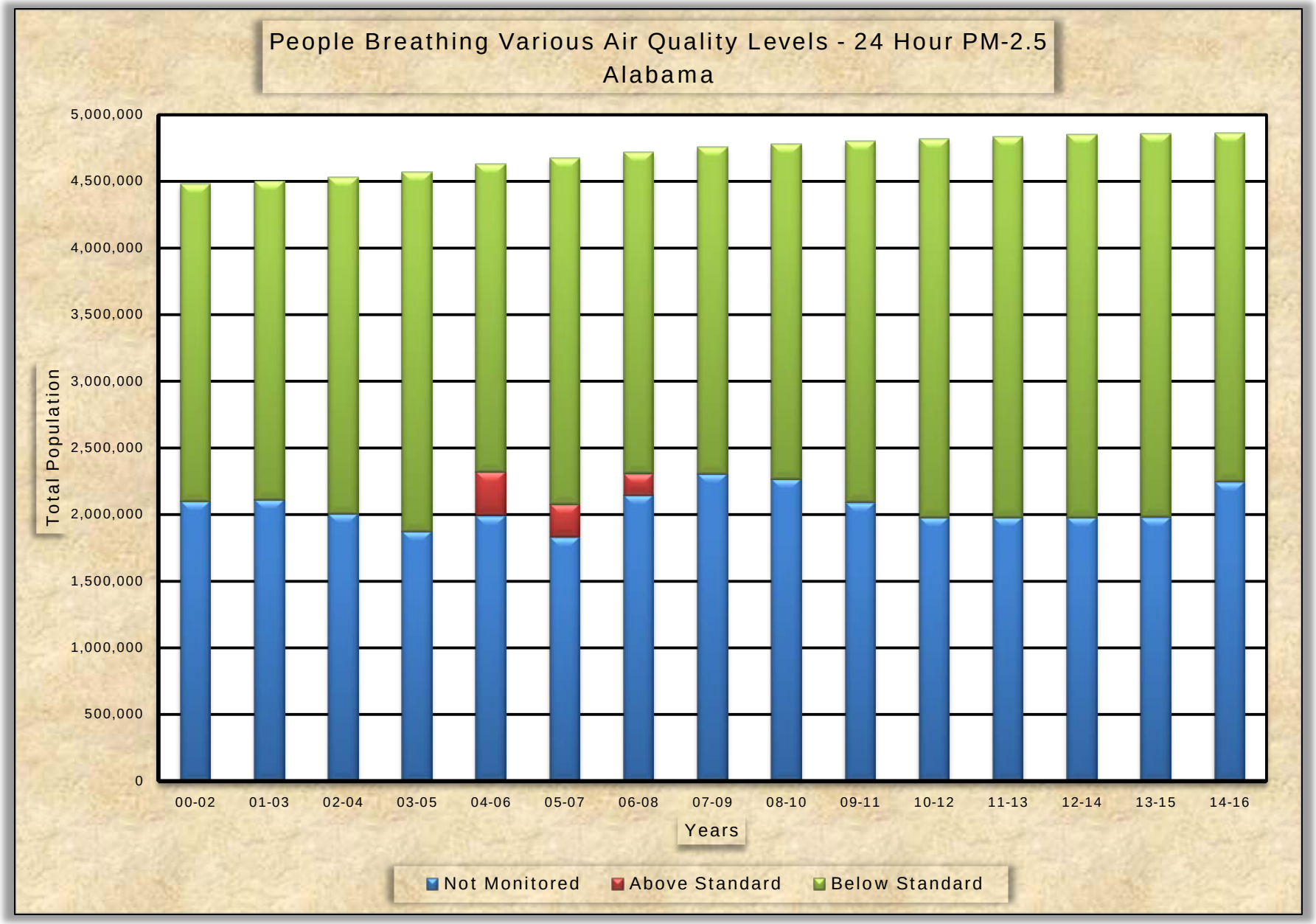
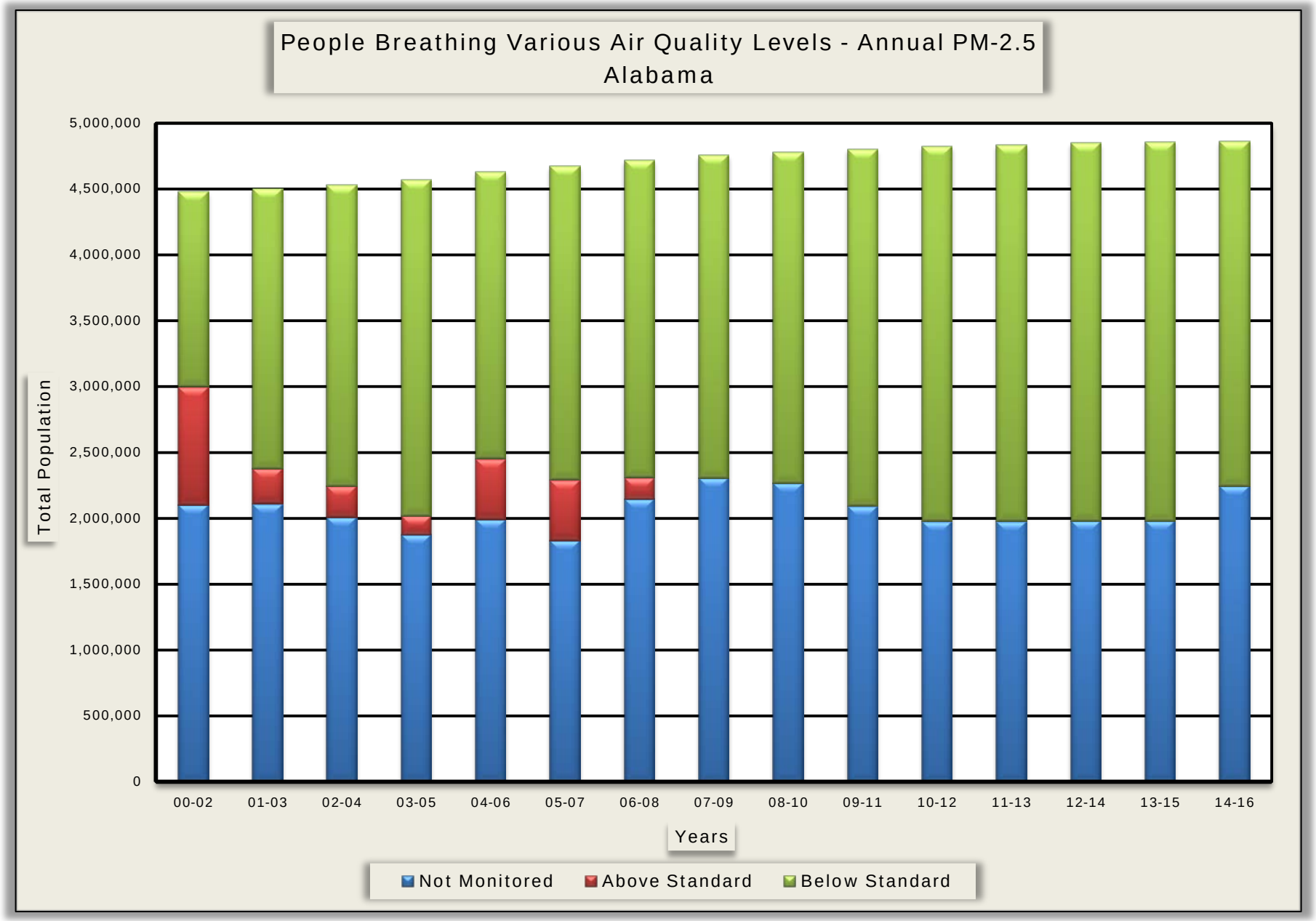

People Breathing Various Air Quality Levels - 24 Hour PM-2.5
Alabama
Total Population
5,000,000
4,500,000
4,000,000
3,500,000
3,000,000
2,500,000
2,000,000
1,500,000
1,000,000
500,000
0
00-02
01-03
02-04
03-05
04-06
05-07
06-08
07-09
08-10
09-11
10-12
11-13
12-14
13-15
14-16
Years
Not Monitored
Above Standard
Below Standard

Figure AL-3


People Breathing Various Air Quality Levels - Annual PM-2.5
Alabama
Total Population
5,000,000
4,500,000
4,000,000
3,500,000
3,000,000
2,500,000
2,000,000
1,500,000
1,000,000
500,000
0
00-02
01-03
02-04
03-05
04-06
05-07
06-08
07-09
08-10
09-11
10-12
11-13
12-14
13-15
14-16
Years
Not Monitored
Above Standard
Below Standard

ALASKA

Ozone

Ozone levels in Alaska have historically been better than the standard. In the 2000 – 2002 time period, approximately two thousand people (0.3%) lived in counties that met the ozone standard and the rest of the population lived in counties where ozone was not measured. By 2014 – 2016 there were 206,923 people (27.9%) living in counties that met the ozone standard and the rest of the population lived in counties where ozone is not measured. The ozone standard was lowered from 0.085 ppm to 0.070 ppm. Figure AK-1 shows the distribution of people by year. The population weighted ozone design value in 2000 – 2002 was 0.051 ppm. By 2014 – 2016 this had lowered to a value of 0.044 ppm, a reduction of 13.7 percent.

24-Hour PM-2.5

In the 2000 – 2002 time period, approximately 450,000 people (70.0%) in Alaska lived in counties where 24-hour PM-2.5 levels met the standard. By 2014 - 2016 this was approximately 483000 people (65.2%). The standard was lowered from 65 µg/m3 to 35 µg/m3. Figure AK-2 shows the distribution of people by year. The population weighted 24-hour PM-2.5 design value in 2000 – 2002 was 24 µg/m3. By 2014 – 2016 this had increased to a value of 27 µg/m3, an increase of 25.0 percent.

Annual PM-2.5

Annual PM-2.5 levels in Alaska have historically been better than the standard. In the 2000 – 2002 time period, approximately 450,000 people (70.0%) lived in counties where annual PM-2.5 levels met the standard. By 2014 – 2016 this had increased to approximately 483,000 (65.2%). The standard was lowered from 15 µg/m3 to 12 µg/m3. Figure AK-3 shows the distribution of people by year. The population weighted annual PM-2.5 design value in 2000 – 2002 was 7.4 µg/m3. By 2014 – 2016 this had increased to a value of 9.0 µg/m3, an increase of 21.6 percent.

Table AK-1

2014 – 2016

		Ozone			Particle Pollution (PM-2.5)				
County	Population	Avg. DV	Grade	MM	Avg. 24-Hr DV	Grade	Avg. Ann DV	Grade	MM
Anchorage	298,192	ND	ND	ND	15	A	5.3	A	N
Denali	1,953	0.053	A	N	ND	ND	ND	ND	ND
Fairbanks	**100,605**	0.042	A	N	**70**	**F**	**18.0**	**F**	Y
Juneau	32,428	ND	ND	ND	24	A	6.8	A	N
Matanuska	104,365	0.045	A	N	22	A	4.6	A	Y

DV = Design Value ND = No Data MM = Multiple Monitors

ALASKA

Table AK-2
Population Weighted Design Values

Period	Ozone (ppm)	24-Hour PM-2.5 (µg/m3)	Annual PM-2.5 (µg/m3)
2000 – 2002	0.051	24	7.4
2001 – 2003	0.054	24	7.1
2002 – 2004	0.053	26	7.4
2003 – 2005	0.052	27	7.6
2004 – 2006	0.052	30	7.7
2005 – 2007	0.052	26	7.1
2006 – 2008	0.058	27	6.9
2007 – 2009	0.058	24	6.9
2008 – 2010	0.058	26	7.2
2009 – 2011	0.053	25	7.0
2010 – 2012	0.045	25	6.6
2011 – 2013	0.052	22	6.3
2012 -2014	0.046	23	6.4
2013 – 2015	0.045	31	8.6
2014 – 2016	0.044	27	9.0

ALASKA

Table AK-3
People Breathing Ozone

Grade	2000-2002	2002-2004	2004-2006	2006-2008	2008-2010	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016
A	1,862	1,877	1,837	1,803	1,826	300,485	1,867	101,278	101,550	206,923
B	0	0	0	0	0	0	0	0	0	0
C	0	0	0	0	0	0	0	0	0	0
D	0	0	0	0	0	0	0	0	0	0
F	0	0	0	0	0	0	0	0	0	0
Subtotal	1,862	1,877	1,837	1,803	1,826	300,485	1,867	101,278	101,550	206,923
NM	640,475	657,409	673,465	685,652	708,405	430,964	733,265	635,454	636,882	534,971
Total	642,337	659,286	675,302	687,455	710,231	731,449	735,132	736,732	738,432	741,894

People Breathing Short-term Particle Pollution (24-Hour PM-2.5)

Grade	2000-2002	2002-2004	2004-2006	2006-2008	2008-2010	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016
A	449,389	394,630	280,085	281.554	323,101	378,129	428,802	398,671	331,451	380,963
B	0	0	30,808	84,079	0	0	0	0	0	0
C	0	0	0	31,110	0	46,962	0	32,627	150,911	102,485
D	0	0	0	0	0	0	0	0	0	0
F	0	0	90,545	94,552	97,581	100,272	100,436	99,357	49,815	52,182
Subtotal	449,389	394,630	401,438	491,295	420,682	525,363	529,238	530,655	532,177	535,630
NM	192,948	264,656	273,864	196,160	289,549	206,086	205,894	206,077	206,255	206,264
Total	642,337	659,286	675,302	687,455	710,231	731,449	735,132	736,732	738,432	741,894

People Breathing Year Round Particle Pollution (Annual PM-2.5)

Grade	2000-2002	2002-2004	2004-2006	2006-2008	2008-2010	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016
A	363,294	394,630	401,438	491,295	420,682	525,363	428,802	431,298	482,362	431,265
B	86,095	0	0	0	0	0	50,218	99,357	0	052,183
C	0	0	0	0	0	0	50,218	0	0	0
D	0	0	0	0	0	0	0	0	0	0
F	0	0	0	0	0	0	0	0	49,815	52,183
Subtotal	449,389	394,630	401,438	491,295	420,682	525,363	529,238	530,655	532,177	535,630
NM	192,948	264,656	273,864	196,160	289,549	206,086	205,894	206,077	206,255	206,264
Total	642,337	659,286	675,302	687,455	710,231	731,449	735,132	736,732	738,432	741,894

NM = Not Monitored

Figure AK-1

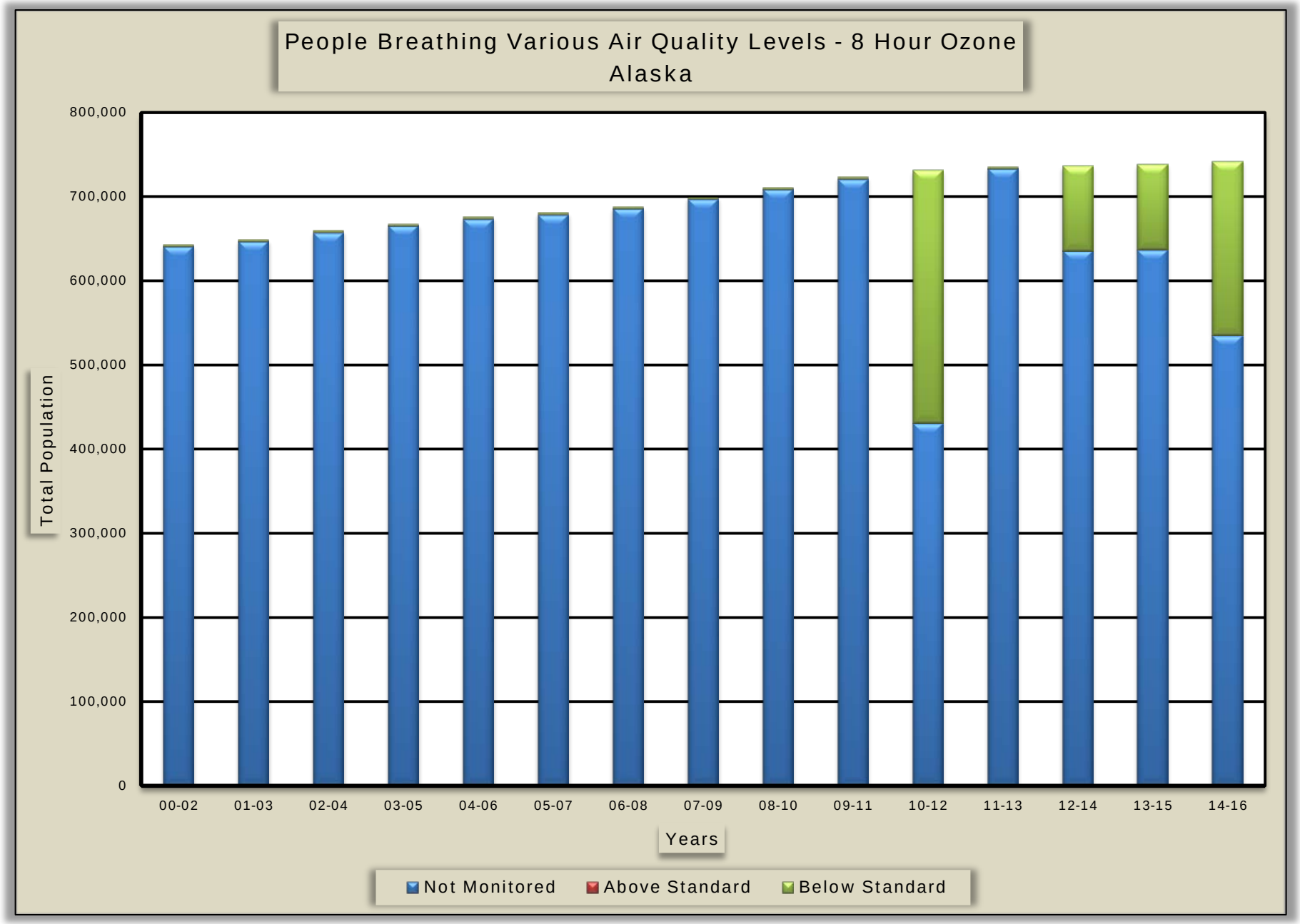

People Breathing Various Air Quality Levels - 8 Hour Ozone
Alaska
Total Population
800,000
700,000
600,000
500,000
400,000
300,000
200,000
100,000
0
00-02
01-03
02-04
03-05
04-06
05-07
06-08
07-09
08-10
09-11
10-12
11-13
12-14
13-15
14-16
Years
Not Monitored
Above Standard
Below Standard

Figure AK-2

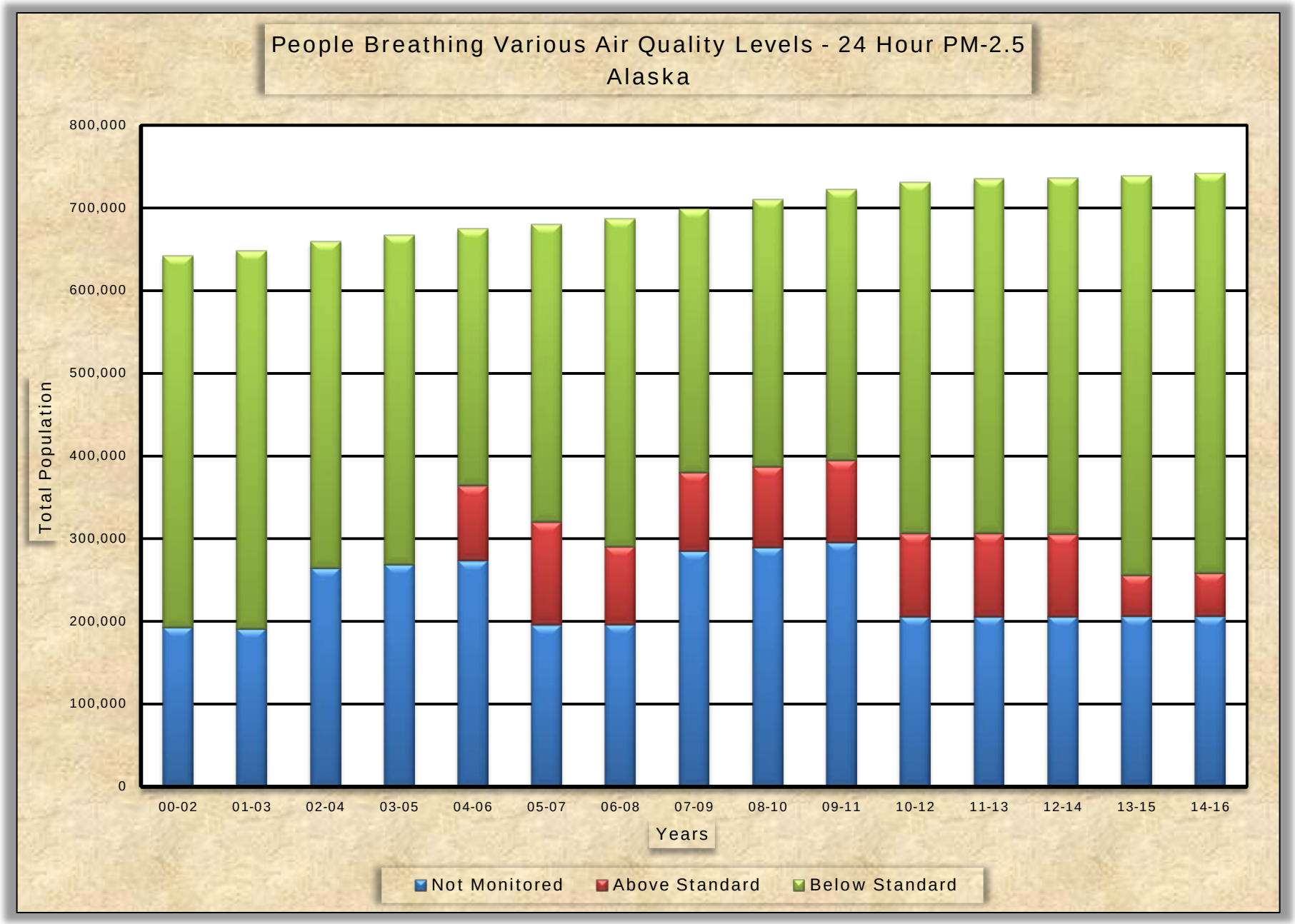
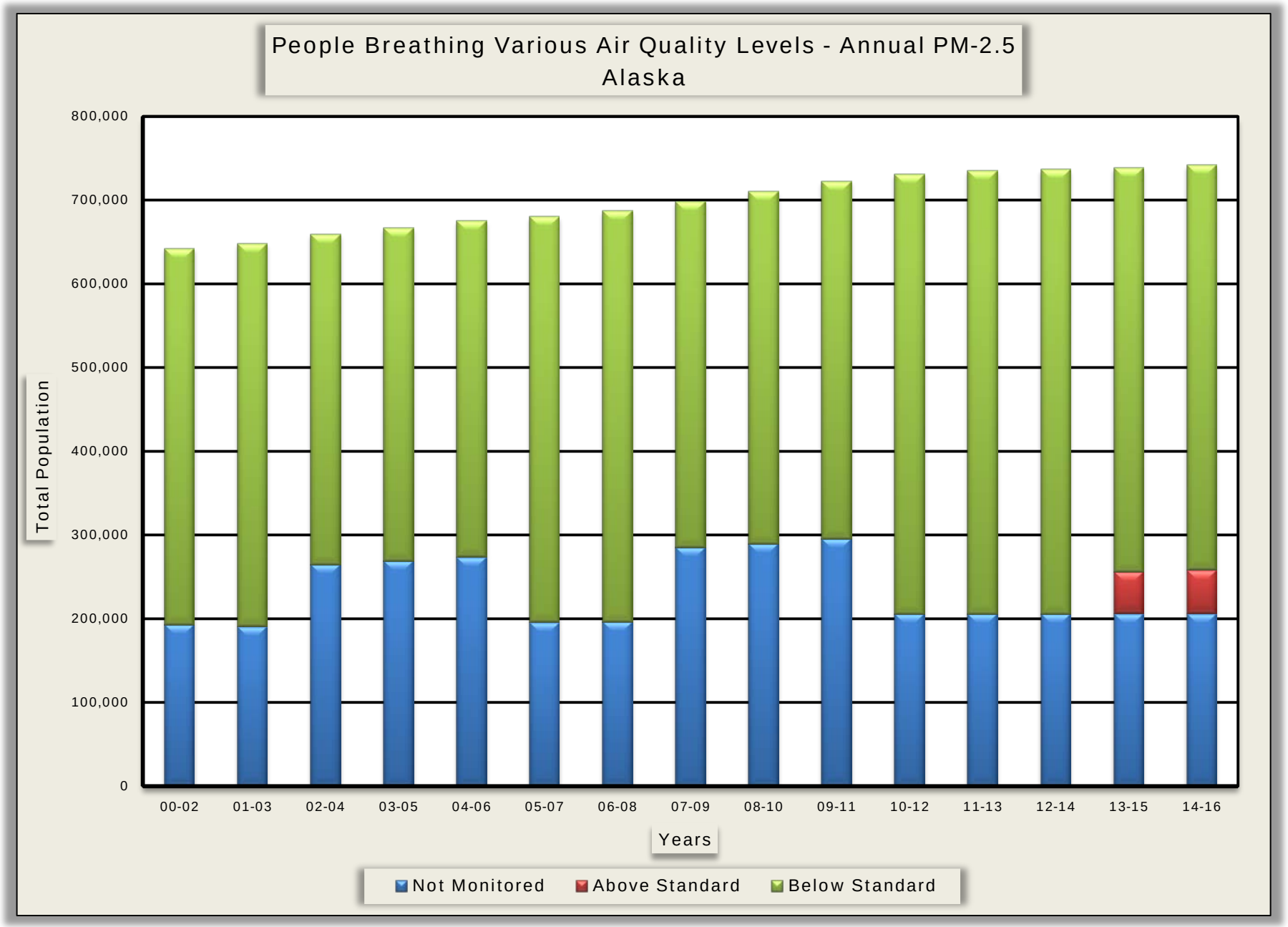

People Breathing Various Air Quality Levels - 24 Hour PM-2.5
Alaska
Total Population
800,000
700,000
600,000
500,000
400,000
300,000
200,000
100,000
0
00-02
01-03
02-04
03-05
04-06
05-07
06-08
07-09
08-10
09-11
10-12
11-13
12-14
13-15
14-16
Years
Not Monitored
Above Standard
Below Standard

Figure AK-3


People Breathing Various Air Quality Levels - Annual PM-2.5
Alaska
800,000
700,000
600,000
500,000
400,000
300,000
200,000
100,000
0
Total Population
00-02
01-03
02-04
03-05
04-06
05-07
06-08
07-09
08-10
09-11
10-12
11-13
12-14
13-15
14-16
Years
Not Monitored
Above Standard
Below Standard

ARIZONA

Ozone

In the 2000 – 2002 time period, approximately 4.5 million people (84.3%) lived in counties that met the ozone standard. By 2014 – 2016 this had decreased to 3.8 million people (55.0%). The ozone standard was lowered from 0.085 ppm to 0.070 ppm. Figure AZ-1 shows the distribution of people by year. The population weighted ozone design value in 2000 – 2002 was 0.078 ppm. By 2014 – 2016 this had decreased to a value of 0.069 ppm, a reduction of 11.5 percent.

24-Hour PM-2.5

In the 2000 – 2002 time period, approximately 3.5 million people (65.7%) lived in counties where 24-hour PM-2.5 levels met the standard. By 2014 - 2016 this had increased to approximately 6.1 million people (87.7%). The remainder of the people in 2012 – 2014 lived in counties where PM-2.5 was not measured. The standard was lowered from 65 µg/m3 to 35 µg/m3. Figure AZ-2 shows the distribution of people by year. The population weighted 24-hour PM-2.5 design value in 2000 – 2002 was 27 µg/m3. By 2014 – 2016 this had lowered to a value of 18 µg/m3, a reduction of 33.3 percent.

Annual PM-2.5

In the 2000 – 2002 time period, approximately 3.5 million people (65.7%) lived in counties where annual PM-2.5 levels met the standard. By 2014 – 2016 this had increased to approximately 6.1 million people (87.7%). The standard was lowered from 15 µg/m3 to 12 µg/m3. Figure AZ-3 shows the distribution of people by year. The population weighted annual PM-2.5 design value in 2000 – 2002 was 10.9 µg/m3. By 2014 – 2016 this had lowered to a value of 7.4 µg/m3, a reduction of 32.1 percent.

Table AZ-1
2014 – 2016

		Ozone			Particle Pollution (PM-2.5)				
County	Population	Avg. DV	Grade	MM	Avg. 24-Hr DV	Grade	Avg. Ann DV	Grade	MM
Cochise	125,770	0.065	C	N	12	A	5.4	A	N
Coconino	140,908	0.068	C	Y	ND	ND	ND	ND	ND
Gila	**53,556**	**0.071**	**D**	**N**	ND	ND	ND	ND	ND
La Paz	20,317	0.069	C	N	8	A	1.8	A	N
Maricopa	**4,242,997**	**0.071**	**D**	**Y**	20	A	7.8	A	Y
Navajo	110,026	0.064	C	N	ND	ND	ND	ND	ND
Pima	1,016,206	0.063	C	Y	13	A	5.4	A	Y
Pinal	418,540	0.067	C	Y	14	A	8.7	A	Y
Santa Cruz	45,985	ND	ND	ND	25	A	9.1	A	Y
Yavapai	225,562	0.069	C	N	ND	ND	ND	ND	ND
Yuma	**205,631**	**0.074**	**D**	**N**	20	A	6.7	A	N

DV = Design Value ND = No Data MM = Multiple Monitors

ARIZONA

Table AZ-2
Population Weighted Design Values

Period	Ozone (ppm)	24-Hour PM-2.5 (µg/m3)	Annual PM-2.5 (µg/m3)
2000 – 2002	0.078	27	10.9
2001 – 2003	0.078	25	9.7
2002 – 2004	0.076	25	9.7
2003 – 2005	0.075	26	9.8
2004 – 2006	0.074	25	9.8
2005 – 2007	0.074	23	9.6
2006 – 2008	0.073	20	9.2
2007 – 2009	0.071	19	8.6
2008 – 2010	0.070	17	7.8
2009 – 2011	0.070	17	7.5
2010 – 2012	0.073	19	8.2
2011 – 2013	0.073	19	8.0
2012 -2014	0.071	19	8.1
2013 – 2015	0.070	19	7.4
2014 – 2016	0.069	18	7.4

ARIZONA

Table AZ-3
People Breathing Ozone

Grade	2000-2002	2002-2004	2004-2006	2006-2008	2008-2010	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016
A	0	150,224	194,990	0	0	0	0	0	0	0
B	1,580,477	1,949,986	4,134,123	211,514	1,040,204	543,546	548,030	554,398	315,705	548,556
C	2,967,695	2,874,637	1,123,977	2,461,501	4,457,912	3,819,576	3,862,360	3,924,430	2,583,056	3,269,846
D	0	0	0	2,034,771	318,093	1,820,083	1,847,971	1,882,966	3,559,437	2,741,111
F	0	0	0	0	0	0	0	0	0	0
Subtotal	4,548,172	4,974,847	5,453,091	5,707,846	5,816,209	6,183,205	6,258,361	6,361,797	6,458,198	6,559,513
NM	848,083	677,557	576,050	572,516	575,808	370,050	368,263	369,687	369,867	377,558
Total	5,396,255	5,652,404	6,029,141	6,280,362	6,392,017	6,553,255	6,626,624	6,731,484	6,828,065	6,937,071

People Breathing Short-term Particle Pollution (24-Hour PM-2.5)

Grade	2000-2002	2002-2004	2004-2006	2006-2008	2008-2010	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016
A	3,543,957	4,703,531	2,931,198	5,335,026	5,524,768	6,002,686	5,091,200	4,952,215	5,110,024	6,075,446
B	0	0	1,214,295	0	172,677	47,303	702,556	454,132	520,993	0
C	0	0	1,214,295	0	0	0	0	133,973	0	0
D	0	0	44,298	0	0	0	0	0	0	0
F	0	0	0	46,144	0	0	0	0	0	0
Subtotal	3,543,957	4,703,531	5,404,085	5,381,170	5,697,445	6,049,989	5,793,756	5,540,320	5,631,017	6,075,446
NM	1,852,298	948,875	625,056	899,192	694,572	503,266	832,868	1,191,164	1,197,048	861,625
Total	5,396,255	5,652,404	6,029,141	6,280,362	6,392,017	6,553,255	6,626,624	6,731,484	6,828,065	6,937,071

People Breathing Year Round Particle Pollution (Annual PM-2.5)

Grade	2000-2002	2002-2004	2004-2006	2006-2008	2008-2010	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016
A	2,418,819	4,703,531	4,145,492	4,469,043	5,572,188	5,920,867	4,471,658	4,043,950	4,068,037	6,075,446
B	1,125,138	0	1,258,593	754,212	0	129,122	46,768	1,362,397	1,562,980	0
C	0	0	0	0	0	0	1,145,546	0	0	0
D	0	0	0	0	125,257	0	0	0	0	0
F	0	0	0	157,914	0	0	129,784	133,973	0	0
Subtotal	3,543,957	4,703,531	5,404,085	5,381,170	5,697,445	6,049,989	5,793,756	4,540,320	5,631,017	6,075,446
NM	1,852,298	948,873	625,056	899,192	694,572	503,266	832,868	1,191,164	1,197,048	861,625
Total	5,396,255	5,652,404	6,029,141	6,280,362	6,392,017	6,553,255	6,626,624	6,731,484	6,828,065	6,937,071

NM = Not Monitored

Figure AZ-1

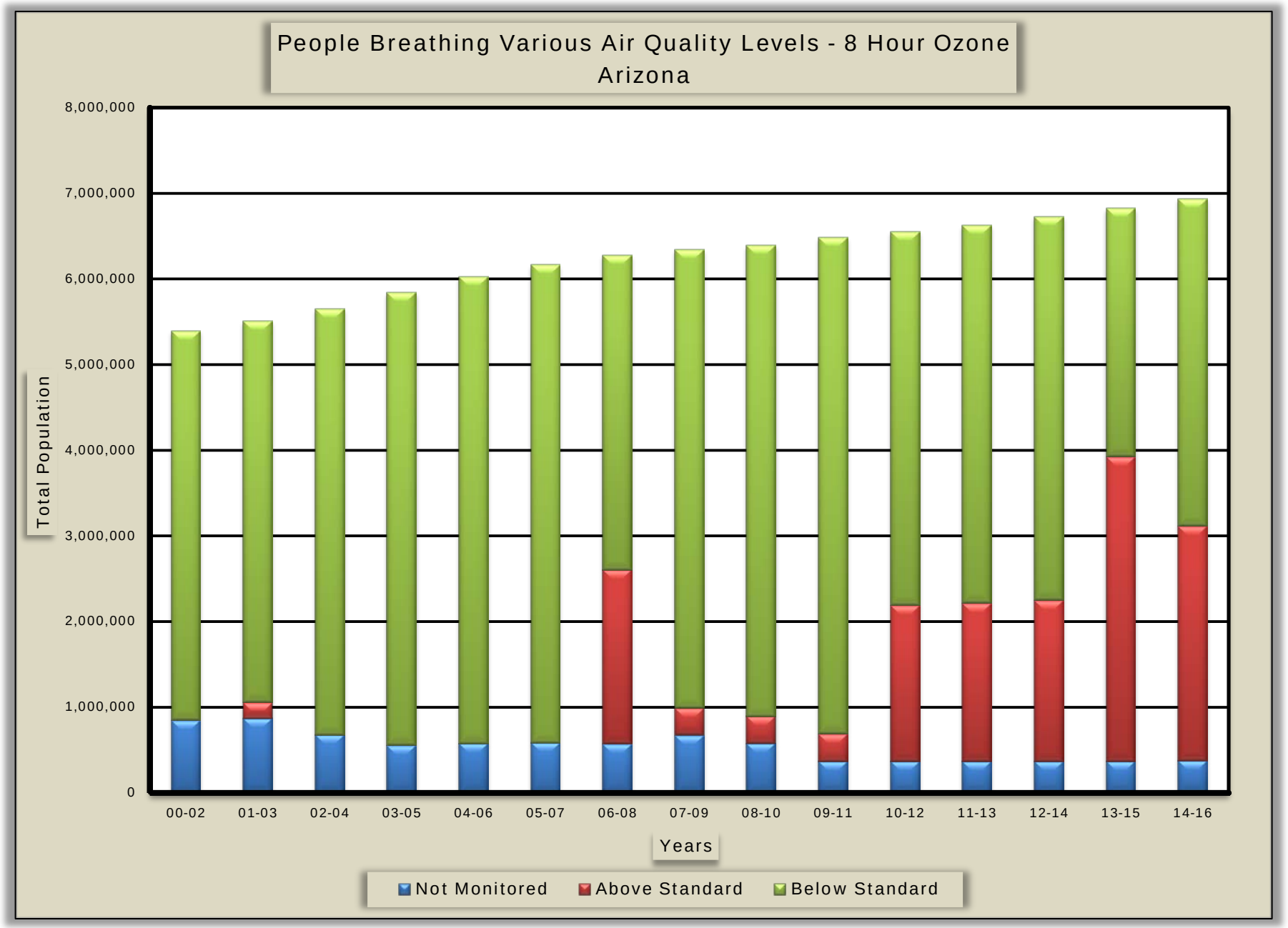
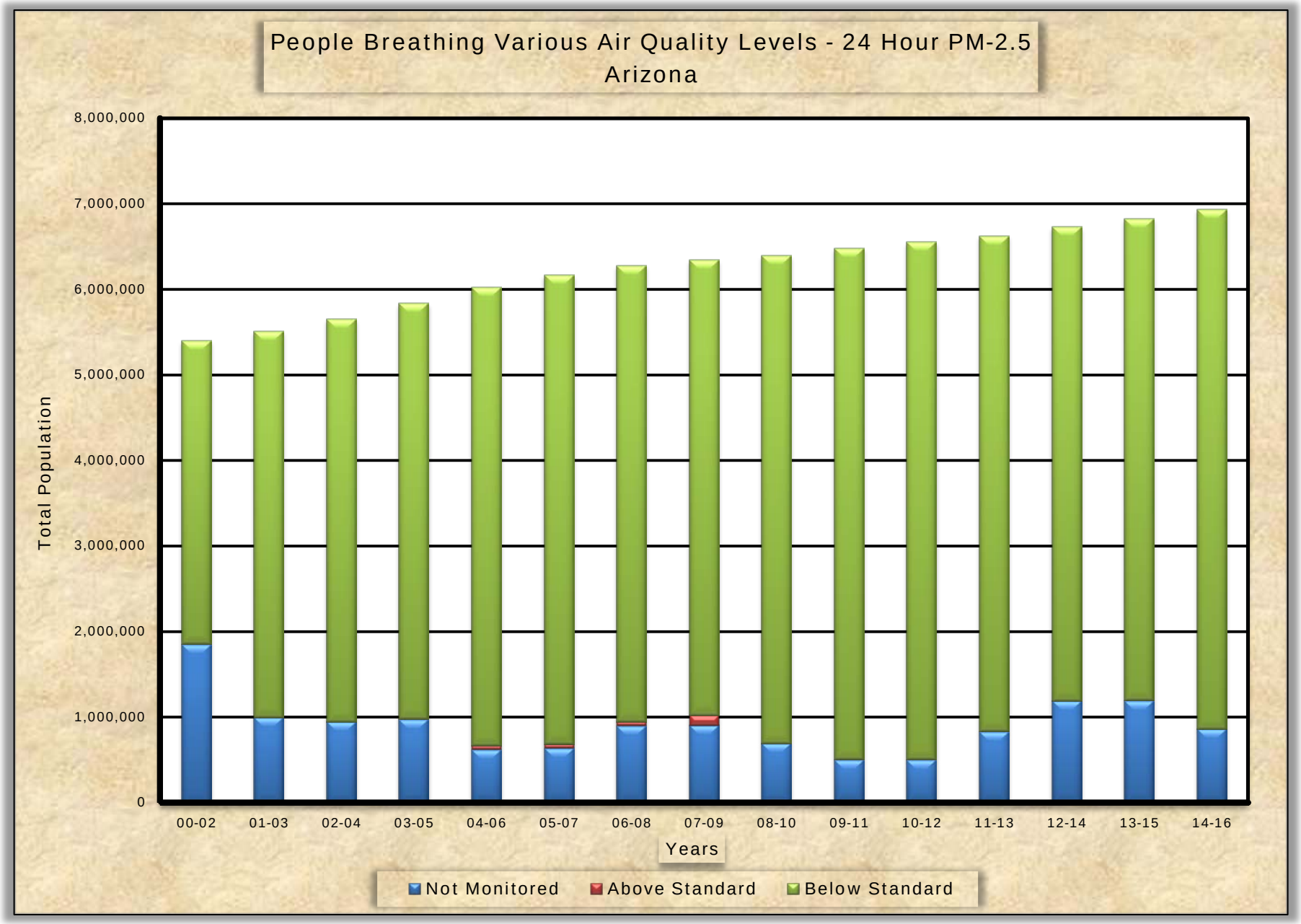

People Breathing Various Air Quality Levels - 8 Hour Ozone
Arizona
Total Population
8,000,000
7,000,000
6,000,000
5,000,000
4,000,000
3,000,000
2,000,000
1,000,000
0
00-02
01-03
02-04
03-05
04-06
05-07
06-08
07-09
08-10
09-11
10-12
11-13
12-14
13-15
14-16
Years
Not Monitored
Above Standard
Below Standard

Figure AZ-2


People Breathing Various Air Quality Levels - 24 Hour PM-2.5
Arizona
Total Population
8,000,000
7,000,000
6,000,000
5,000,000
4,000,000
3,000,000
2,000,000
1,000,000
0
00-02
01-03
02-04
03-05
04-06
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06-08
07-09
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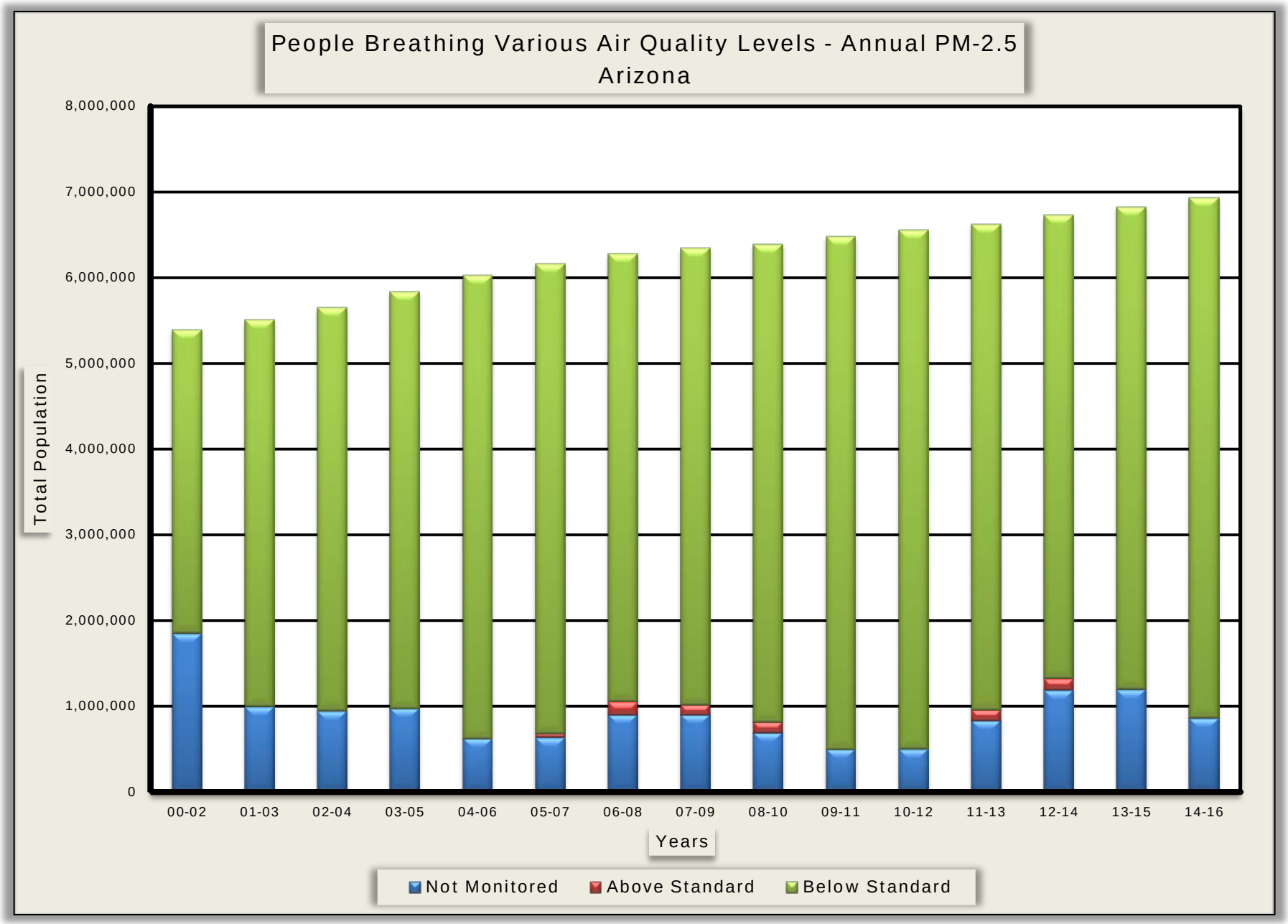
10-12
11-13
12-14
13-15
14-16
Years
Not Monitored
Above Standard
Below Standard

Figure AZ-3


People Breathing Various Air Quality Levels - Annual PM-2.5
Arizona
Total Population
8,000,000
7,000,000
6,000,000
5,000,000
4,000,000
3,000,000
2,000,000
1,000,000
0
00-02
01-03
02-04
03-05
04-06
05-07
06-08
07-09
08-10
09-11
10-12
11-13
12-14
13-15
14-16
Years
Not Monitored
Above Standard
Below Standard

ARKANSAS

Ozone

Progress has been made in ozone levels in Arkansas. In the 2000 – 2002 time period, approximately 200,000 people (7.4%) lived in counties that met the ozone standard. By 2014 – 2016 this had increased to approximately 721,000 people (24.1%) although the standard was lowered from 0.085 ppm to 0.070 ppm. Figure AR-1 shows the distribution of people by year. The population weighted ozone design value in 2000 – 2002 was 0.085 ppm. By 2014 – 2016 this had lowered to a value of 0.063 ppm, a reduction of 25.9 percent.

24-Hour PM-2.5

24-hour PM-2.5 levels in Arkansas have historically been better than the standard. In the 2000 – 2002 time period, approximately 1 million people (38.2%) lived in counties where 24-hour PM-2.5 levels met the standard. By 2014 – 2016 this had decreased to approximately 0.9 million people (29.6%). The remainder of the population lived in counties where PM-2.5 was not measured. The standard was lowered from 65 µg/m3 to 35 µg/m3. Figure AR-2 shows the distribution of people by year. The population weighted 24-hour design value in 2000 – 2002 was 30 µg/m3. By 2014 - 2016 this had lowered to a value of 20 µg/m3, a reduction of 33.3 percent.

Annual PM-2.5

Annual PM-2.5 levels in Arkansas have historically been better than the standard. In the 2000 – 2002 time period, approximately 1 million people (38.2%) lived in counties where annual PM-2.5 levels met the standard. By 2014 – 2016 this had decreased to approximately 0.9 million people (29.6%). The remainder of the population lived in areas where PM-2.5 was not measured. The standard was lowered from 15 µg/m3 to 12 µg/m3. Figure AR-3 shows the distribution of people by year. The population weighted annual PM-2.5 design value in 2000 – 2002 was 13.2 µg/m3. By 2014 – 2016 this had lowered to a value of 9.2 µg/m3, a reduction of 30.3 percent.

Table AR-1

2014 – 2016

		Ozone			Particle Pollution (PM-2.5)				
County	Population	Avg. DV	Grade	MM	Avg. 24-Hr DV	Grade	Avg. Ann DV	Grade	MM
Arkansas	18,214	ND	ND	ND	20	A	8.8	A	N
Ashley	20,492	ND	ND	ND	19	A	8.4	A	N
Clark	22,657	0.058	B	N	ND	ND	ND	ND	ND
Crittenden	49,235	0.067	C	N	20	A	8.8	A	N
Garland	97,477	ND	ND	ND	19	A	8.7	A	N
Jackson	17,221	ND	ND	ND	21	A	8.6	A	N
Newton	7,936	0.060	B	N	ND	ND	ND	ND	ND
Polk	20,173	0.063	C	N	20	A	8.6	A	N
Pulaski	393,250	0.064	C	Y	21	A	10.0	B	Y
Union	39,887	ND	ND	ND	18	A	8.9	A	N
Washington	228,049	0.060	B	Y	19	A	8.2	A	N

DV = Design Value ND = No Data MM = Multiple Monitors

ARKANSAS

Table AR-2

Population Weighted Design Values

Period	Ozone (ppm)	24-Hour PM-2.5 (µg/m3)	Annual PM-2.5 (µg/m3)
2000 – 2002	0.085	30	13.2
2001 – 2003	0.080	29	12.5
2002 – 2004	0.078	27	11.9
2003 – 2005	0.076	31	13.0
2004 – 2006	0.078	30	13.0
2005 – 2007	0.080	31	13.1
2006 – 2008	0.076	27	11.9
2007 – 2009	0.069	26	11.4
2008 – 2010	0.068	23	11.1
2009 – 2011	0.071	23	11.2
2010 – 2012	0.075	22	11.2
2011 – 2013	0.073	22	10.4
2012 -2014	0.069	22	10.0
2013 – 2015	0.064	21	9.5
2014 – 2016	0.063	20	9.2

ARKANSAS

Table AR-3
People Breathing Ozone

Grade	2000-2002	2002-2004	2004-2006	2006-2008	2008-2010	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016
A	0	9,334	0	0	0	0	0	0	0	0
B	9,150	191,807	132,356	0	338,978	0	8,064	161,101	30,546	258,642
C	190,698	183,304	247,765	154,333	326,729	499,270	497,672	552,646	687,320	462,658
D	182,163	50,266	50,360	301,744	0	179,672	180,174	0	0	0
F	50,622	0	0	0	0	0	0	0	0	0
Subtotal	432,633	434,711	430,482	456,077	665,707	678,942	685,910	713,747	717,866	721,300
NM	2,273,294	2,314,975	2,391,280	2,418,477	2,250,211	2,270,189	2,273,463	2,252,622	2,260,338	2,266,948
Total	2,705,927	2,749,686	2,821,761	2,874,554	2,915,918	2,949,131	2,959,373	2,966,369	2,978,204	2,988,248

People Breathing Short-term Particle Pollution (24-Hour PM-2.5)

Grade	2000-2002	2002-2004	2004-2006	2006-2008	2008-2010	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016
A	1,034,249	1,070,181	20,422	858,706	1,253,477	1,068,895	521,388	877,892	881,251	883,998
B	0	0	684,792	176,221	0	0	0	0	0	0
C	0	0	174,242	0	0	0	0	0	0	0
D	0	0	0	0	0	0	0	0	0	0
F	0	0	0	0	0	0	0	0	0	0
Subtotal	1,034,249	1,070,181	879,456	1,034,927	1,253,477	1,068,895	521,388	877,892	881,251	883,998
NM	1,671,678	1,679,505	1,942,305	1,839,627	1,662,441	1,880,236	2,437,985	2,088,477	2,096,953	2,104,250
Total	2,705,927	2,749,686	2,821,761	2,874,554	2,915,918	2,949,131	2,959,373	2,966,369	2,978,204	2,988,248

People Breathing Year Round Particle Pollution (Annual PM-2.5)

Grade	2000-2002	2002-2004	2004-2006	2006-2008	2008-2010	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016
A	203,251	557,145	43,666	524,985	898,312	1,068,895	0	277,868	488,587	490,748
B	416,049	513,036	588,025	509,942	255,165	0	482,104	469,123	392,664	393,250
C	414,949	0	247,765	0	0	0	39,284	130,901	0	0
D	0	0	0	0	0	0	0	0	0	0
F	0	0	0	0	0	0	0	0	0	0
Subtotal	1,034,249	1,070,181	879,456	1,034,927	1,253,477	1,068,895	521,388	877,892	881,251	883,998
NM	1,671,678	1,679,505	1,942,305	1,839,627	1,662,441	1,880,236	2,437,985	2,088,477	2,096,953	2,104,250
Total	2,705,927	2,749,686	2,821,761	2,874,554	2,915,918	2,949,131	2,959,373	2,966,369	2,978,204	2,988,248

NM = Not Monitored

Figure AR-1

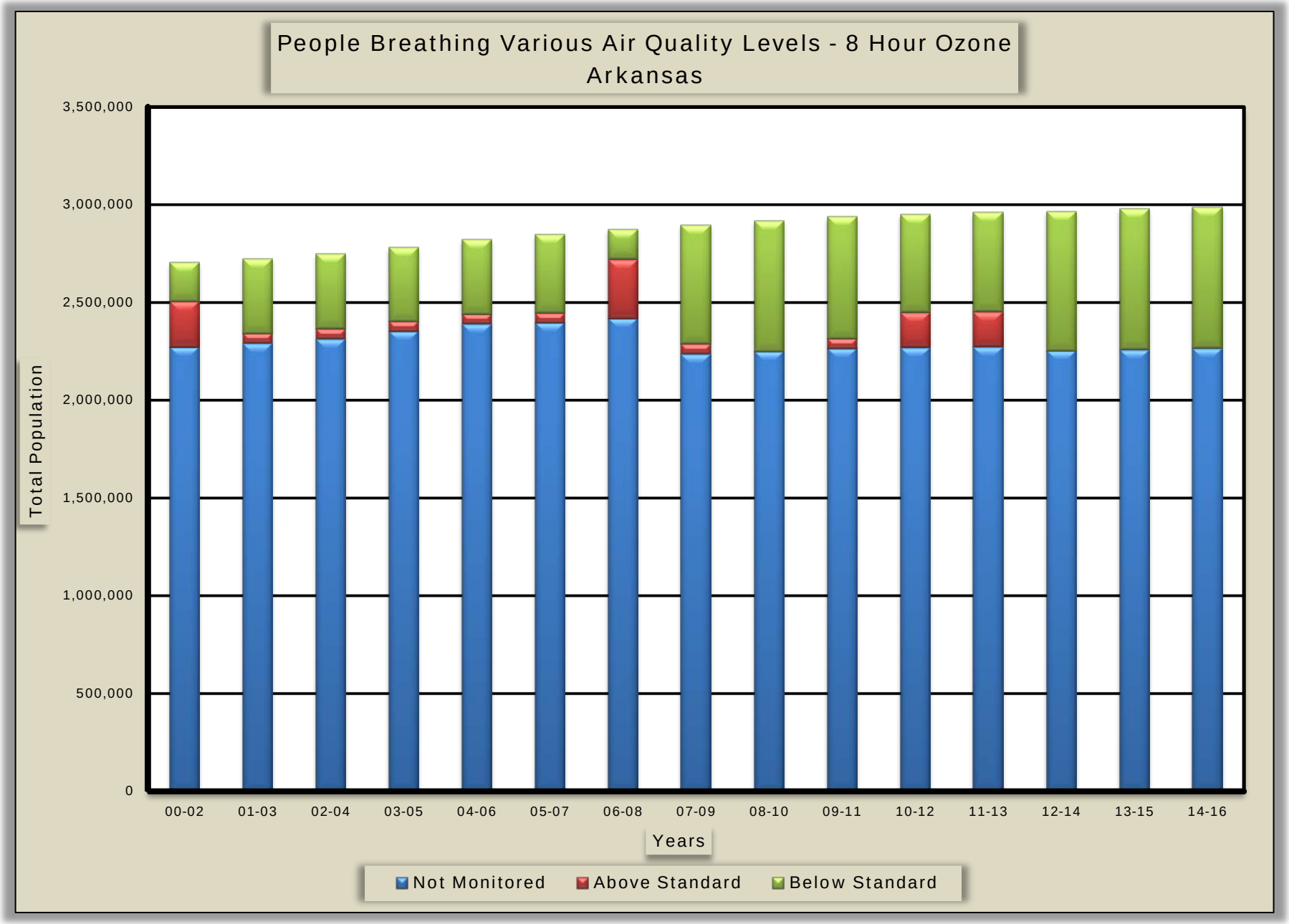

People Breathing Various Air Quality Levels - 8 Hour Ozone
Arkansas
Total Population
3,500,000
3,000,000
2,500,000
2,000,000
1,500,000
1,000,000
500,000
0
00-02
01-03
02-04
03-05
04-06
05-07
06-08
07-09
08-10
09-11
10-12
11-13
12-14
13-15
14-16
Years
Not Monitored
Above Standard
Below Standard

Figure AR-2

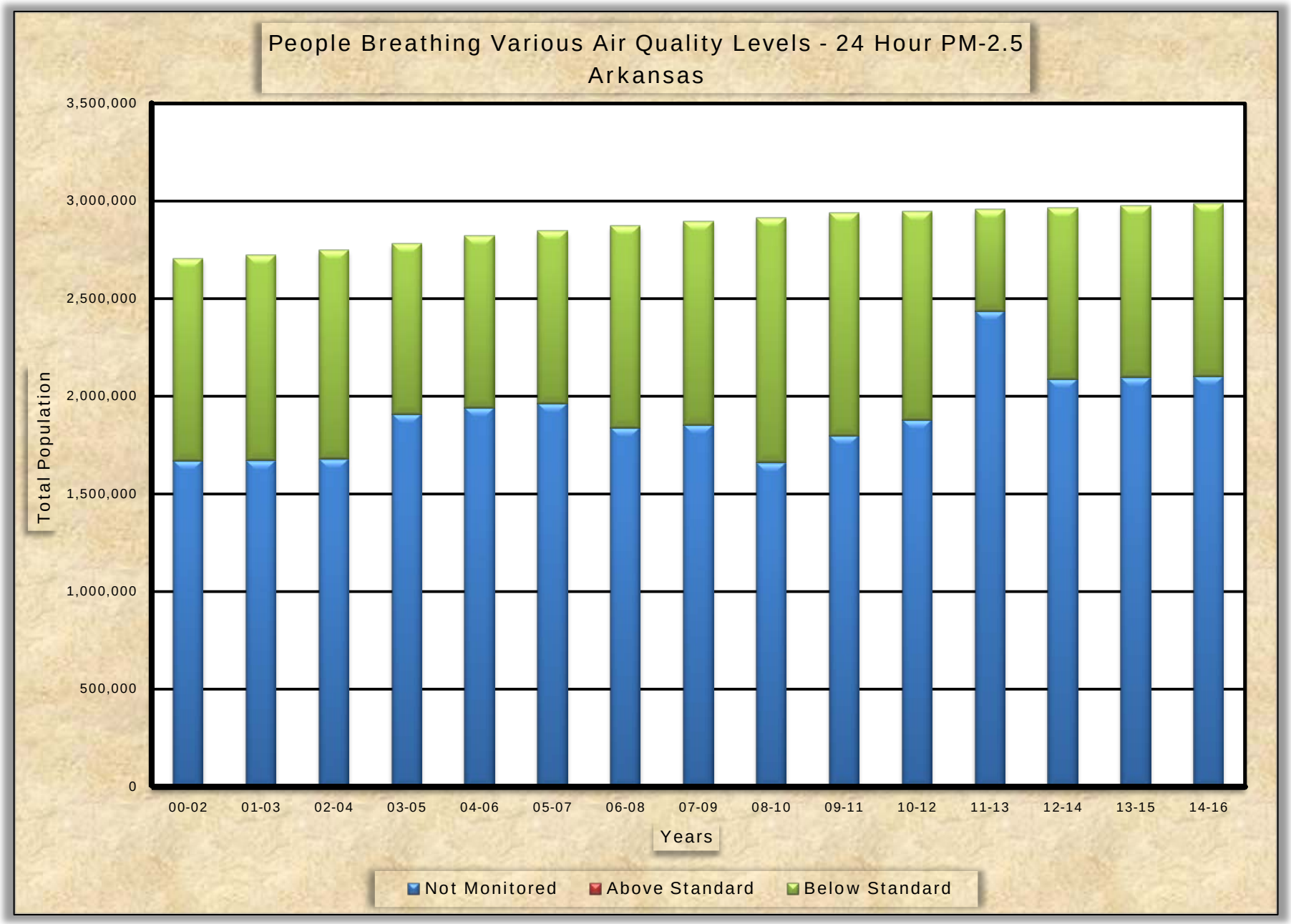
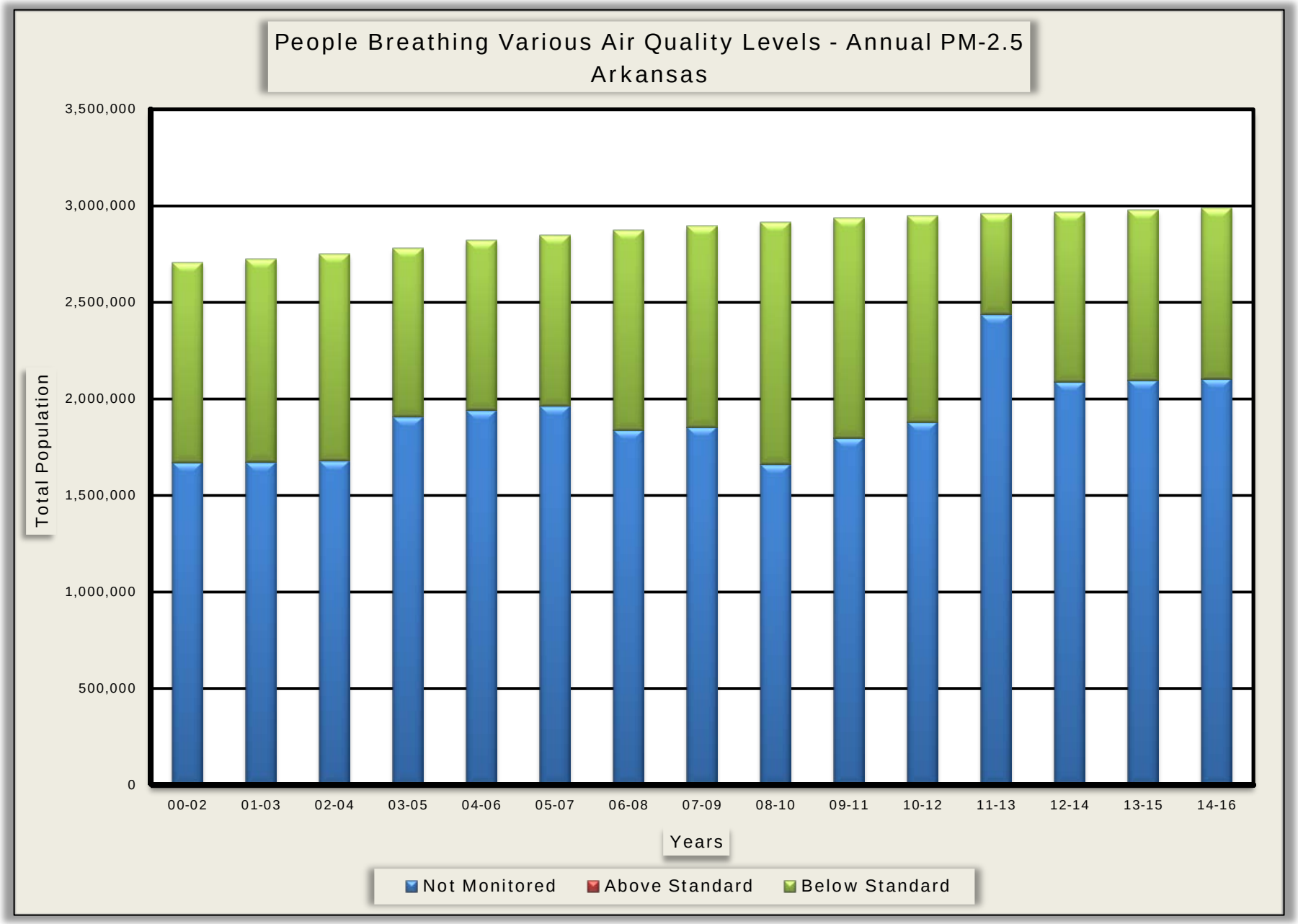

People Breathing Various Air Quality Levels - 24 Hour PM-2.5
Arkansas
Total Population
3,500,000
3,000,000
2,500,000
2,000,000
1,500,000
1,000,000
500,000
0
00-02
01-03
02-04
03-05
04-06
05-07
06-08
07-09
08-10
09-11
10-12
11-13
12-14
13-15
14-16
Years
Not Monitored
Above Standard
Below Standard

Figure AR-3


People Breathing Various Air Quality Levels - Annual PM-2.5
Arkansas
Total Population
3,500,000
3,000,000
2,500,000
2,000,000
1,500,000
1,000,000
500,000
0
00-02
01-03
02-04
03-05
04-06
05-07
06-08
07-09
08-10
09-11
10-12
11-13
12-14
13-15
14-16
Years
Not Monitored
Above Standard
Below Standard

CALIFORNIA

Ozone

In the 2000 – 2002 time period, approximately 21.4 million people (61.6%) lived in counties that met the ozone standard. By 2014 – 2016 this had decreased to approximately 18.3 million people (46.7%). The ozone standard was lowered from 0.085 ppm to 0.070 ppm. Figure CA-1 shows the distribution of people by year. The population weighted ozone design value in 2000 – 2002 was 0.079 ppm. By 2014 – 2016 this had lowered to a value of 0.074 ppm, a reduction of 6.3 percent.

24-Hour PM-2.5

Significant progress has been made in 24-hour PM-2.5 levels in California. In the 2000 – 2002 time period, approximately 27 million people (77.4%) lived in counties where 24-hour PM-2.5 levels met the standard. By 2014 - 2016 this had increased to approximately 34.0 million people (86.6%). The standard was lowered from 65 µg/m3 to 35 µg/m3. Figure CA-2 shows the distribution of people by year. The population weighted 24-hour PM-2.5 design value in 2000 – 2002 was 51 µg/m3. By 2014 – 2016 this had lowered to a value of 26 µg/m3, a reduction of 49.0 percent.

Annual PM-2.5

Significant progress has been made in annual PM-2.5 levels in California. In the 2000 – 2002 time period, approximately 12.8 million people (36.7%) lived in counties where annual PM-2.5 levels met the standard. By 2014 – 2016 this had increased to approximately 33.0 million people (84.2%). The standard was lowered from 15 µg/m3 to 12 µg/m3. Figure CA-3 shows the distribution of people by year. The population weighted annual PM-2.5 design value in 2000 – 2002 was 17.1 µg/m3. By 2014 – 2016 this had lowered to a value of 9.4 µg/m3, a reduction of 45.0 percent.

CALIFORNIA

Table CA-1
2014 – 2016

		Ozone			Particle Pollution (PM-2.5)				
County	Population	Avg. DV	Grade	MM	Avg. 24-Hr DV	Grade	Avg. Ann DV	Grade	MM
Alameda	1,647,704	0.061	B	Y	23	A	8.5	A	Y
Amador	37,383	0.073	D	N	ND	ND	ND	ND	ND
Butte	226,864	0.070	C	Y	26	A	8.5	A	N
Calaveras	45,171	0.076	D	N	20	A	8.2	A	N
Colusa	21,588	0.063	C	N	19	A	7.3	A	N
Contra Costa	1,135,127	0.063	C	Y	22	A	8.1	A	Y
El Dorado	185,625	0.083	F	Y	ND	ND	ND	ND	ND
Fresno	979,915	0.089	F	N	46	F	12.7	D	Y
Glenn	28,085	0.064	C	N	ND	ND	ND	ND	ND
Humboldt	136,646	0.044	A	Y	14	A	4.6	A	Y
Imperial	180,883	0.071	D	Y	30	B	11.1	C	Y
Inyo	18,144	ND	ND	ND	25	A	6.7	A	Y
Kern	884,788	0.083	F	Y	40	F	11.5	C	Y
Kings	149,785	ND	ND	ND	57	F	15.9	F	N
Lake	64,116	0.058	B	N	10	A	3.4	A	N
Los Angeles	10,137,915	0.080	F	Y	28	B	10.4	B	Y
Madera	154,697	ND	ND	ND	44	F	12.7	D	N
Marin	260,651	0.061	B	N	22	A	8.6	A	N
Mariposa	17,410	0.074	D	Y	ND	ND	ND	ND	ND
Mendocino	87,628	0.051	A	N	17	A	7.0	A	Y
Merced	268,672	0.082	F	N	40	F	11.7	C	Y
Monterey	435,232	0.058	B	Y	13	A	5.2	A	Y
Napa	142,166	0.062	B	N	25	A	10.4	B	N
Nevada	99,107	0.084	F	N	12	A	4.4	A	N
Orange	3,172,532	0.072	D	Y	23	A	8.6	A	Y
Placer	380,531	0.073	D	Y	17	A	6.6	A	Y
Plumas	18,627	ND	ND	ND	40	F	11.8	C	Y
Riverside	2,387,741	0.084	F	Y	26	B	9.9	B	Y
Sacramento	1,514,460	0.074	D	Y	25	A	8.2	A	Y
San Benito	59,414	0.066	C	Y	12	A	4.4	A	N
San Bernardino	2,140,086	0.091	F	Y	30	B	10.8	C	Y
San Diego	3,317,749	0.067	C	Y	17	A	8.2	A	Y
San Francisco	870,887	0.049	A	N	21	A	7.6	A	N
San Joaquin	733,709	0.073	D	Y	38	D	11.6	C	Y
San Luis Obispo	282,887	0.062	B	Y	23	A	9.5	A	Y
San Mateo	764,797	0.059	B	N	20	A	7.0	A	N
Santa Barbara	446,170	0.061	B	Y	16	A	7.6	A	Y
Santa Clara	1,919,402	0.066	C	Y	24	A	8.6	A	Y
Santa Cruz	274,673	0.057	B	N	14	A	5.4	A	Y
Shasta	179,631	0.067	C	Y	16	A	6.0	A	N
Siskiyou	43,603	0.059	B	N	38	D	7.1	A	N
Solano	440,207	0.064	C	Y	24	A	8.9	A	N
Sonoma	503,070	0.055	A	Y	18	A	6.4	A	N
Stanislaus	541,560	0.081	F	N	42	F	11.7	C	Y
Sutter	96,651	0.070	C	Y	26	A	9.0	A	N
Tehama	63,276	0.079	F	N	ND	ND	ND	ND	ND
Tulare	460,437	0.084	F	Y	54	F	16.2	F	N
Tuolumne	53,804	0.079	F	N	ND	ND	ND	ND	ND
Ventura	849,738	0.071	D	Y	19	A	8.5	A	Y
Yolo	215,802	0.066	C	Y	16	A	6.6	A	N

DV = Design Value ND = No Data MM = Multiple Monitors

CALIFORNIA

Table CA-2
Population Weighted Design Values

Period	Ozone (ppm)	24-Hour PM-2.5 (µg/m3)	Annual PM-2.5 (µg/m3)
2000 – 2002	0.079	51	17.1
2001 – 2003	0.081	46	16.4
2002 – 2004	0.083	41	14.8
2003 – 2005	0.081	40	14.0
2004 – 2006	0.080	39	13.4
2005 – 2007	0.078	38	13.0
2006 – 2008	0.079	36	12.9
2007 – 2009	0.078	33	12.2
2008 – 2010	0.077	29	11.0
2009 – 2011	0.074	30	11.6
2010 – 2012	0.073	27	10.5
2011 – 2013	0.072	28	10.7
2012 -2014	0.074	27	10.0
2013 – 2015	0.072	28	9.9
2014 – 2016	0.074	26	9.4

CALIFORNIA

Table CA-3
People Breathing Ozone

Grade	2000-2002	2002-2004	2004-2006	2006-2008	2008-2010	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016
A	9,789,128	6,964,609	9,296,336	5,659,429	4,387,085	6,760,046	7,252,215	5,599,804	2,721,802	2.731,182
B	5,885,592	6,730,324	7,597,584	4,644,413	4,563,096	6,864,469	8,186,973	7,815,498	5,177,415	4,454,115
C	5,795,475	6,124,278	3,825,359	5,895,877	9,893,661	8,193,646	5,645,284	8,193,428	11,488,828	11,156,137
D	3,822,978	3,741,905	6,040,442	4,057,759	4,561,537	6,620,275	5,667,911	5,763,084	5,586,507	5,903,758
F	9,221,583	11,650,187	8,646,594	15,686,411	13,650,821	9,222,877	11,149,877	11,000,706	13,585,134	14,490,312
Subtotal	34,514,756	35,211,303	25,406,315	35,943,889	37,056,200	37,661,313	37,902,260	38,372,520	38,559,686	38,735,503
NM	357,087	363,273	614,887	660,448	197,756	380,117	430,261	429,980	585,132	514,514
Total	34,871,843	35,574,576	36,021,202	36,604,337	37,253,956	38,041,430	38,332,521	38,802,500	39,144,818	39,250,017

People Breathing Short-term Particle Pollution (24-Hour PM-2.5)

Grade	2000-2002	2002-2004	2004-2006	2006-2008	2008-2010	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016
A	15,426,631	24,312,470	24,773,314	6,404,187	12,188,062	18,869,345	19,773,214	24,844,521	17,200,652	24,057,597
B	6,478,023	8,006,151	5,640,821	6,059,059	8,200,061	10,828,624	11,682,758	5,533,788	11,015,591	7,024,272
C	5,088,713	1,435,576	1,949,480	1,085,688	6,540,661	1,938,202	1,295,691	3,110,134	6,239,184	2,926,401
D	1,681,001	0	0	4,505,142	1,834,424	396,626	18,467	746,010	0	171,123,987
F	1,672,036	0	0	10,794,242	1,876,408	2,834,157	2,378,232	2,889,521	3,877,787	3,568,816
Subtotal	30,346,404	33,754,197	32,363,615	28,848,318	30,639,616	34,866,954	35,148,362	37,123,974	38,333,214	38,690,073
NM	4,525,439	1,820,379	3,657,587	7,756,019	6,614,340	3,174,476	3,184,159	1,678,526	811,604	559,944
Total	34,871,843	35,574,576	36,021,202	36,604,337	37,253,956	38,041,430	38,332,521	38,802,500	39,144,818	39,250,017

People Breathing Year Round Particle Pollution (Annual PM-2.5)

Grade	2000-2002	2002-2004	2004-2006	2006-2008	2008-2010	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016
A	6,316,994	13,069,541	13,243,248	11,691,409	9,540,329	24,945,824	14,371,725	16,811,094	18,320,884	22,918,384
B	5,135,775	1,914,908	5,335,767	2,864,258	5,056,069	5,527,545	8,495,499	5,388,081	8,530,391	5,764,530
C	1,360,544	4,283,321	921,020	5,881,887	5,097,260	1,855,539	3,190,075	7,923,653	4,696,834	4,361,342
D	4,967,464	492,613	2,163,990	3,894,059	0	1,932,071	4,197,346	4,239,696	3,851,574	2,759,803
F	12,565,627	13,993,814	10,699,590	4,516,705	945,958	605,975	4,893,717	2,761,450	2,933,531	28,862,013
Subtotal	30,346,404	33,754,197	32,363,615	28,848,318	30,639,616	34,866,954	35,148,362	37,123,974	38,333,214	38,690,073
NM	4,525,439	1,820,379	3,657,587	7,756,019	6,614,340	3,174,476	3,184,159	1,678,526	811,604	559,944
Total	34,871,843	35,574,576	36,021,202	36,604,337	37,253,956	38,041,430	38,332,521	38,802,500	39,144,818	39,250,017

NM = Not Monitored

Figure CA-1

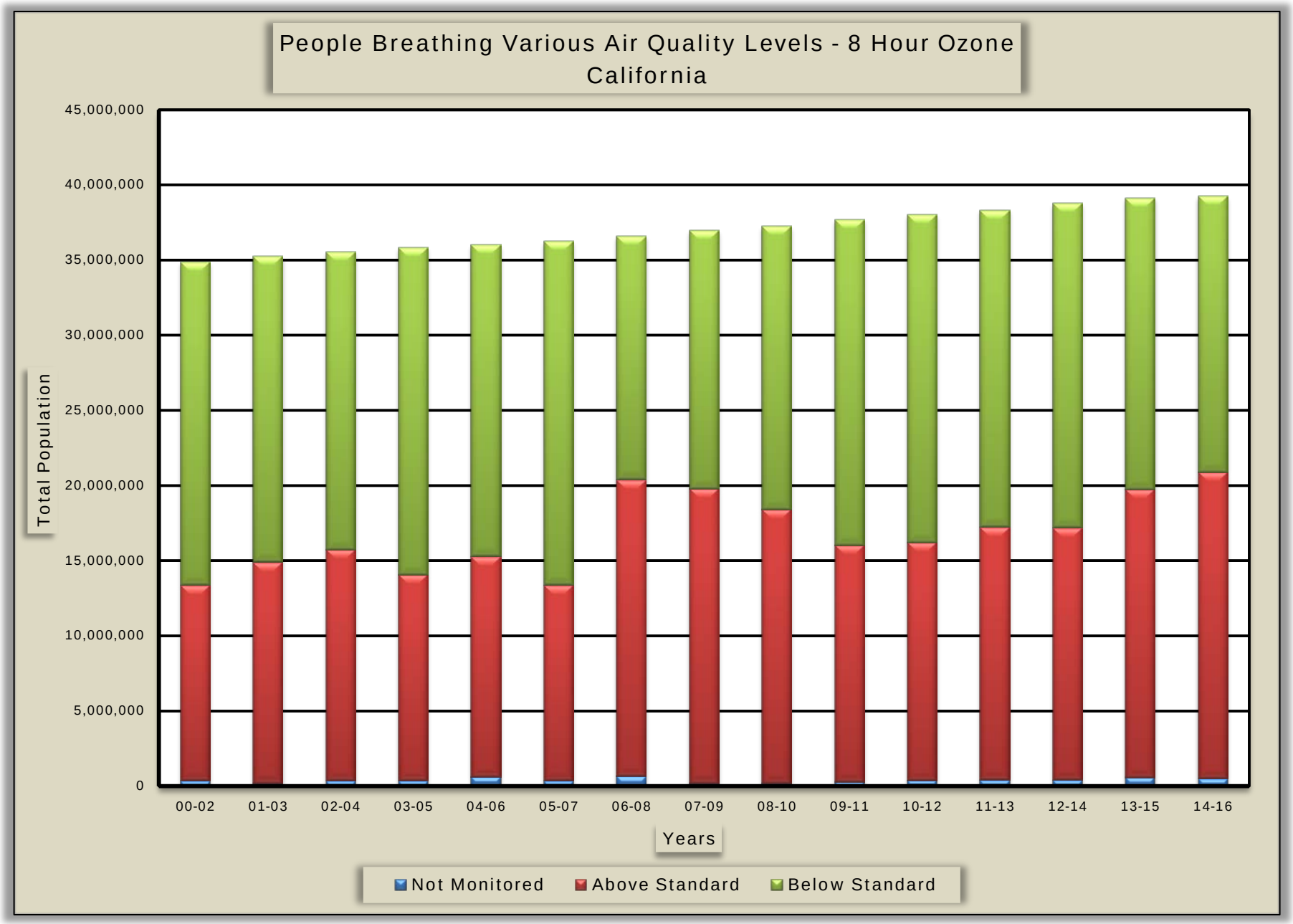

People Breathing Various Air Quality Levels - 8 Hour Ozone
California
Total Population
45,000,000
40,000,000
35,000,000
30,000,000
25,000,000
20,000,000
15,000,000
10,000,000
5,000,000
0
00-02
01-03
02-04
03-05
04-06
05-07
06-08
07-09
08-10
09-11
10-12
11-13
12-14
13-15
14-16
Years
Not Monitored
Above Standard
Below Standard

Figure CA-2

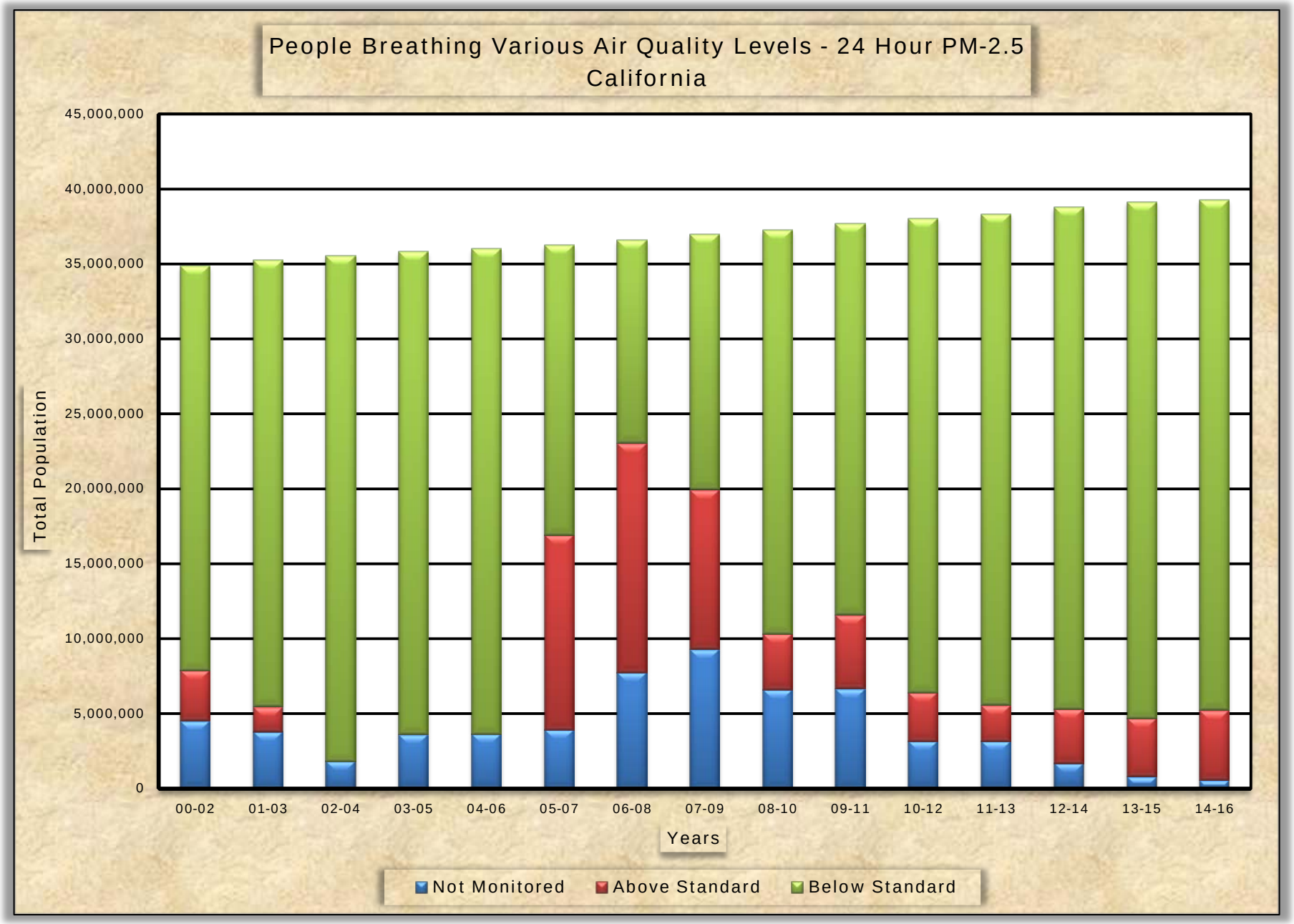
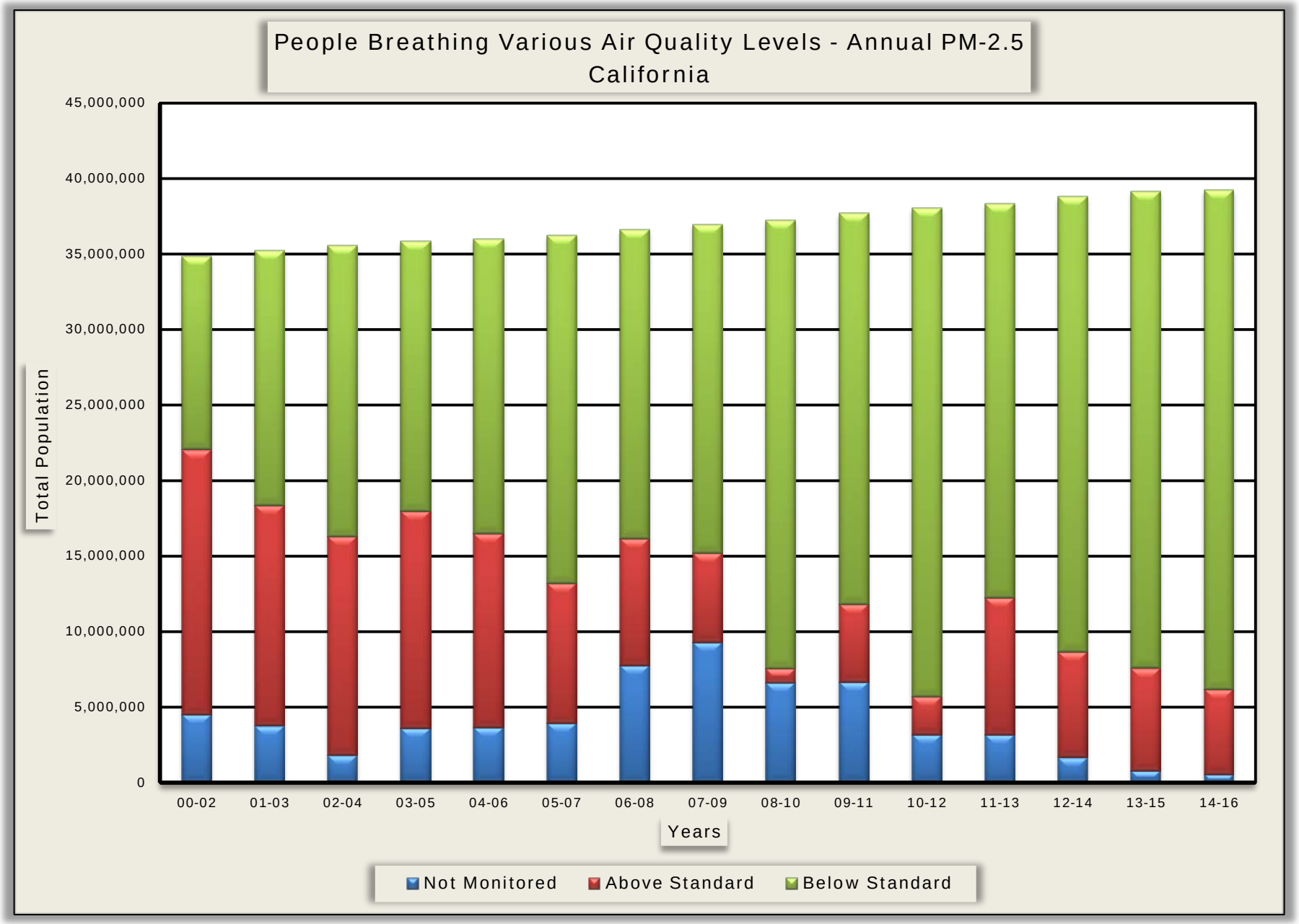

People Breathing Various Air Quality Levels - 24 Hour PM-2.5
California
45,000,000
40,000,000
35,000,000
30,000,000
25,000,000
20,000,000
15,000,000
10,000,000
5,000,000
0
Total Population
00-02
01-03
02-04
03-05
04-06
05-07
06-08
07-09
08-10
09-11
10-12
11-13
12-14
13-15
14-16
Years
Not Monitored
Above Standard
Below Standard

Figure CA-3


People Breathing Various Air Quality Levels - Annual PM-2.5
California
Total Population
45,000,000
40,000,000
35,000,000
30,000,000
25,000,000
20,000,000
15,000,000
10,000,000
5,000,000
0
00-02
01-03
02-04
03-05
04-06
05-07
06-08
07-09
08-10
09-11
10-12
11-13
12-14
13-15
14-16
Years
Not Monitored
Above Standard
Below Standard

COLORADO

Ozone

In the 2000 – 2002 time period, approximately 3.3 million people (74.2%) lived in counties that met the ozone standard. By 2014 – 2016 this had decreased to approximately 3.5 million people (63.1%). The ozone standard was lowered from 0.085 ppm to 0.070 ppm. Figure CO-1 shows the distribution of people by year. The population weighted ozone design value in 2000 – 2002 was 0.072 ppm. By 2014 – 2016 this had lowered to a value of 0.069 ppm, a reduction of 4.2 percent.

24-Hour PM-2.5

In the 2000 – 2002 time period, approximately 2.7 million people (60.9%) lived in counties where 24-hour PM-2.5 levels met the standard. By 2014 - 2016 this had increased to approximately 3.7 million people (66.4%). The remainder of the population lived in areas where PM-2.5 is not measured. The standard was lowered from 65 µg/m3 to 35 µg/m3 .Figure CO-2 shows the distribution of people by year. The population weighted 24-hour PM-2.5 design value in 2000 – 2002 was 23 µg/m3. By 2014 – 2016 this had lowered to a value of 19 µg/m3, a reduction of 17.4 percent.

Annual PM-2.5

In the 2000 – 2002 time period, approximately 2.7 million people (60.9%) lived in counties where annual PM-2.5 levels met the standard. By 2014 – 2016 this had increased to approximately 3.7 million people (66.4%). The remainder of the population lived in areas where PM-2.5 is not measured. The standard was lowered from 15 µg/m3 to 12 µg/m3. Figure CO-3 shows the distribution of people by year. The population weighted annual PM-2.5 design value in 2000 – 2002 was 8.7 µg/m3. By 2014 – 2016 this had lowered to a value of 6.2 µg/m3, a reduction of 28.7 percent.

COLORADO

Table CO-1
2014 – 2016

		Ozone			Particle Pollution (PM-2.5)				
County	Population	Avg. DV	Grade	MM	Avg. 24-Hr DV	Grade	Avg. Ann DV	Grade	MM
Adams	498,187	0.067	C	N	ND	ND	ND	ND	ND
Arapahoe	637,068	0.067	C	N	17	A	5.9	A	N
Boulder	322,226	ND	ND	ND	21	A	6.3	A	Y
Denver	693,060	0.067	C	Y	23	A	7.9	A	Y
Douglas	**328,632**	**0.077**	**D**	N	15	A	5.2	A	N
El Paso	688,284	0.065	C	Y	15	A	5.2	A	N
Garfield	58,887	0.063	C	N	ND	ND	ND	ND	ND
Gunnison	16,408	0.064	C	N	ND	ND	ND	ND	ND
Jefferson	**571,837**	**0.074**	**D**	**Y**	ND	ND	ND	ND	ND
La Plata	55,623	0.067	C	Y	7	A	3.3	A	N
Larimer	**339,993**	**0.071**	**D**	**Y**	20	A	6.1	A	N
Mesa	150,083	0.063	C	N	20	A	6.3	A	Y
Montezuma	26,999	0.063	C	Y	ND	ND	ND	ND	ND
Pueblo	165,123	ND	ND	ND	14	A	5.2	A	N
Rio Blanco	6,545	0.052	A	Y	14	A	7.8	A	N
Weld	294,962	0.070	C	N	30	B	7.7	A	Y

DV = Design Value ND = No Data MM = Multiple Monitors

Table CO-2
Population Weighted Design Values

Period	Ozone (ppm)	24-Hour PM-2.5 (µg/m3)	Annual PM-2.5 (µg/m3)
2000 – 2002	0.072	23	8.7
2001 – 2003	0.076	23	8.9
2002 – 2004	0.074	21	8.5
2003 – 2005	0.075	21	8.4
2004 – 2006	0.073	20	8.2
2005 – 2007	0.076	22	8.3
2006 – 2008	0.075	22	8.2
2007 – 2009	0.072	21	7.9
2008 – 2010	0.070	18	7.1
2009 – 2011	0.071	17	6.7
2010 – 2012	0.072	19	6.9
2011 – 2013	0.074	20	6.9
2012 -2014	0.071	21	7.0
2013 – 2015	0.070	21	6.6
2014 – 2016	0.069	19	6.2

COLORADO

Table CO-3
People Breathing Ozone

Grade	2000-2002	2002-2004	2004-2006	2006-2008	2008-2010	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016
A	548,585	431,537	178,989	16,764	0	0	0	0	0	0
B	2,177,923	1,807,812	2,354,407	16,764	589,954	393,658	208,259	635,085	14,440	16.772
C	605,522	915,176	932,807	1,786,364	2,097,988	2,164,447	2,859,871	3,211,689	3,136,942	3,478,955
D	0	0	0	1,352,378	419,101	1,023,911	1,356,843	674,920	860,405	727,882
F	0	0	0	132,250	0	0	0	0	605,149	142,959
Subtotal	3,332,030	3,154,525	3,466,203	3,304,520	3,107,043	3,582,016	4,424,973	4,521,694	4,616,936	4,366,568
NM	1,158,376	1,420,488	1,254,220	1,585,210	1,922,153	1,605,566	843,394	834,172	839,638	1,173,977
Total	4,490,406	4,575,013	4,720,423	4,889,730	5,029,196	5,187,582	5,268,367	5,355,866	5,456,574	5,540,545

People Breathing Short-term Particle Pollution (24-Hour PM-2.5)

Grade	2000-2002	2002-2004	2004-2006	2006-2008	2008-2010	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016
A	2,707,791	3,031,521	3,127,218	2,480,593	3,391,600	3,750,768	3,829,750	3,999,292	4,113,322	3,386,637
B	0	0	0	424,913	146,723	147.848	147,554	0	0	294,232
C	0	0	0	0	0	0	0	0	0	0
D	0	0	0	0	0	0	0	0	0	0
F	0	0	0	0	0	0	0	0	0	0
Subtotal	2,707,791	3,031,521	3,127,218	2,905,506	3,538,323	3,898,616	3,977,304	3,999,292	4,113,322	3,680,869
NM	1,782,615	1,543,492	1,593,206	1,984,225	1,490,873	1,288,966	1,291,063	1,356,574	1,343,252	1,859,676
Total	4,490,406	4,575,013	4,720,423	4,889,730	5,029,196	5,187,582	5,268,367	5,355,866	5,456,574	5,540,545

People Breathing Year Round Particle Pollution (Annual PM-2.5)

Grade	2000-2002	2002-2004	2004-2006	2006-2008	2008-2010	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016
A	2,707,791	3,031,521	3,127,218	2,905,506	3,538,323	3,898,616	3,970,497	3,999,292	4,113,322	3,680,869
B	0	0	0	0	0	0	6,807	0	0	0
C	0	0	0	0	0	0	0	0	0	0
D	0	0	0	0	0	0	0	0	0	0
F	0	0	0	0	0	0	0	0	0	0
Subtotal	2,707,791	3,031,521	3,127,218	2,905,505	3,538,323	3,898,616	3,977,304	3,999,292	4,113,322	3,680,869
NM	1,782,615	1,543,492	1,593,205	1,984,225	1,490,873	1,288,966	1,291,063	1,356,574	1,343,252	1,859,676
Total	4,490,406	4,575,013	4,720,423	4,889,730	5,029,196	5,187,582	5,268,367	5,355,866	5,456,574	5,540,545

NM = Not Monitored

Figure CO-1

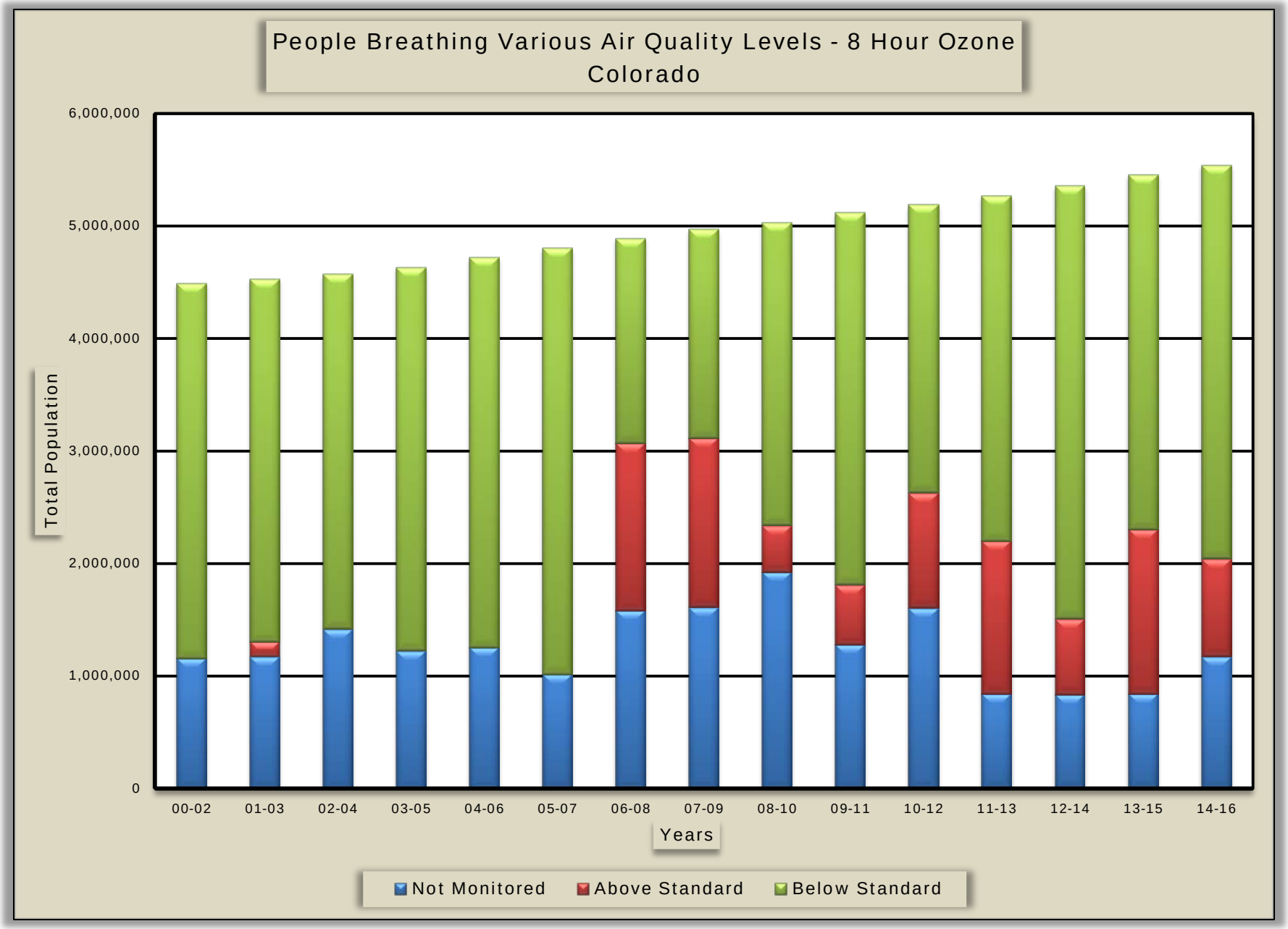

People Breathing Various Air Quality Levels - 8 Hour Ozone
Colorado
6,000,000
5,000,000
4,000,000
3,000,000
2,000,000
1,000,000
0
Total Population
00-02
01-03
02-04
03-05
04-06
05-07
06-08
07-09
08-10
09-11
10-12
11-13
12-14
13-15
14-16
Years
Not Monitored
Above Standard
Below Standard

Figure CO-2

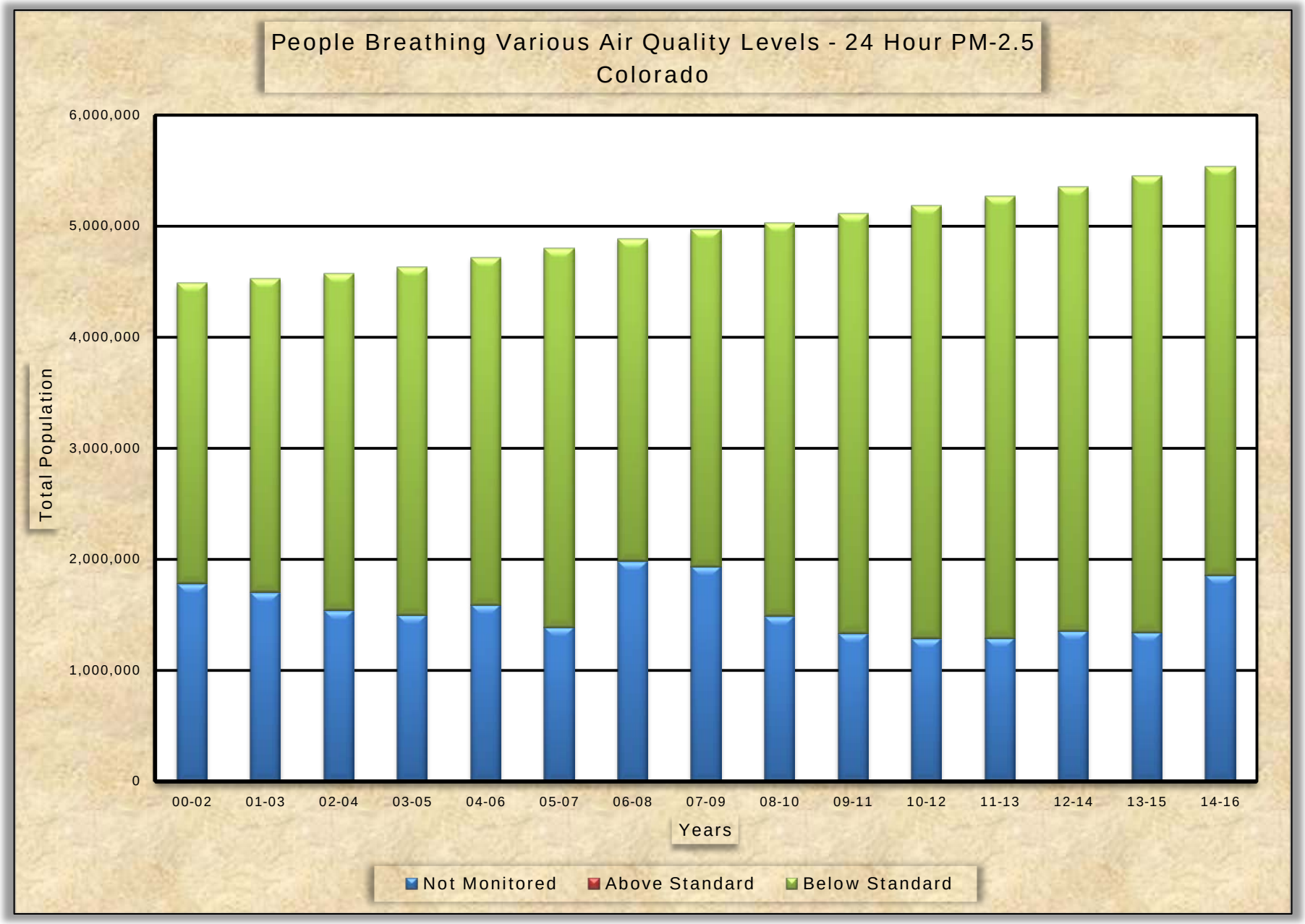
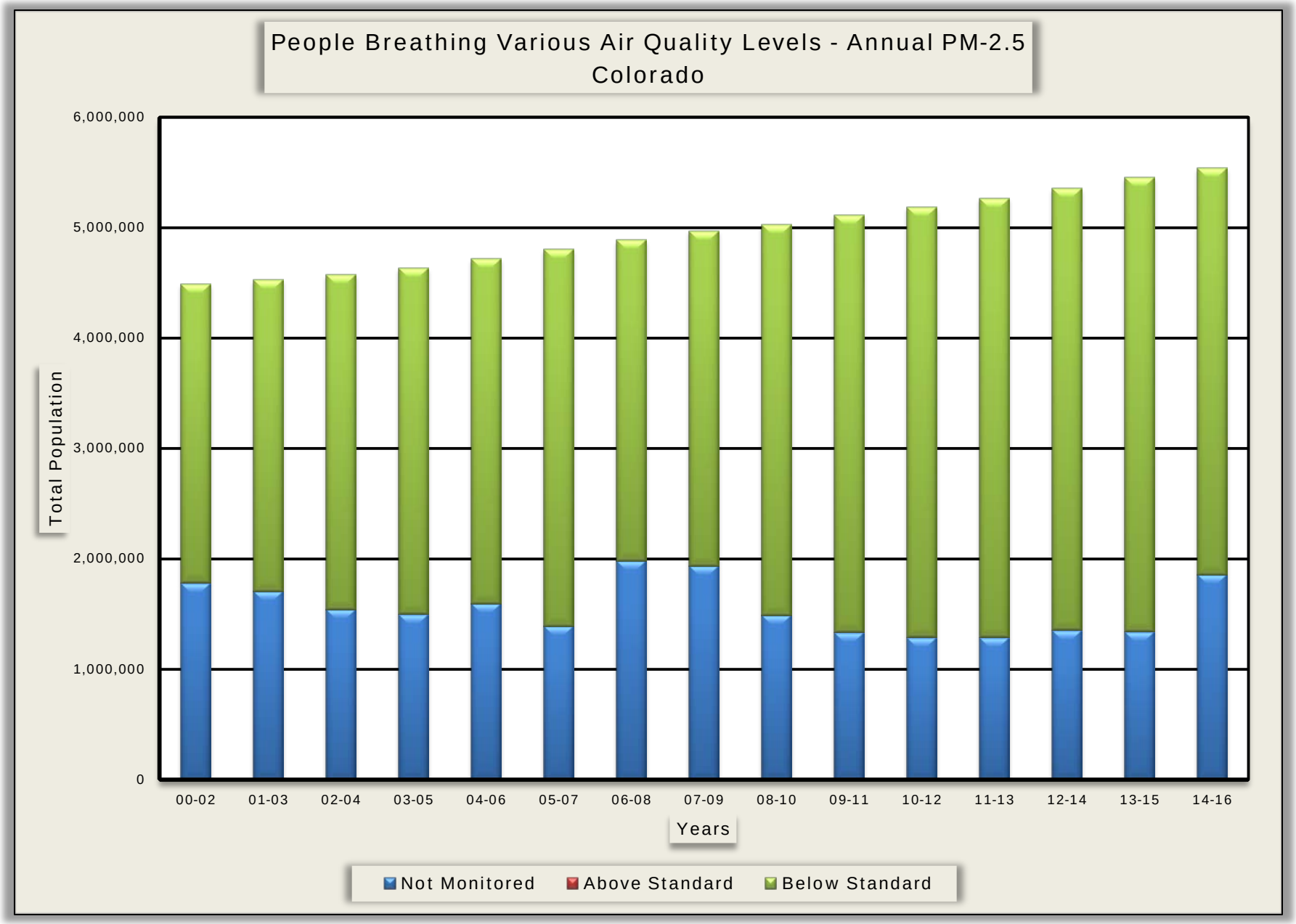

People Breathing Various Air Quality Levels - 24 Hour PM-2.5
Colorado
6,000,000
5,000,000
4,000,000
3,000,000
2,000,000
1,000,000
0
Total Population
00-02
01-03
02-04
03-05
04-06
05-07
06-08
07-09
08-10
09-11
10-12
11-13
12-14
13-15
14-16
Years
Not Monitored
Above Standard
Below Standard

Figure CO-3


People Breathing Various Air Quality Levels - Annual PM-2.5
Colorado
6,000,000
5,000,000
4,000,000
3,000,000
2,000,000
1,000,000
0
Total Population
00-02
01-03
02-04
03-05
04-06
05-07
06-08
07-09
08-10
09-11
10-12
11-13
12-14
13-15
14-16
Years
Not Monitored
Above Standard
Below Standard

CONNECTICUT

Ozone

In the 2000 – 2002 time period, no people lived in counties that met the ozone standard. By 2014 – 2016 this had increased to approximately 116,000 people (3.2%). The ozone standard was lowered from 0.085 ppm to 0.070 ppm. Figure CT-1 shows the distribution of people by year. The population weighted ozone design value in 2000 – 2002 was 0.094 ppm. By 2014 – 2016 this had lowered to a value of 0.076 ppm, a reduction of 19.1 percent.

24-Hour PM-2.5

In the 2000 – 2002 time period, approximately 2.9 million people (82.6%) lived in counties where 24-hour PM-2.5 levels met the standard. By 2014 - 2016 this was approximately 3.1 million people (88.0%). In 2014 - 2016 the remainder of the population lived in areas where PM-2.5 is not measured. The standard was lowered from 65 µg/m3 to 35 µg/m3. Figure CT-2 shows the distribution of people by year. The population weighted 24-hour PM-2.5 design value in 2000 – 2002 was 34 µg/m3. By 2014 – 2016 this had lowered to a value of 19 µg/m3, a reduction of 44.1 percent.

Annual PM-2.5

In the 2000 – 2002 time period, approximately 2.7 million people (76.7%) lived in counties where annual PM-2.5 levels met the standard. By 2014 – 2016 this had increased to approximately 3.1 million people (88.0%). The remainder of the population lived in areas where PM-2.5 is not measured. The standard was lowered from 15 µg/m3 to 12 µg/m3. Figure CT-3 shows the distribution of people by year. The population weighted annual PM-2.5 design value in 2000 – 2002 was 12.8 µg/m3. By 2014 – 2016 this had lowered to a value of 7.6 µg/m3, a reduction of 40.6 percent.

Table CT-1

2014 – 2016

		Ozone			Particle Pollution (PM-2.5)				
County	Population	Avg. DV	Grade	MM	Avg. 24-Hr DV	Grade	Avg. Ann DV	Grade	MM
Fairfield	**944,177**	**0.080**	**F**	**Y**	23	A	8.8	A	Y
Hartford	**892,389**	**0.074**	**D**	**N**	18	A	6.8	A	N
Litchfield	**182,571**	**0.072**	**D**	**N**	13	A	5.1	A	N
Middlesex	**163,329**	**0.079**	**F**	**N**	ND	ND	ND	ND	ND
New Haven	**856,875**	**0.076**	**D**	**Y**	19	A	7.6	A	N
New London	**269,801**	**0.072**	**D**	**N**	18	A	6.6	A	N
Tolland	**151,118**	**0.073**	**D**	**N**	ND	ND	ND	ND	ND
Windham	**116,192**	**0.073**	**D**	**N**	ND	ND	ND	ND	ND

DV = Design Value ND = No Data MM = Multiple Monitors

CONNECTICUT

Table CT-2
Population Weighted Design Values

Period	Ozone (ppm)	24-Hour PM-2.5 (µg/m3)	Annual PM-2.5 (µg/m3)
2000 – 2002	0.094	34	12.8
2001 – 2003	0.096	36	12.9
2002 – 2004	0.090	34	12.4
2003 – 2005	0.086	35	12.3
2004 – 2006	0.085	33	11.8
2005 – 2007	0.089	32	11.4
2006 – 2008	0.086	30	10.8
2007 – 2009	0.080	28	10.1
2008 – 2010	0.075	26	9.3
2009 – 2011	0.075	25	8.9
2010 – 2012	0.078	23	8.6
2011 – 2013	0.079	23	8.5
2012 -2014	0.078	22	7.9
2013 – 2015	0.077	22	7.8
2014 – 2016	0.076	19	7.6

CONNECTICUT

Table CT-3
People Breathing Ozone

Grade	2000-2002	2002-2004	2004-2006	2006-2008	2008-2010	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016
A	0	0	0	0	0	0	0	0	0	0
B	0	0	0	0	0	0	0	0	0	0
C	0	874,449	1,577,216	0	1,083,941	1,084,789	1,085,196	184,993	300,176	116,192
D	1,355,374	1,438,456	1,633,784	428,311	2,371,728	1,454,124	1,492,527	2,821,967	1,985,872	2,352,754
F	1,806,323	1,068,873	0	2,726,746	0	933,835	900,853	472,719	1,304,838	1,107,506
Subtotal	3,161,697	3,381,778	3,211,000	3,155,057	3,455,669	3,472,748	3,478,476	3,479,679	3,590,886	3,576,452
NM	297,052	114,316	306,460	390,522	118,428	117,599	117,604	116,998	0	0
Total	3,458,749	3,496,094	3,517,460	3,545,579	3,574,097	3,590,347	3,596,080	3,596,677	3,590,886	3,576,452

People Breathing Short-term Particle Pollution (24-Hour PM-2.5)

Grade	2000-2002	2002-2004	2004-2006	2006-2008	2008-2010	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016
A	2,860,148	2,885,021	0	272,634	2,333,110	3,155,607	3,161,537	2,889,693	2,856,967	3,145,813
B	0	0	1,152,112	1,737,085	804,192	0	0	0	0	0
C	0	0	1,182,315	911,258	0	0	0	0	0	0
D	0	0	564,146	0	0	0	0	0	0	0
F	0	0	0	0	0	0	0	0	0	0
Subtotal	2,860,148	2,885,021	2,898,573	2,920,977	3,137,302	3,155,607	3,161,537	2,889,693	2,856,967	3,145,813
NM	598,601	611,073	618,887	624,602	436,795	434,740	434,543	706,984	733,919	430,639
Total	3,458,749	3,496,094	3,517,460	3,545,579	3,574,097	3,590,347	3,596,080	3,596,677	3,590,886	3,576,452

People Breathing Year Round Particle Pollution (Annual PM-2.5)

Grade	2000-2002	2002-2004	2004-2006	2006-2008	2008-2010	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016
A	907,198	1,322,538	1,546,217	2,297,739	3,137,302	3,155,607	3,161,537	2,889,693	2,856,967	2,673,725
B	1,326,626	717,978	1,352,356	623,238	0	0	0	0	0	472,089
C	417,549	563,003	0	0	0	0	0	0	0	0
D	208,775	281,502	0	0	0	0	0	0	0	0
F	0	0	0	0	0	0	0	0	0	0
Subtotal	2,860,148	2,885,021	2,898,573	2,920,977	3,137,306	3,155,607	3,161,537	2,889,693	2,856,967	3,145,813
NM	598,601	611,073	618,887	624,602	436,795	434,740	434,543	706,984	733,919	430,639
Total	3,458,749	3,496,094	3,517,460	3,545,579	3,574,097	3,590,347	3,596,080	3,596,677	3,590,886	3,576,452

NM = Not Monitored

Figure CT-1

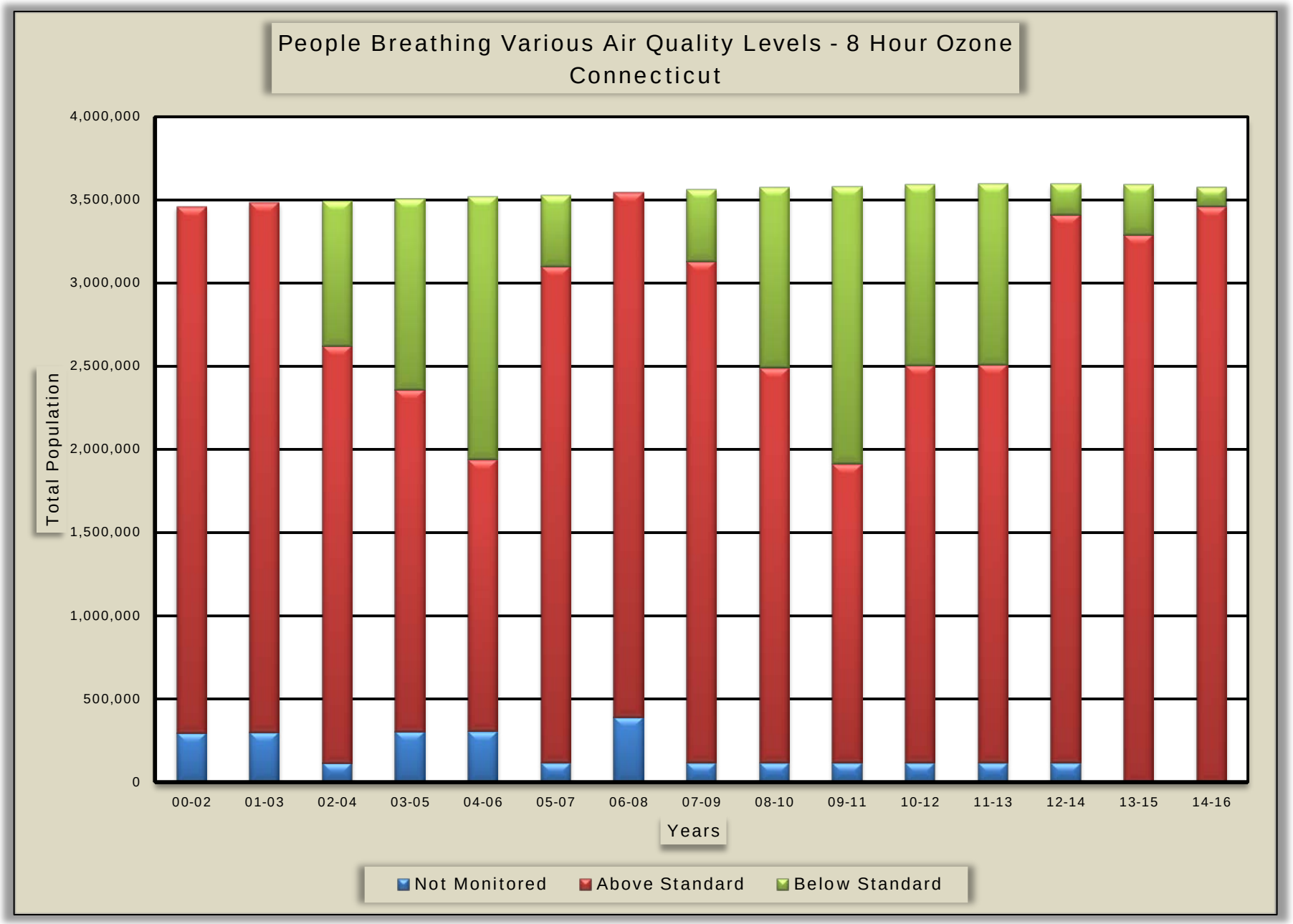
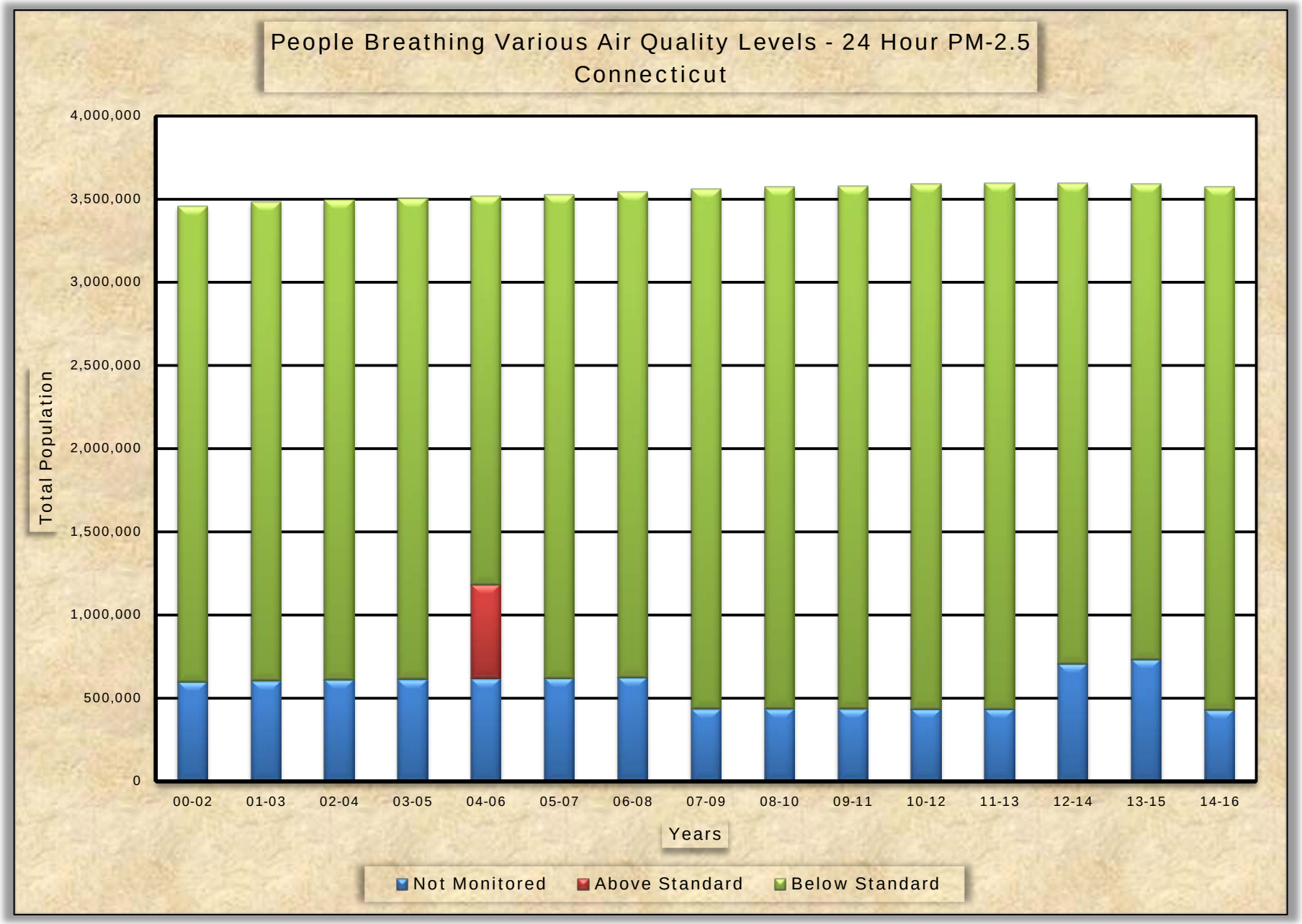

People Breathing Various Air Quality Levels - 8 Hour Ozone
Connecticut
Total Population
4,000,000
3,500,000
3,000,000
2,500,000
2,000,000
1,500,000
1,000,000
500,000
0
00-02
01-03
02-04
03-05
04-06
05-07
06-08
07-09
08-10
09-11
10-12
11-13
12-14
13-15
14-16
Years
Not Monitored
Above Standard
Below Standard

Figure CT-2


People Breathing Various Air Quality Levels - 24 Hour PM-2.5
Connecticut
Total Population
4,000,000
3,500,000
3,000,000
2,500,000
2,000,000
1,500,000
1,000,000
500,000
0
00-02
01-03
02-04
03-05
04-06
05-07
06-08
07-09
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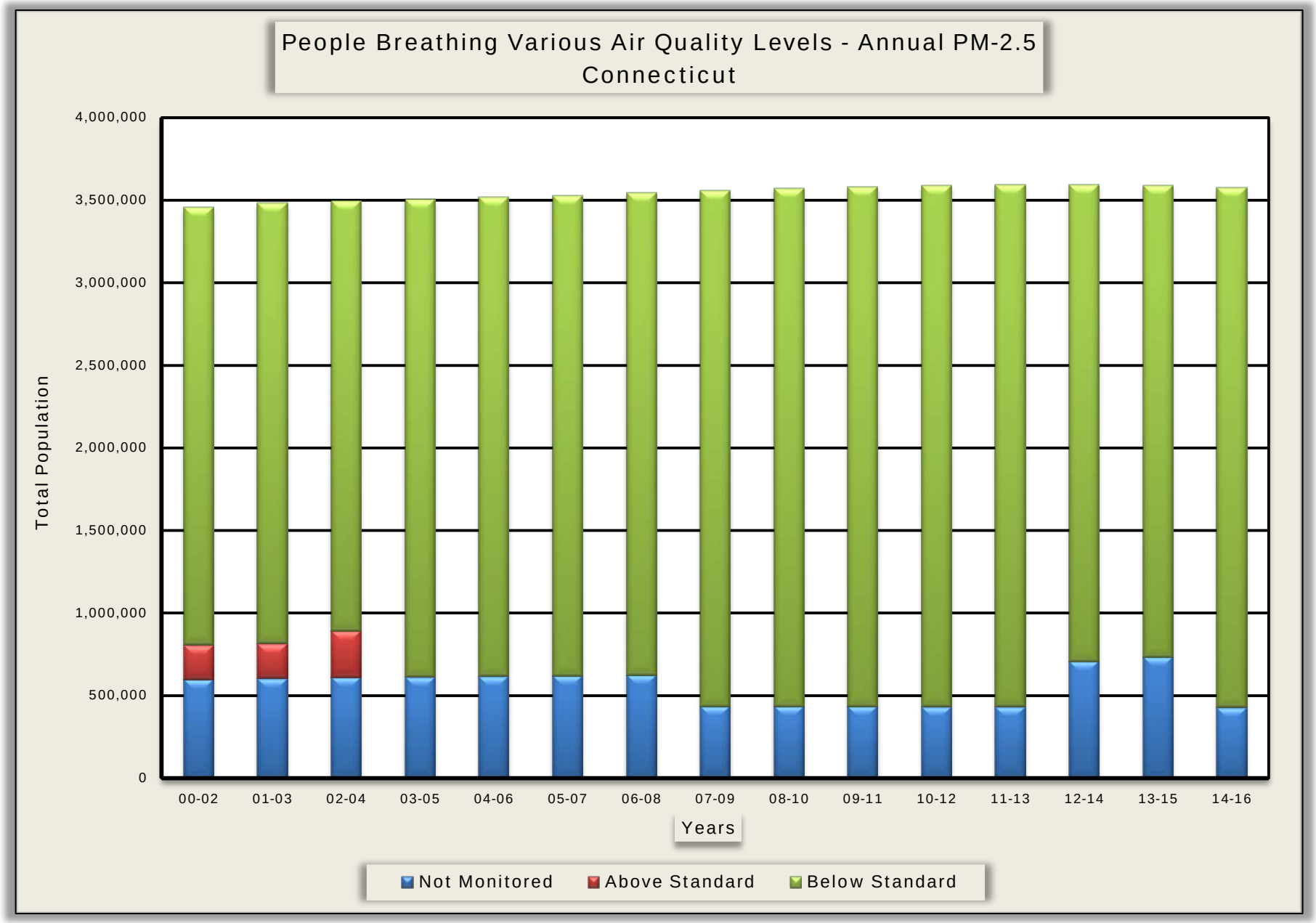
09-11
10-12
11-13
12-14
13-15
14-16
Years
Not Monitored
Above Standard
Below Standard

Figure CT-3


People Breathing Various Air Quality Levels - Annual PM-2.5
Connecticut
Total Population
4,000,000
3,500,000
3,000,000
2,500,000
2,000,000
1,500,000
1,000,000
500,000
0
00-02
01-03
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08-10
09-11
10-12
11-13
12-14
13-15
14-16
Years
Not Monitored
Above Standard
Below Standard

DELAWARE

Ozone

In the 2000 – 2002 time period, no people lived in counties that met the ozone standard. By 2014 – 2016 approximately 0.95 million people (100.0%) lived in counties that met the ozone standard. The ozone standard was lowered from 0.085 ppm to 0.070 ppm. Figure DE-1 shows the distribution of people by year. The population weighted ozone design value in 2000 – 2002 was 0.093 ppm. By 2014 – 2016 this had lowered to a value of 0.068 ppm, a reduction of 26.9 percent.

24-Hour PM-2.5

In the 2000 – 2002 time period, approximately 0.81 million people (100.0%) lived in counties where 24-hour PM-2.5 levels met the standard. By 2014 - 2016 all people in Delaware lived in counties that met the 24-hour PM-2.5 standard. The standard was lowered from 65 µg/m3 to 35 µg/m3. Figure DE-2 shows the distribution of people by year. The population weighted 24-hour PM-2.5 design value in 2000 – 2002 was 38 µg/m3. By 2014 – 2016 this had lowered to a value of 21 µg/m3, a reduction of 44.7 percent.

Annual PM-2.5

In the 2000 – 2002 time period, approximately 0.55 million people (68.4%) lived in counties where annual PM-2.5 levels met the standard. By 2014 – 2016 all people in Delaware lived in counties that met the annual PM-2.5 standard. The standard was lowered from 15 µg/m3 to 12 µg/m3. Figure DE-3 shows the distribution of people by year. The population weighted annual PM-2.5 design value in 2000 – 2002 was 14.5 µg/m3. By 2014 – 2016 this had lowered to a value of 8.6 µg/m3, a reduction of 40.7 percent.

Table DE-1
2014 – 2016

		Ozone			Particle Pollution (PM-2.5)				
County	Population	Avg. DV	Grade	MM	Avg. 24-Hr DV	Grade	Avg. Ann DV	Grade	MM
Kent	174,827	0.066	C	N	19	A	7.8	A	Y
New Castle	556,987	0.069	C	Y	23	A	9.1	A	N
Sussex	220,251	0.067	C	Y	19	A	8.0	A	N

DV = Design Value ND = No Data MM = Multiple Monitors

DELAWARE

Table DE-2
Population Weighted Design Values

Period	Ozone (ppm)	24-Hour PM-2.5 (µg/m3)	Annual PM-2.5 (µg/m3)
2000 – 2002	0.093	38	14.5
2001 – 2003	0.092	37	14.2
2002 – 2004	0.085	35	13.7
2003 – 2005	0.081	34	13.8
2004 – 2006	0.080	33	13.4
2005 – 2007	0.082	33	13.3
2006 – 2008	0.080	31	12.7
2007 – 2009	0.075	28	11.9
2008 – 2010	0.075	26	10.8
2009 – 2011	0.075	24	9.9
2010 – 2012	0.079	24	9.4
2011 – 2013	0.074	23	8.9
2012 -2014	0.071	22	8.9
2013 – 2015	0.066	23	8.8
2014 – 2016	0.068	21	8.6

DELAWARE

Table DE-3
People Breathing Ozone

Grade	2000-2002	2002-2004	2004-2006	2006-2008	2008-2010	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016
A	0	0	0	0	0	0	0	0	0	0
B	0	0	0	0	0	0	0	0	0	0
C	0	657,822	859,268	0	700,789	0	685,004	935,614	945,934	952,065
D	383,970	172,981	0	705,888	197,145	917,092	240,745	0	0	0
F	422,199	0	0	177,986	0	0	0	0	0	0
Subtotal	806,169	830,803	859,268	883,874	897,934	917,092	925,749	935,614	945,934	952,065
NM	0	0	0	0	0	0	0	0	0	0
Total	806,169	830,803	859,268	883,874	897,934	917,092	925,749	935,614	945,934	952,065

People Breathing Short-term Particle Pollution (24-Hour PM-2.5)

Grade	2000-2002	2002-2004	2004-2006	2006-2008	2008-2010	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016
A	806,169	830,803	0	0	763,314	917,092	925,749	935,614	945,934	952,065
B	0	0	74,852	616,895	134,620	0	0	0	0	0
C	0	0	652,623	266,979	0	0	0	0	0	0
D	0	0	131,793	0	0	0	0	0	0	0
F	0	0	0	0	0	0	0	0	0	0
Subtotal	806,169	830,803	859,268	883,874	897,934	917,092	925,749	935,614	945,934	952,065
NM	0	0	0	0	0	0	0	0	0	0
Total	806,169	830,803	859,268	883,874	897,934	917,092	925,749	935,614	945,934	952,065

People Breathing Year Round Particle Pollution (Annual PM-2.5)

Grade	2000-2002	2002-2004	2004-2006	2006-2008	2008-2010	2010-2012	2011-2013	2012-2014	203-2015	2014-2016
A	0	0	0	291,415	897,934	917,092	650,907	797,420	945,934	952,065
B	131,824	441,595	463,888	458,970	0	0	274,842	138,194	0	0
C	419,266	389,208	395,380	133,489	0	0	0	0	0	0
D	255,079	0	0	0	0	0	0	0	0	0
F	0	0	0	0	0	0	0	0	0	0
Subtotal	806,169	830,803	859,268	883,874	897,934	917,092	925,749	935,614	945,934	952,065
NM			0	0	0	0	0	0	0	0
Total	806,169	830,803	859,268	883,874	897,934	917,135	925,749	935,614	945,934	952,065

NM = Not Monitored

Figure DE-1

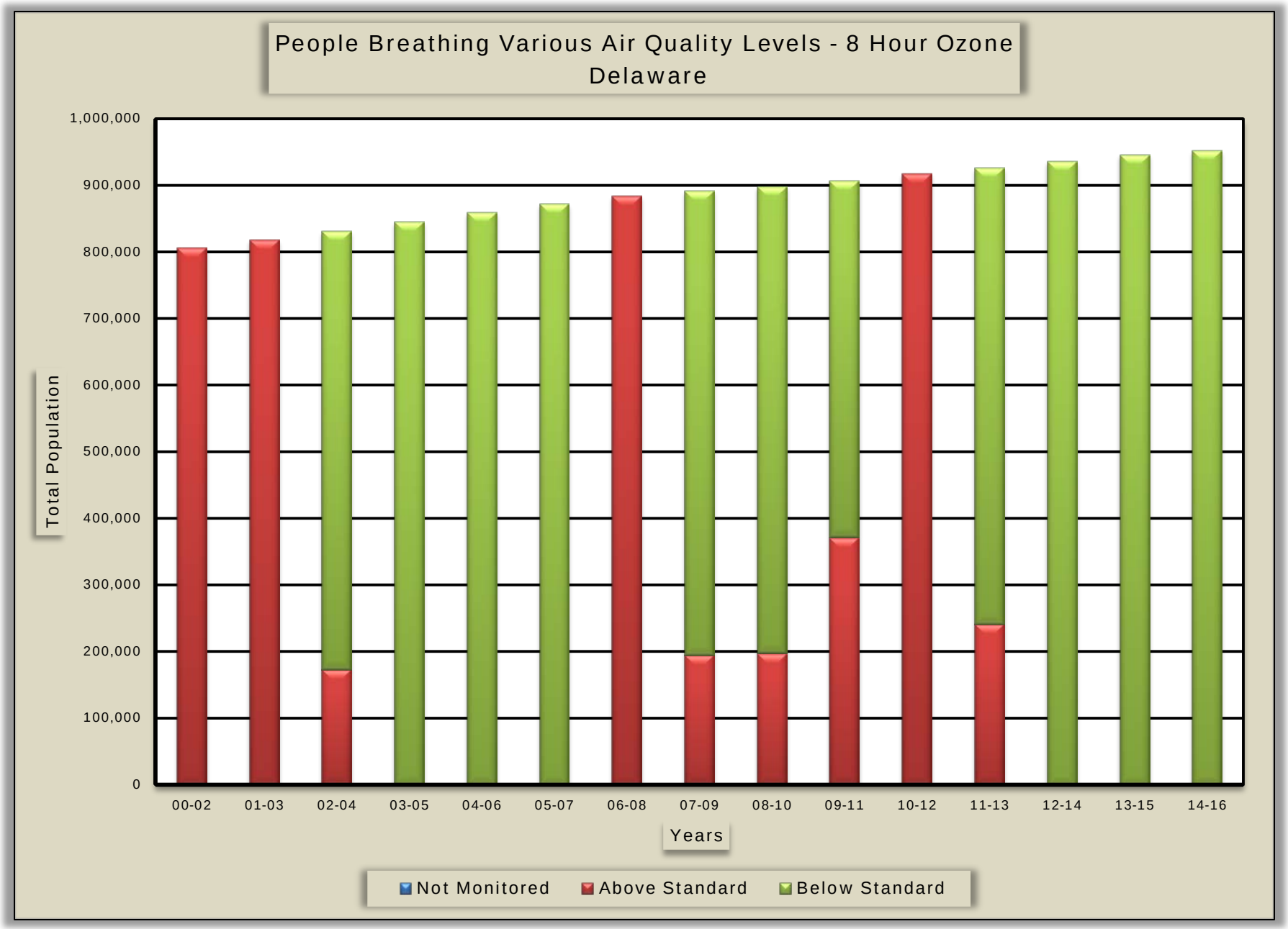

People Breathing Various Air Quality Levels - 8 Hour Ozone
Delaware
Total Population
1,000,000
900,000
800,000
700,000
600,000
500,000
400,000
300,000
200,000
100,000
0
00-02
01-03
02-04
03-05
04-06
05-07
06-08
07-09
08-10
09-11
10-12
11-13
12-14
13-15
14-16
Years
Not Monitored
Above Standard
Below Standard

Figure DE-2

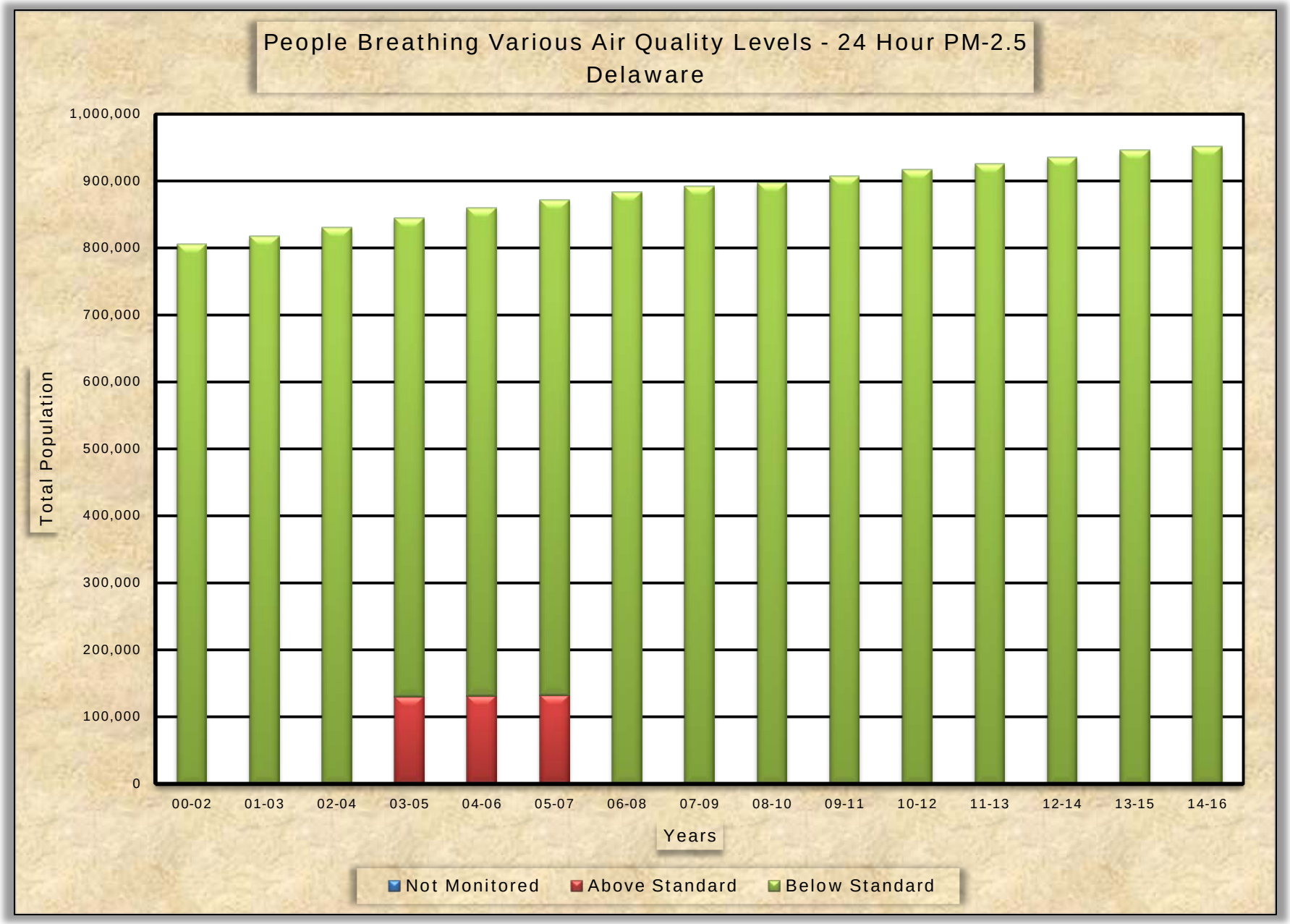
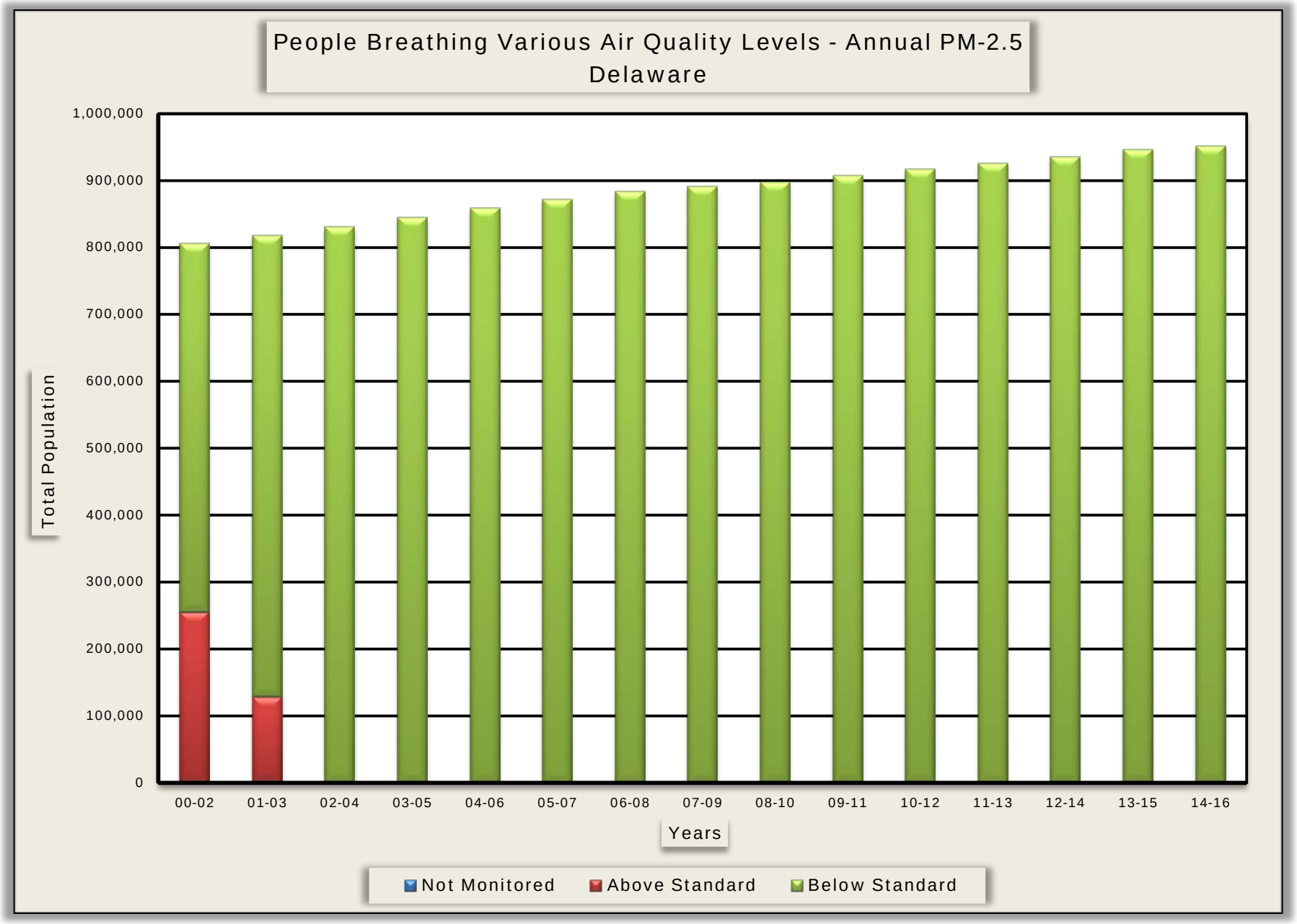

People Breathing Various Air Quality Levels - 24 Hour PM-2.5
Delaware
Total Population
1,000,000
900,000
800,000
700,000
600,000
500,000
400,000
300,000
200,000
100,000
0
00-02
01-03
02-04
03-05
04-06
05-07
06-08
07-09
08-10
09-11
10-12
11-13
12-14
13-15
14-16
Years
Not Monitored
Above Standard
Below Standard

Figure DE-3


People Breathing Various Air Quality Levels - Annual PM-2.5
Delaware
Total Population
1,000,000
900,000
800,000
700,000
600,000
500,000
400,000
300,000
200,000
100,000
0
00-02
01-03
02-04
03-05
04-06
05-07
06-08
07-09
08-10
09-11
10-12
11-13
12-14
13-15
14-16
Years
Not Monitored
Above Standard
Below Standard

DISTRICT OF COLUMBIA

Ozone

In the 2000 – 2002 time period, no people lived in counties that met the ozone standard. By 2014 – 2016 all people were breathing air that met the ozone standard. The ozone standard was lowered from 0.085 ppm to 0.070 ppm. Figure DC-1 shows the distribution of people by year. The population weighted ozone design value in 2000 – 2002 was 0.093 ppm. By 2014 – 2016 this had lowered to a value of 0.070 µg/m3, a reduction of 24.7 percent.

24-Hour PM-2.5

In the 2000 – 2002 time period, all people lived in counties where 24-hour PM-2.5 levels met the standard. By 2014 -2016 all people were breathing air that met the standard. The standard was lowered from 65 µg/m3 to 35 µg/m3. Figure DC-2 shows the distribution of people by year. The population weighted 24-hour PM-2.5 design value in 2000 – 2002 was 41 µg/m3. By 2014 – 2016 this had lowered to a value of 22 µg/m3, a reduction of 40.5 percent.

Annual PM-2.5

In the 2000 – 2002 time period, no people lived in counties where annual PM-2.5 levels met the standard. By 2014 – 2016 all people were breathing air that met the standard. The standard was lowered from 15 µg/m3 to 12 µg/m3. Figure DC-3 shows the distribution of people by year. The population weighted annual PM-2.5 design value in 2000 – 2002 was 15.7 µg/m3. By 2014 – 2016 this had lowered to a value of 9.3 µg/m3, a reduction of 40.8 percent.

Table DC-1
2014 – 2016

		Ozone			Particle Pollution (PM-2.5)				
County	Population	Avg. DV	Grade	MM	Avg. 24-Hr DV	Grade	Avg. Ann DV	Grade	MM
DC	**681,170**	**0.070**	**C**	**Y**	**22**	**A**	**9.3**	A	Y

DV = Design Value MM = Multiple Monitors

DISTRICT OF COLUMBIA

Table DC-2
Population Weighted Design Values

Period	Ozone (ppm)	24-Hour PM-2.5 (µg/m3)	Annual PM-2.5 (µg/m3)
2000 – 2002	0.093	41	15.7
2001 – 2003	0.091	40	15.2
2002 – 2004	0.086	38	14.7
2003 – 2005	0.079	36	14.6
2004 – 2006	0.081	35	14.3
2005 – 2007	0.084	33	13.9
2006 – 2008	0.084	31	12.9
2007 – 2009	0.078	28	11.9
2008 – 2010	0.077	26	11.0
2009 – 2011	0.077	25	10.5
2010 – 2012	0.082	25	10.3
2011 – 2013	0.075	24	9.6
2012 -2014	0.073	22	9.2
2013 – 2015	0.068	21	9.0
2014 – 2016	0.070	22	9.3

DISTRICT OF COLUMBIA

Table DC-3
People Breathing Ozone

Grade	2000-2002	2002-2004	2004-2006	2006-2008	2008-2010	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016
A	0	0	0	0	0	0	0	0	0	0
B	0	0	0	0	0	0	0	0	0	0
C	0	378,503	570,681	0	200,574	0	323,225	658,893	672,228	681,170
D	382,105	189,251	0	193,412	401,149	316,161	323,224	0	0	0
F	191,053	0	0	386,824	0	316,162	0	0	0	0
Subtotal	573,158	567,754	570,681	580,236	601,723	632,323	646,449	658,893	672,228	681,170
NM	0	0	0	0	0	0	0	0	0	0
Total	573,158	567,754	570,681	580,236	601,723	632,323	646,449	658,893	672,228	681,170

People Breathing Short-term Particle Pollution (24-Hour PM-2.5)

Grade	2000-2002	2002-2004	2004-2006	2006-2008	2008-2010	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016
A	573,158	567,754	0	0	601,723	632,323	646,449	658,893	672,228	681,170
B	0	0	0	386,824	0	0	0	0	0	0
C	0	0	380,454	193,412	0	0	0	0	0	0
D	0	0	190,227	0	0	0	0	0	0	0
F	0	0	0	0	0	0	0	0	0	0
Subtotal	573,158	567,754	570,681	580,236	601,723	632,323	646,449	658,893	672,228	681,170
NM	0	0	0	0	0	0	0	0	0	0
Total	573,158	567,754	570,681	580,236	601,723	632,323	646,449	658,893	672,228	681,170

People Breathing Year Round Particle Pollution (Annual PM-2.5)

Grade	2000-2002	2002-2004	2004-2006	2006-2008	2008-2010	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016
A	0	0	0	0	601,723	632,323	215,483	658,893	672,228	340,585
B	0	0	0	580,236	0	0	430,966	0	0	370,585
C	0	567,754	570,681	0	0	0	0	0	0	0
D	573,158	0	0	0	0	0	0	0	0	0
F	0	0	0	0	0	0	0	0	0	0
Subtotal	573,158	567,754	570,681	580,236	601,723	632,323	646,449	658,893	672,228	681,170
NM	0	0	0	0	0	0	0	0	0	0
Total	573,158	567,754	570,681	580,236	601,723	632,323	646,449	658,893	672,228	681,170

NM = Not Monitored

Figure DC-1

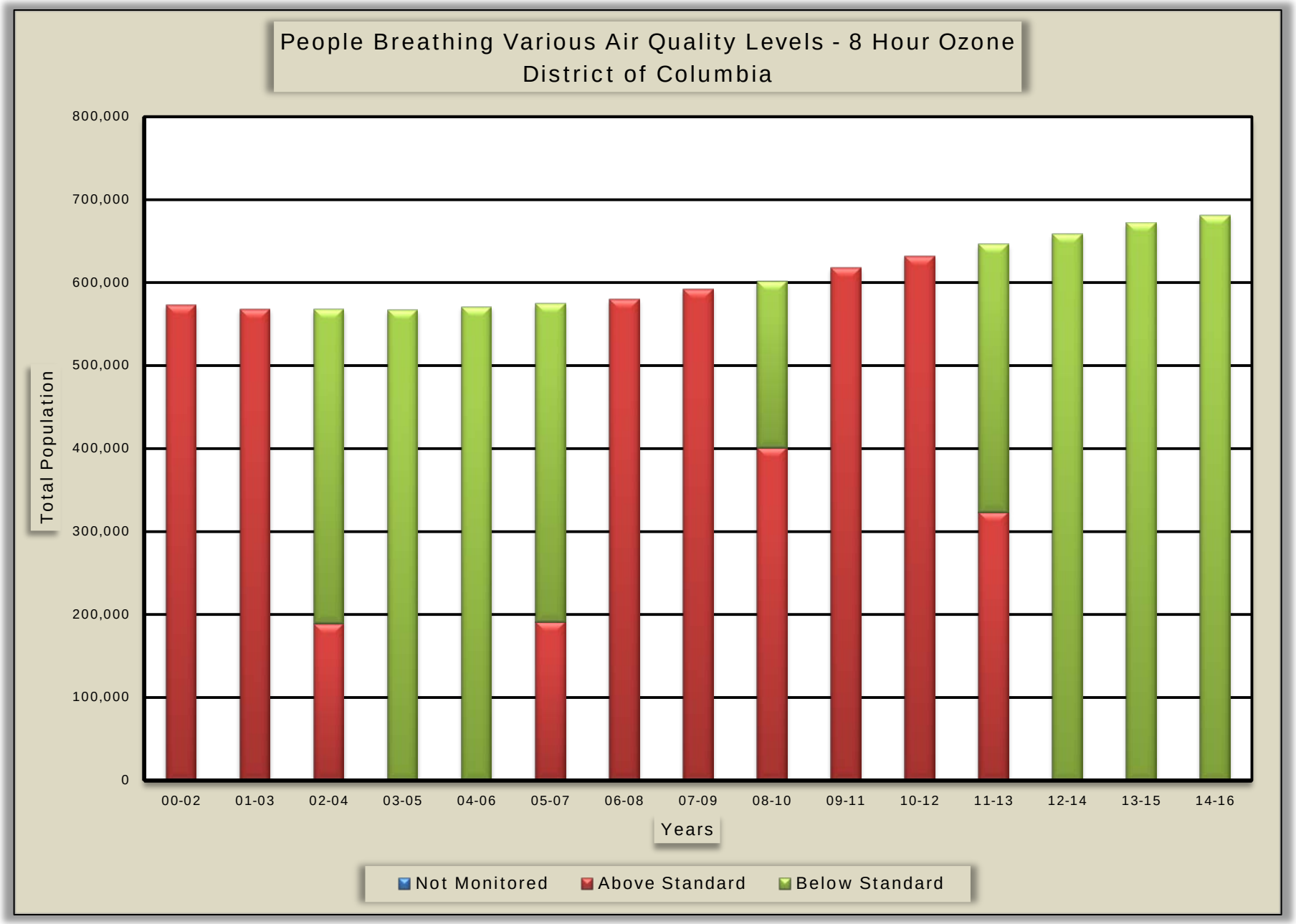

People Breathing Various Air Quality Levels - 8 Hour Ozone
District of Columbia
800,000
700,000
600,000
500,000
400,000
300,000
200,000
100,000
0
Total Population
00-02
01-03
02-04
03-05
04-06
05-07
06-08
07-09
08-10
09-11
10-12
11-13
12-14
13-15
14-16
Years
Not Monitored
Above Standard
Below Standard

Figure DC-2

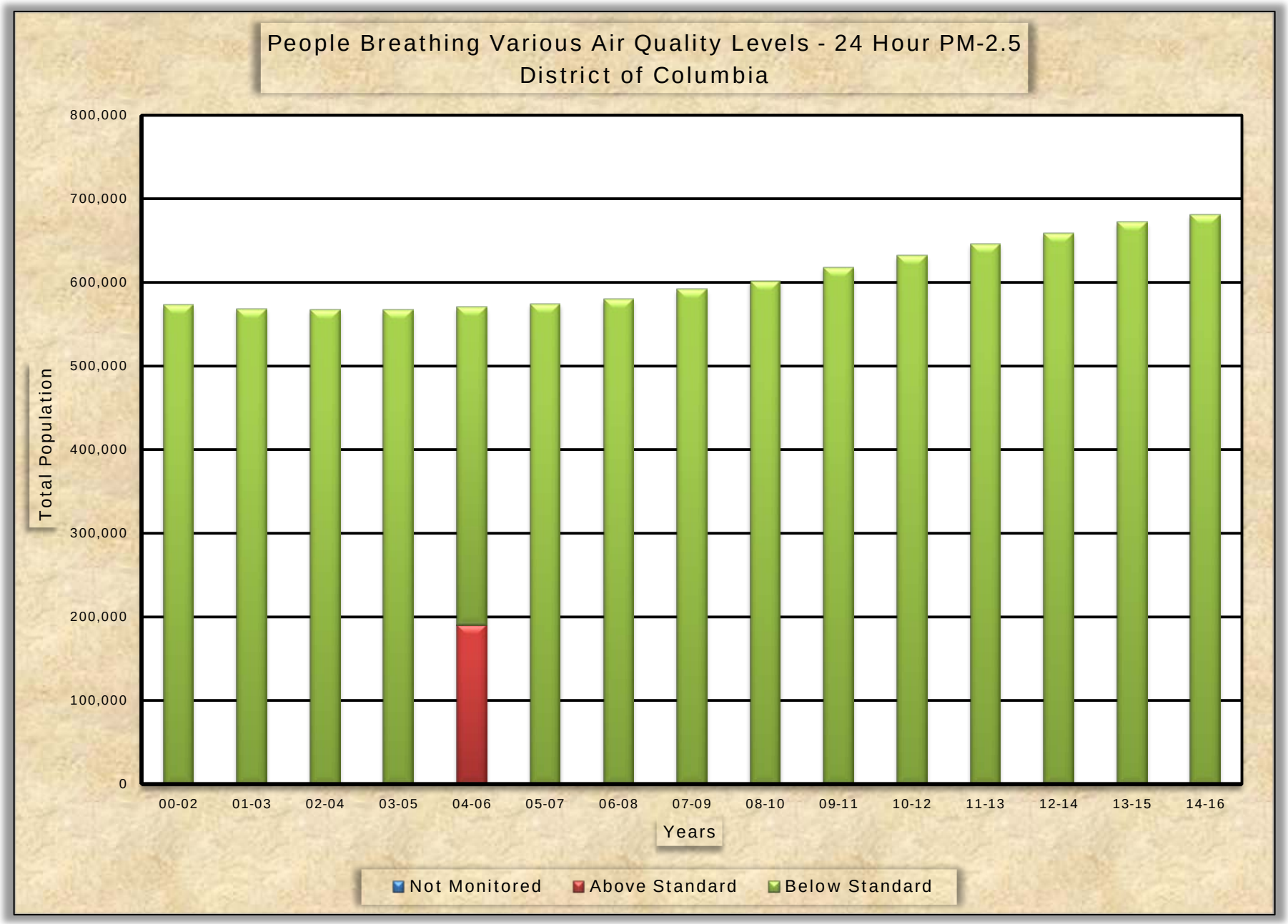
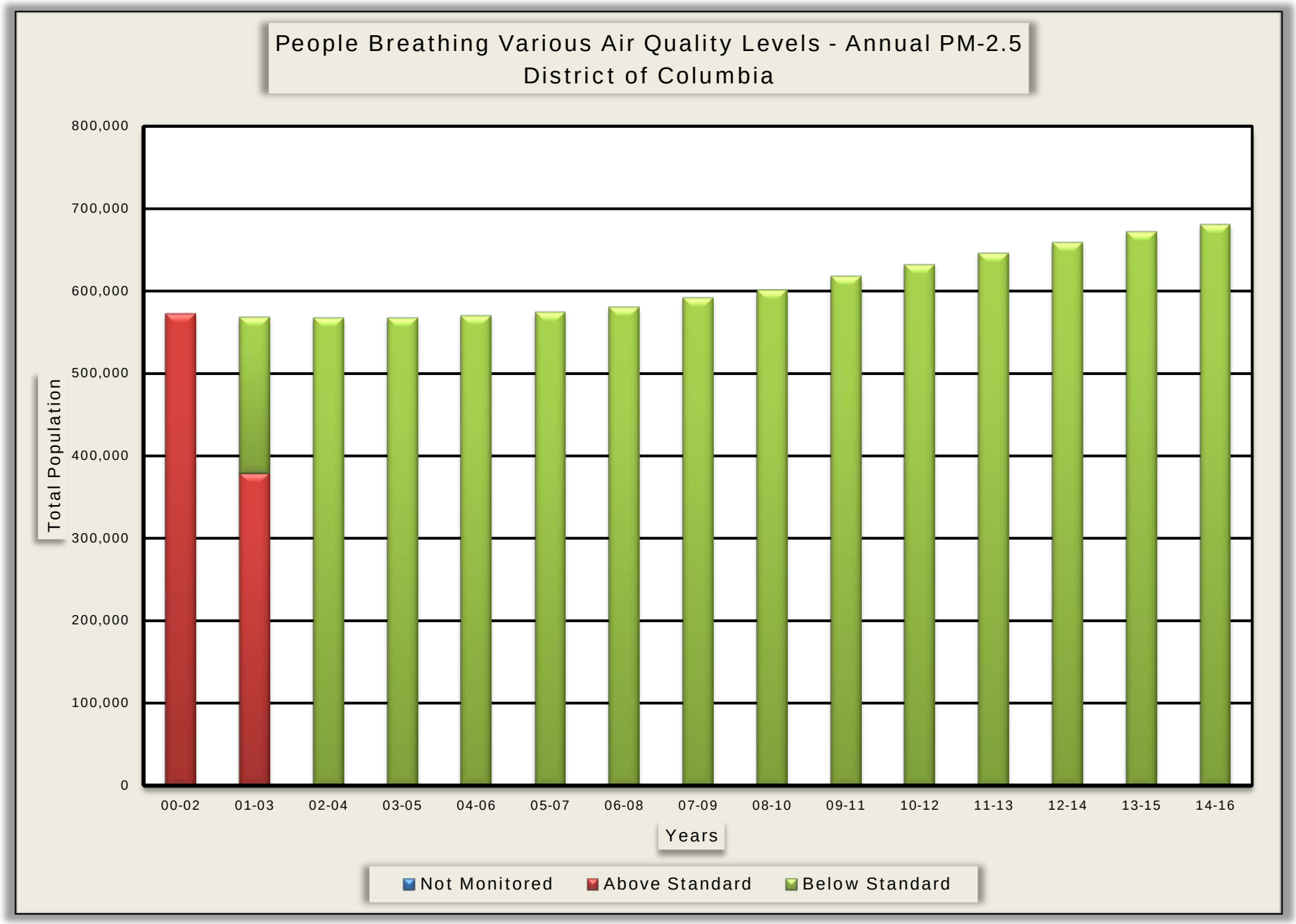

People Breathing Various Air Quality Levels - 24 Hour PM-2.5
District of Columbia
800,000
700,000
600,000
500,000
400,000
300,000
200,000
100,000
0
Total Population
00-02
01-03
02-04
03-05
04-06
05-07
06-08
07-09
08-10
09-11
10-12
11-13
12-14
13-15
14-16
Years
Not Monitored
Above Standard
Below Standard

Figure DC-3


People Breathing Various Air Quality Levels - Annual PM-2.5
District of Columbia
Total Population
800,000
700,000
600,000
500,000
400,000
300,000
200,000
100,000
0
00-02
01-03
02-04
03-05
04-06
05-07
06-08
07-09
08-10
09-11
10-12
11-13
12-14
13-15
14-16
Years
Not Monitored
Above Standard
Below Standard

FLORIDA

Ozone

In the 2000 – 2002 time period, approximately 13.7 million people (82.2%) lived in counties that met the ozone standard. By 2014 – 2016 this had increased to 16.3 million people (79.0%). The ozone standard was lowered from 0.085 ppm to 0.070 ppm. Figure FL-1 shows the distribution of people by year. The population weighted ozone design value in 2000 – 2002 was 0.072 ppm. By 2014 – 2016 this had lowered to a value of 0.061 ppm, a reduction of 15.3 percent.

24-Hour PM-2.5

In the 2000 – 2002 time period, approximately 12.4 million people (74.3%) lived in counties where 24-hour PM-2.5 levels met the standard. By 2014 – 2016 this was approximately 11.5 million people (55.9%). The standard was lowered from 65 µg/m3 to 35 µg/m3. Figure FL-2 shows the distribution of people by year. The population weighted 24-hour PM-2.5 design value in 2000 – 2002 was 23 µg/m3. By 2014 -2016 this had lowered to a value of 15 µg/m3, a reduction of 34.8 percent.

Annual PM-2.5

In the 2000 – 2002 time period, approximately 12.4 million people (74.3%) lived in counties where annual PM-2.5 levels met the standard. By 2014 – 2016 this had decreased to approximately 11.5 million people (55.9%). The standard was lowered from 15 µg/m3 to 12 µg/m3. Figure FL-3 shows the distribution of people by year. The population weighted annual PM-2.5 design value in 2000 – 2002 was 9.9 µg/m3. By 2014 – 2016 this had lowered to a value of 6.5 µg/m3, a reduction of 34.3 percent.

FLORIDA

Table FL-1
2014 – 2016

		Ozone			Particle Pollution (PM-2.5)				
County	Population	Avg. DV	Grade	MM	Avg. 24-Hr DV	Grade	Avg. Ann DV	Grade	MM
Alachua	263,496	0.059	B	N	12	A	5.4	A	N
Baker	27,937	0.059	B	N	ND	ND	ND	ND	ND
Bay	183,974	0.063	C	N	ND	ND	ND	ND	ND
Brevard	579,130	0.059	B	Y	ND	ND	ND	ND	ND
Broward	1,909,632	0.060	B	Y	ND	ND	ND	ND	ND
Citrus	143,621	ND	ND	ND	13	A	5.8	A	N
Collier	365,136	0.057	B	N	ND	ND	ND	ND	ND
Columbia	69,299	0.059	B	N	ND	ND	ND	ND	ND
Duval	926,255	ND	ND	ND	16	A	7.3	A	Y
Escambia	315,187	0.064	C	Y	15	A	7.5	A	N
Flagler	108,310	0.060	B	N	ND	ND	ND	ND	ND
Highlands	100,917	0.060	B	N	ND	ND	ND	ND	ND
Hillsborough	1,376,238	0.066	C	Y	15	A	7.0	A	N
Holmes	19,487	0.060	B	N	ND	ND	ND	ND	ND
Indian River	151,563	0.061	B	N	ND	ND	ND	ND	ND
Lake	335,396	0.063	C	N	ND	ND	ND	ND	ND
Lee	722,336	0.059	B	Y	13	A	5.8	A	N
Leon	287,822	0.060	B	N	18	A	7.9	A	N
Liberty	8,202	0.056	B	N	ND	ND	ND	ND	ND
Manatee	375,888	0.060	B	Y	ND	ND	ND	ND	ND
Marion	349,020	0.059	B	Y	ND	ND	ND	ND	ND
Martin	158,701	0.061	B	N	ND	ND	ND	ND	ND
Miami-Dade	2,712,945	0.061	B	Y	15	A	6.6	A	Y
Okaloosa	201,170	0.062	B	N	ND	ND	ND	ND	ND
Orange	1,314,367	0.062	B	Y	ND	ND	ND	ND	ND
Osceola	336,015	0.063	C	N	ND	ND	ND	ND	ND
Palm Beach	1,443,810	ND	ND	ND	14	A	5.6	A	Y
Pasco	512,368	0.061	B	Y	ND	ND	ND	ND	ND
Pinellas	960,730	0.060	B	Y	16	A	6.7	A	Y
Polk	666,149	0.062	B	Y	14	A	6.3	A	N
St. Lucie	306,507	0.061	B	N	ND	ND	ND	ND	ND
Santa Rosa	170,497	0.064	C	N	ND	ND	ND	ND	ND
Sarasota	412,569	0.061	B	Y	16	A	6.2	A	N
Seminole	455,479	ND	ND	ND	16	A	5.9	A	N
Volusia	529,364	0.059	B	Y	13	A	5.9	A	N

DV = Design Value ND = No Data MM = Multiple Monitors

FLORIDA

Table FL-2
Population Weighted Design Values

Period	Ozone (ppm)	24-Hour PM-2.5 (µg/m3)	Annual PM-2.5 (µg/m3)
2000 – 2002	0.072	23	9.9
2001 – 2003	0.070	20	9.1
2002 – 2004	0.069	20	9.1
2003 – 2005	0.071	20	9.2
2004 – 2006	0.072	21	9.3
2005 – 2007	0.072	20	8.8
2006 – 2008	0.071	18	8.2
2007 – 2009	0.067	17	7.5
2008 – 2010	0.065	15	7.3
2009 – 2011	0.065	16	7.2
2010 – 2012	0.065	16	7.3
2011 – 2013	0.063	16	6.8
2012 – 2014	0.063	15	6.5
2013 – 2015	0.062	15	6.4
2014 – 2016	0.061	15	6.5

FLORIDA

Table FL-3
People Breathing Ozone

Grade	2000-2002	2002-2004	2004-2006	2006-2008	2008-2010	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016
A	1,930,957	5,803,339	1,739,348	0	874,033	2,147,564	1,847,193	2,753,125	0	0
B	8,668,875	8,343,324	8,796,113	3,631,108	11,142,049	10,265,851	11,849,532	13,995,882	11,246,368	13,235,450
C	3,118,200	1,142,882	3,453,430	10,744,920	3,512,057	4,417,537	3,153,476	813,479	5,738,216	3,050,382
D	0	0	0	1,509,239	0	0	0	0	0	0
F	0	0	0	0	0	0	0	0	0	0
Subtotal	13,718,032	15,289,544	13,988,891	15,885,266	15,528,139	16,830,952	16,850,205	17,562,186	16,984,584	16,285,831
NM	2,971,338	2,125,774	4,178,099	2,642,039	3,273,171	2,486,616	2,702,655	2,331,111	3,286,688	4,326,608
Total	16,689,370	17,415,318	18,166,990	18,527,305	18,801,310	19,317,568	19,552,860	19,893,297	20,271,272	20,612,439

People Breathing Short-term Particle Pollution (24-Hour PM-2.5)

Grade	2000-2002	2002-2004	2004-2006	2006-2008	2008-2010	2010-2012	2011-2013	2012-2014	203-2015	2014-2016
A	12,402,826	13,889,132	13,942,490	13,535,143	13,526,480	14,143,562	14,303,340	14,286,983	14,543,419	11,531,635
B	0	0	466,039	0	0	0	0	0	0	0
C	0	0	0	0	0	0	0	0	0	0
D	0	0	0	0	0	0	0	0	0	0
F	0	0	0	0	0	0	0	0	0	0
Subtotal	12,402,826	13,889,132	14,408,529	13,535,143	13,526,480	14,143,562	14,303,340	14,286,983	14,543,419	11,531,635
NM	4,286,544	3,526,186	3,758,461	4,992,162	5,274,830	5,174,006	5,249,520	5,606,314	5,727,853	9,080,804
Total	16,689,370	17,415,318	18,166,990	18,527,305	18,801,310	19,317,568	19,552,860	19,893,297	20,271,272	20,612,439

People Breathing Year Round Particle Pollution (Annual PM-2.5)

Grade	2000-2002	2002-2004	2004-2006	2006-2008	2008-2010	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016
A	11,859,854	13,634,944	14,145,453	13,535,143	13,526,480	14,143,562	14,303,340	14,286,983	14,543,419	11,531,635
B	542,972	254,188	263,076	0	0	0	0	0	0	0
C	0	0	0	0	0	0	0	0	0	0
D	0	0	0	0	0	0	0	0	0	0
F	0	0	0	0	0	0	0	0	0	0
Subtotal	12,402,826	13,889,132	14,408,529	13,535,143	13,526,480	14,143,562	14,303,340	14,286,983	14,543,419	11,531,635
NM	4,286,544	3,526,186	3,758,461	4,992,162	5,274,830	5,174,006	5,249,520	5,606,314	5,727,853	9,080,804
Total	16,689,370	17,415,318	18,166,990	18,527,305	18,801,310	19,317,568	19,552,860	19,893,297	20,271,272	20,612,439

NM = Not Monitored

Figure FL-1

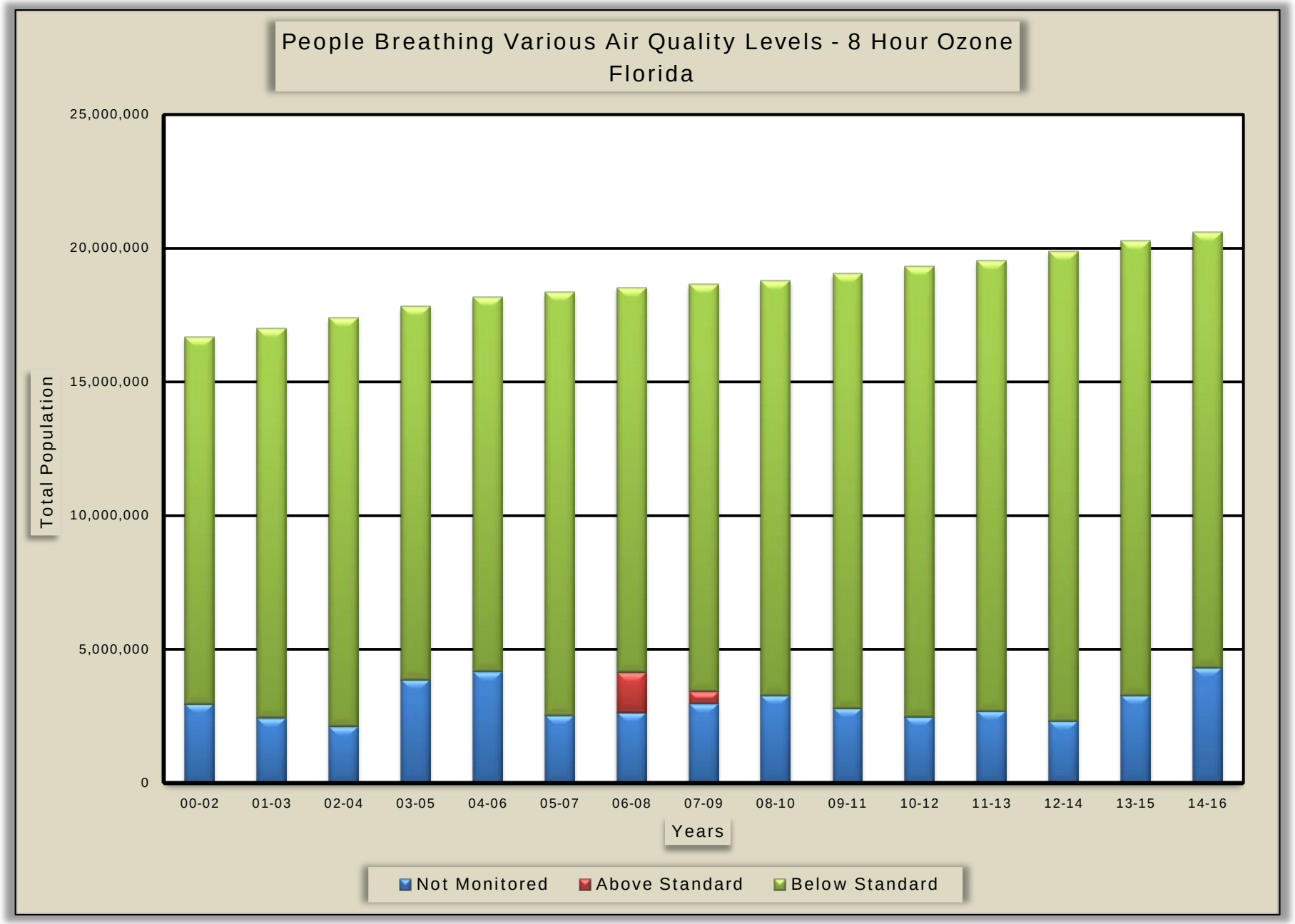

People Breathing Various Air Quality Levels - 8 Hour Ozone
Florida
25,000,000
20,000,000
15,000,000
10,000,000
5,000,000
0
Total Population
00-02
01-03
02-04
03-05
04-06
05-07
06-08
07-09
08-10
09-11
10-12
11-13
12-14
13-15
14-16
Years
Not Monitored
Above Standard
Below Standard

Figure FL-2

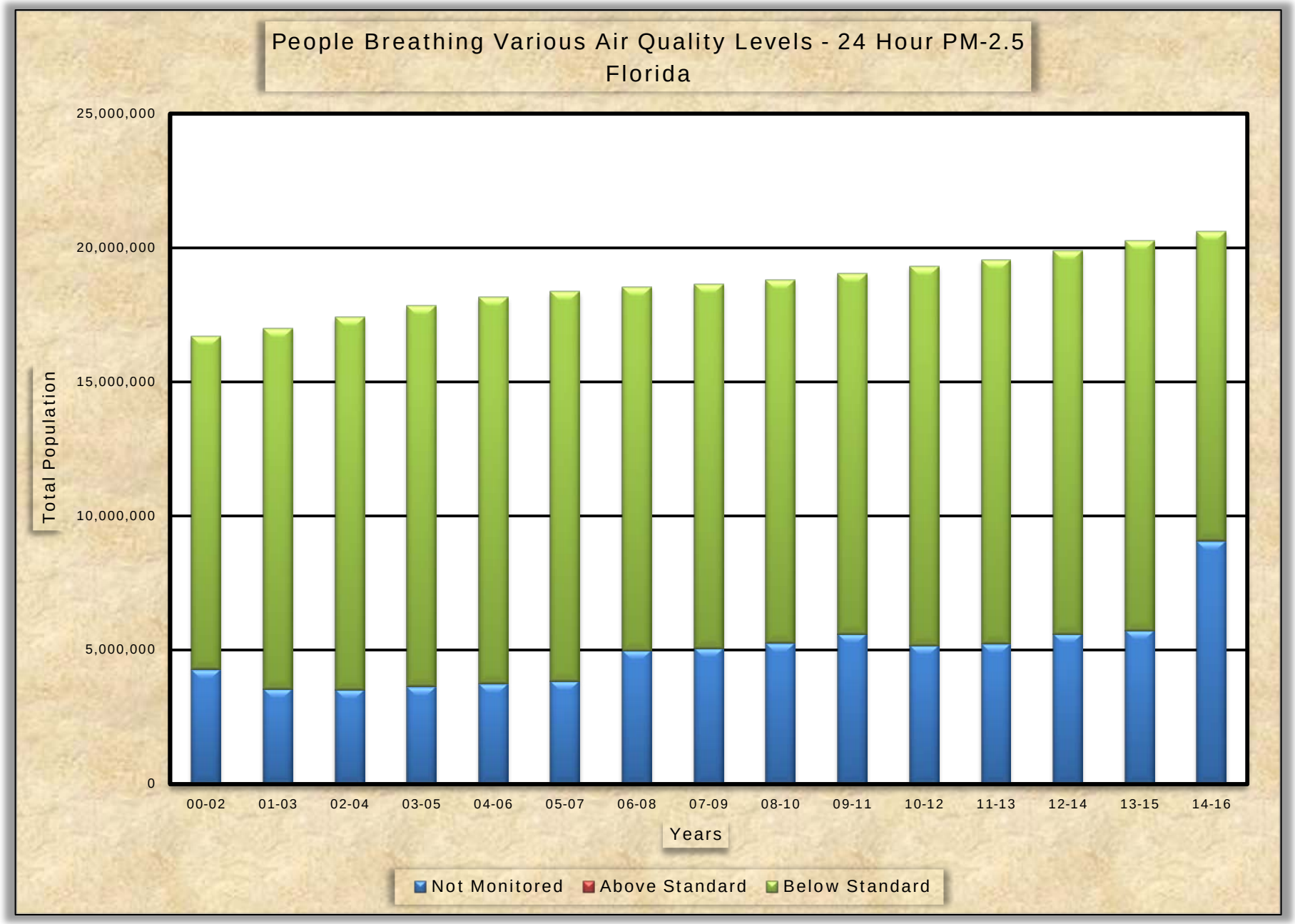
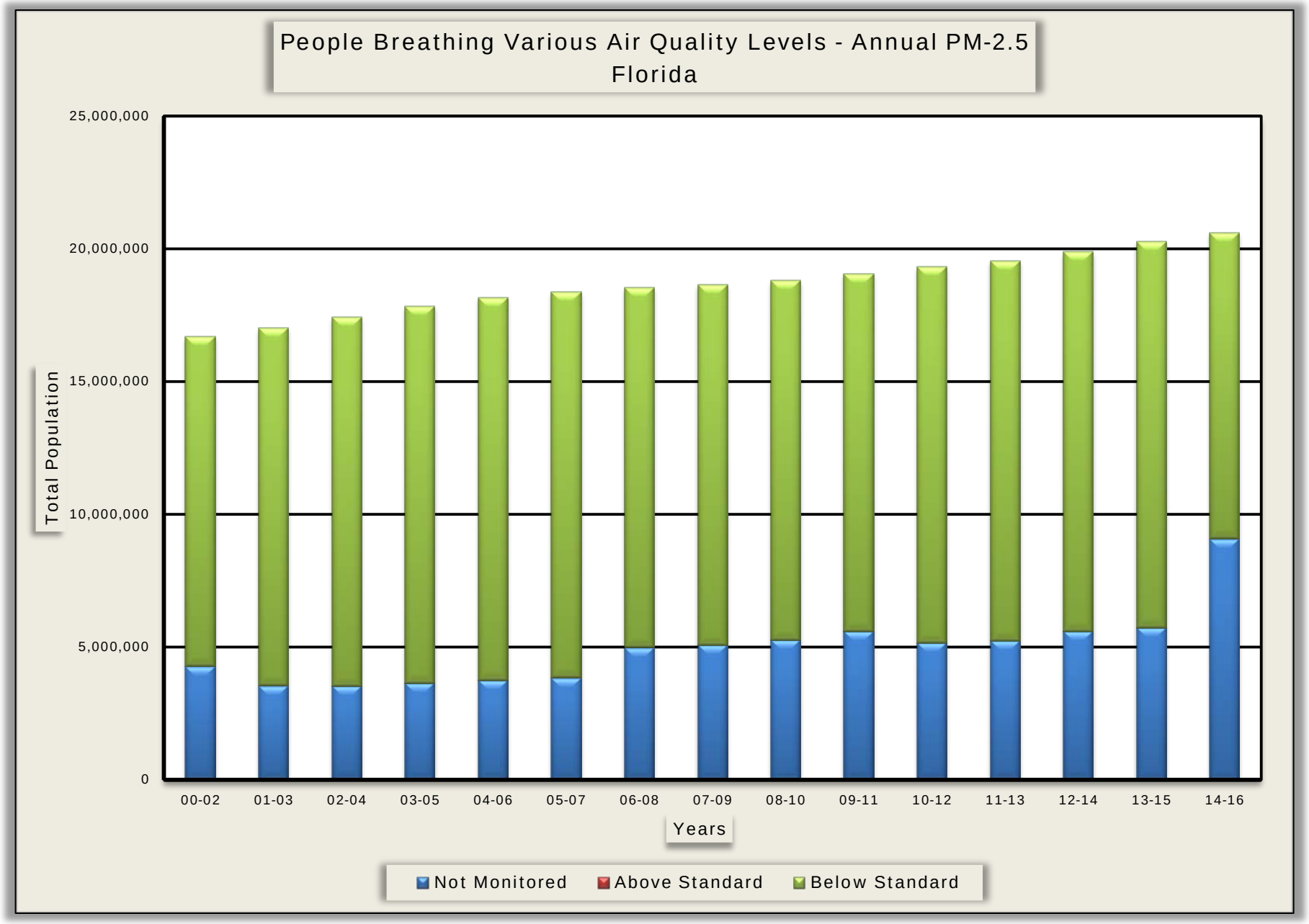

People Breathing Various Air Quality Levels - 24 Hour PM-2.5
Florida
25,000,000
20,000,000
15,000,000
10,000,000
5,000,000
0
Total Population
00-02
01-03
02-04
03-05
04-06
05-07
06-08
07-09
08-10
09-11
10-12
11-13
12-14
13-15
14-16
Years
Not Monitored
Above Standard
Below Standard

Figure FL-3


People Breathing Various Air Quality Levels - Annual PM-2.5
Florida
25,000,000
20,000,000
15,000,000
10,000,000
5,000,000
0
Total Population
00-02
01-03
02-04
03-05
04-06
05-07
06-08
07-09
08-10
09-11
10-12
11-13
12-14
13-15
14-16
Years
Not Monitored
Above Standard
Below Standard

GEORGIA

Ozone

In the 2000 – 2002 time period, approximately 0.7 million people (8.2%) lived in counties that met the ozone standard. By 2014 – 2016 this had increased to 1.8 million people (17.2%). The ozone standard was lowered from 0.085 ppm to 0.070 ppm. Figure GA-1 shows the distribution of people by year. The population weighted ozone design value in 2000 – 2002 was 0.092 ppm. By 2014 – 2016 this had lowered to a value of 0.069 ppm, a reduction of 25.0 percent.

24-Hour PM-2.5

In the 2000 – 2002 time period, approximately 3.9 million people (45.4%) lived in counties where 24-hour PM-2.5 levels met the standard. By 2014 - 2016 this was approximately 5.7 million people (54.8%). The standard was lowered from 65 µg/m3 to 35 µg/m3. Figure GA-2 shows the distribution of people by year. The population weighted 24-hour PM-2.5 design value in 2000 – 2002 was 38 µg/m3. By 2014 – 2016 this had lowered to a value of 19 µg/m3, a reduction of 50.0 percent.

Annual PM-2.5

In the 2000 – 2002 time period, approximately 0.6 million people (7.1%) lived in counties where annual PM-2.5 levels met the standard. By 2014 – 2016 this had increased to approximately 5.7 million people (54.8%). The standard was lowered from 15 µg/m3 to 12 µg/m3. Figure GA-3 shows the distribution of people by year. The population weighted annual PM-2.5 design value in 2000 – 2002 was 16.6 µg/m3. By 2014 – 2016 this had lowered to a value of 9.3 µg/m3, a reduction of 44.0 percent.

GEORGIA

Table GA-1
2014 – 2016

		Ozone			Particle Pollution (PM-2.5)				
County	Population	Avg. DV	Grade	MM	Avg. 24-Hr DV	Grade	Avg. Ann DV	Grade	MM
Bibb	152,760	0.065	C	N	19	A	8.9	A	Y
Chatham	289,082	0.057	B	N	22	A	8.7	A	N
Chattooga	24,824	0.062	B	N	ND	ND	ND	ND	ND
Clarke	124,707	0.064	C	N	19	A	9.0	A	N
Clayton	279,462	ND	ND	ND	18	A	9.8	B	N
Cobb	748,150	ND	ND	ND	18	A	9.5	A	N
Columbia	147,450	0.061	B	N	ND	ND	ND	ND	ND
Coweta	140,526	0.066	C	N	ND	ND	ND	ND	ND
Dawson	23,604	0.065	C	N	ND	ND	ND	ND	ND
DeKalb	**740,321**	**0.071**	**D**	**N**	18	A	9.1	A	N
Dougherty	90,017	ND	ND	ND	21	A	9.3	A	N
Douglas	142,224	0.068	C	N	ND	ND	ND	ND	ND
Floyd	96,560	ND	ND	ND	20	A	9.9	B	N
Fulton	**1,023,336**	**0.075**	**D**	N	20	A	10.3	B	N
Glynn	84,502	0.056	B	N	24	A	7.9	A	N
Gwinnett	**907,135**	**0.072**	**D**	**N**	17	A	8.8	A	N
Hall	196,637	ND	ND	ND	19	A	8.4	A	N
Henry	**221,768**	**0.074**	**D**	N	ND	ND	ND	ND	ND
Houston	152,122	ND	**ND**	ND	19	A	8.6	A	N
Lowndes	114,628	ND	ND	ND	16	A	8.1	A	N
Murray	39,315	0.065	C	N	ND	ND	ND	ND	ND
Muscogee	197,485	ND	ND	ND	20	A	9.4	A	Y
Paulding	155,825	0.063	C	N	16	A	7.8	A	N
Pike	17,941	0.068	C	N	ND	ND	ND	ND	ND
Richmond	201,647	0.062	B	N	22	A	9.6	B	N
Rockdale	**89,355**	**0.074**	**D**	**N**	ND	ND	ND	ND	ND
Sumter	30,389	0.060	B	N	ND	ND	ND	ND	ND
Walker	67,896	ND	ND	ND	19	A	9.6	B	N
Washington	20,457	ND	ND	ND	21	A	8.7	A	Y
Wilkinson	9,104	ND	ND	ND	21	A	9.9	B	N

DV = Design Value ND = No Data MM = Multiple Monitors

GEORGIA

Table GA-2
Population Weighted Design Values

Period	Ozone (ppm)	24-Hour PM-2.5 (µg/m3)	Annual PM-2.5 (µg/m3)
2000 – 2002	**0.092**	**38**	**16.6**
2001 – 2003	**0.086**	**35**	**15.5**
2002 – 2004	**0.086**	**33**	**15.2**
2003 – 2005	**0.082**	**34**	**15.5**
2004 – 2006	**0.085**	**33**	**15.6**
2005 – 2007	**0.083**	**32**	**15.2**
2006 – 2008	**0.085**	**30**	**14.2**
2007 – 2009	**0.080**	**28**	**12.7**
2008 – 2010	**0.075**	**24**	**11.9**
2009 – 2011	**0.075**	**24**	**11.8**
2010 – 2012	**0.076**	**23**	**11.3**
2011 – 2013	**0.073**	**22**	**10.6**
2012 – 2014	**0.070**	**20**	**10.0**
2013 – 2015	**0.067**	**19**	**9.5**
2014 – 2016	**0.069**	**19**	**9.3**

GEORGIA

Table GA-3
People Breathing Ozone

Grade	2000-2002	2002-2004	2004-2006	2006-2008	2008-2010	2010-2012	2011-2013	2012-2014	2013-2015	2014–2016
A	0	0	0	0	0	0	81,508	365,554	0	0
B	305,918	530,252	630,488	333,282	328,345	766,499	693,626	1,358,227	1,387,237	975,379
C	394,704	1,101,318	1,441,241	269,044	2,131,314	929,105	2,384,327	1,617,867	2,005,966	796,902
D	678,225	2,765,326	2,666,456	759,843	2,589,689	2,551,450	2,141,644	1,297,942	1,317,157	2,981,915
F	2,428,518	0	0	3,670,080	0	977,773	0	0	0	0
Subtotal	3,507,365	4,396,896	4,738,185	5,032,248	5,049,348	5,224,827	5,301,105	4,639,590	4,710,360	4,754,196
NM	4,700,891	4,372,356	4,417,628	4,472,595	4,638,305	4,725,118	4,691,062	5,457,753	5,504,500	5,556,175
Total	8,508,256	8,769,252	9,155,813	9,504,843	9,687,653	9,949,945	9,992,167	10,097,343	10,214,860	10,310,371

People Breathing Short-term Particle Pollution (24-Hour PM-2.5)

Grade	2000-2002	2002-2004	2004-2006	2006-2008	2008-2010	2010-2012	2011-2013	2012-2014	203-2015	2014-2016
A	3,864,592	4,783,827	175,462	438,200	3,895,722	5,161,800	5,008,556	5,352,026	5,518,050	5,651,833
B	0	0	1,371,948	3,309,656	0	78,231	0	0	0	0
C	0	0	3,617,823	1,835,993	0	0	0	0	0	0
D	0	0	258,552	0	0	0	0	0	0	0
F	0	0	0	0	0	0	0	0	0	0
Subtotal	3,864,592	4,783,827	5,423,785	5,583,849	3,895,722	5,240,031	5,008,556	5,352,026	5,518,050	5,651,833
NM	4,643,664	3,985,425	3,732,028	3,920,994	5,791,931	4,679,914	4,983,611	4,745,317	4,696,810	4,658,538
Total	8,508,256	8,769,252	9,155,813	9,504,843	9,687,653	9,919,945	9,992,167	10,097,343	10,214,860	10,310,371

People Breathing Year Round Particle Pollution (Annual PM-2.5)

Grade	2000-2002	2002-2004	2004-2006	2006-2008	2008-2010	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016
A	0	71,475	74,870	182,931	1,670,877	4,397,449	524,972	1,840,636	2,949,703	3,821,068
B	93,903	461,051	100,592	1,250,248	2,224,846	842,583	2,594,376	2,515,072	2,568,348	1,830,765
C	506,868	1,552,470	1,666,256	3,811,379	0	0	1,532,539	996,319	0	0
D	1,129,058	2,825,174	2,823,670	339,291	0	0	356,670	0	0	0
F	2,134,764	404,741	758,398	0	0	0	0	0	0	0
Subtotal	3,864,592	5,314,910	5,423,785	5,583,849	3,895,722	5,240,031	5,008,556	5,352,026	5,518,050	5,651,833
NM	4,643,664	3,454,342	3,732,028	3,620,994	5,791,931	4,679,914	4,983,611	4,745,317	4,696,810	4,658,538
Total	8,508,256	8,769,252	9,155,813	9,504,843	9,687,653	9,919,945	9,992,167	10,097,343	10,214,860	10,310,371

NM = Not Monitored

Figure GA-1

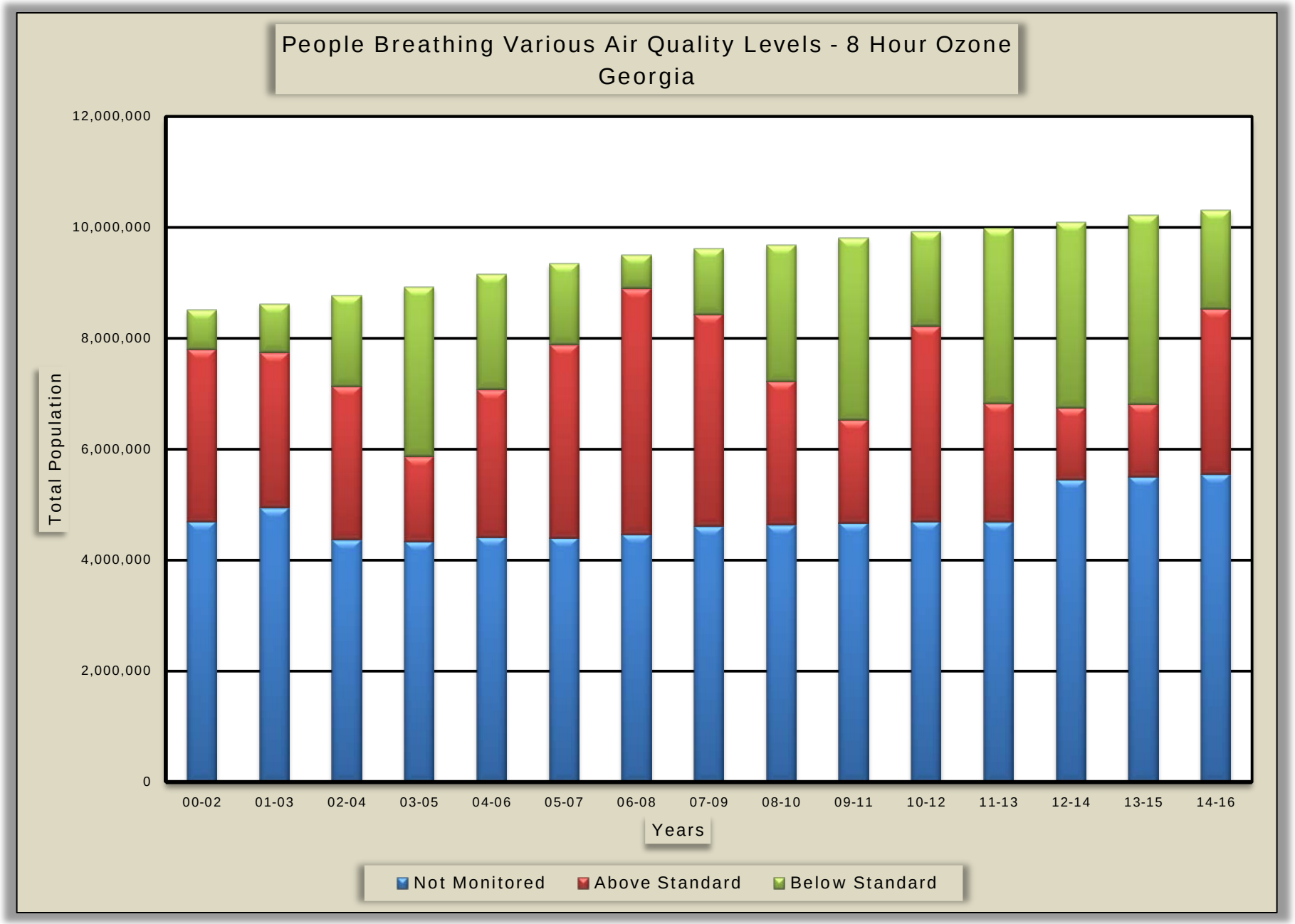
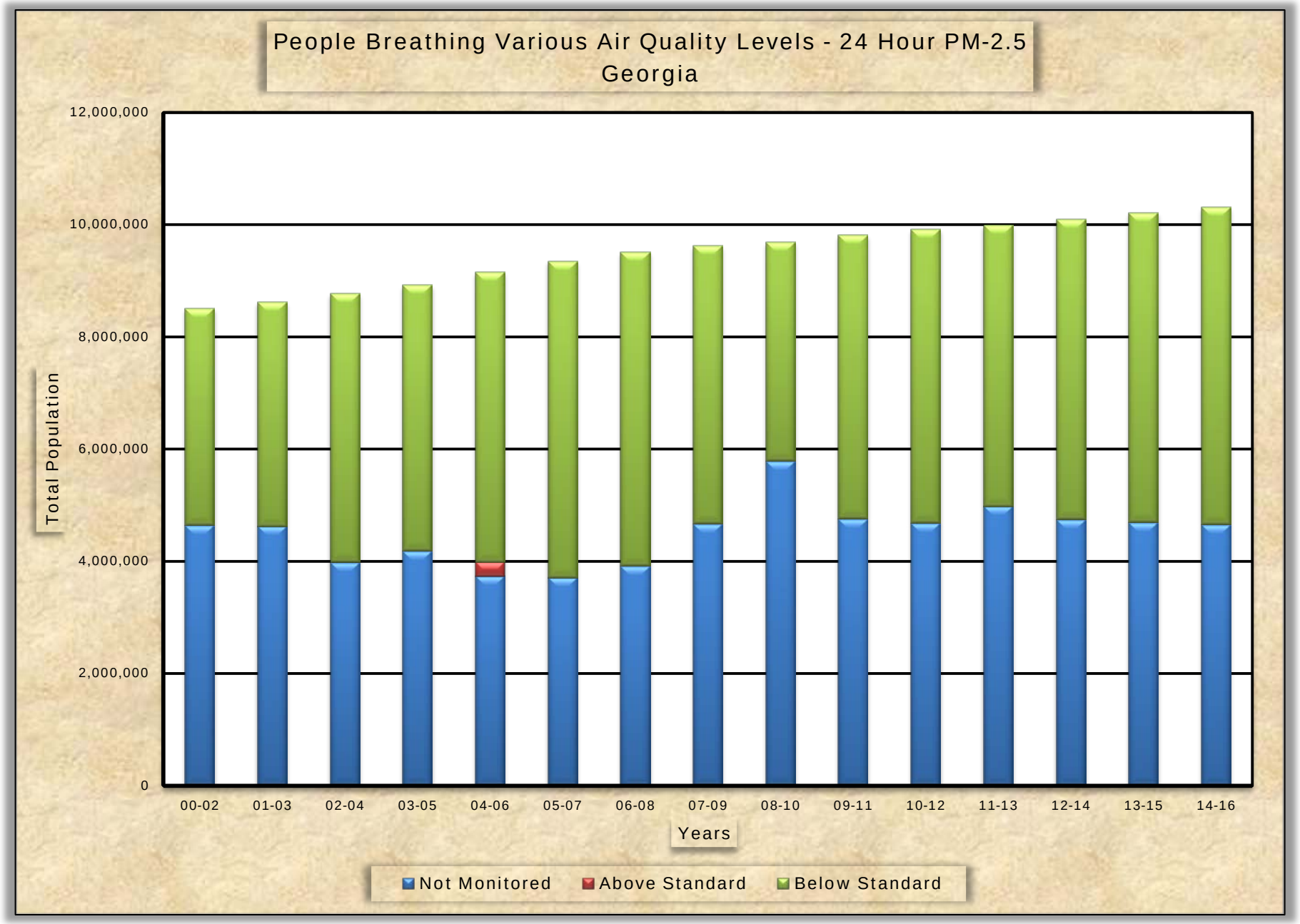

People Breathing Various Air Quality Levels - 8 Hour Ozone
Georgia
12,000,000
10,000,000
8,000,000
6,000,000
4,000,000
2,000,000
0
Total Population
00-02
01-03
02-04
03-05
04-06
05-07
06-08
07-09
08-10
09-11
10-12
11-13
12-14
13-15
14-16
Years
Not Monitored
Above Standard
Below Standard

Figure GA-2


People Breathing Various Air Quality Levels - 24 Hour PM-2.5
Georgia
12,000,000
10,000,000
8,000,000
6,000,000
4,000,000
2,000,000
0
Total Population
00-02
01-03
02-04
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04-06
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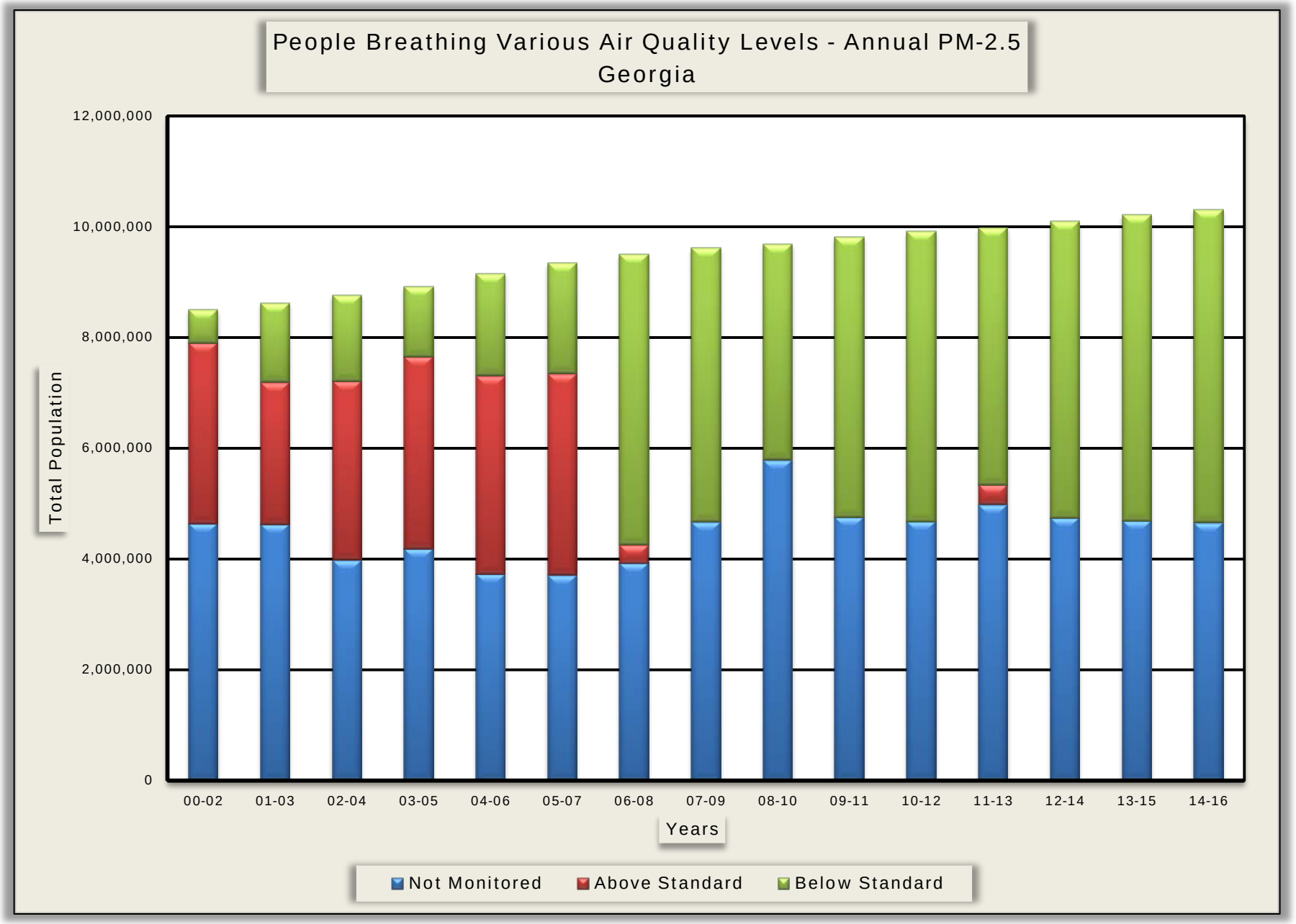
12-14
13-15
14-16
Years
Not Monitored
Above Standard
Below Standard

Figure GA-3


People Breathing Various Air Quality Levels - Annual PM-2.5
Georgia
Total Population
12,000,000
10,000,000
8,000,000
6,000,000
4,000,000
2,000,000
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09-11
10-12
11-13
12-14
13-15
14-16
Years
Not Monitored
Above Standard
Below Standard

HAWAII

Ozone

Ozone levels in Hawaii have historically been better than the standard. In the 2000 – 2002 time period, approximately 1.0 million people (84.3%) lived in counties that met the ozone standard. By 2013 – 2015 this was a little under 1.0 million people (69.8%). All people in both years either lived in counties with air quality rated as A or lived in counties where ozone was not measured. The ozone standard was lowered from 0.085 ppm to 0.070 ppm. Figure HI-1 shows the distribution of people by year. The population weighted ozone design value in 2000 – 2002 was 0.043 ppm. By 2013 – 2015 this had increased to a value of 0.051 ppm, an increase of 18.6 percent.

24-Hour PM-2.5

24-hour PM-2.5 levels in Hawaii have historically been better than the standard. In the 2000 – 2002 time period, approximately 1.0 million people (82.7%) lived in counties where 24-hour PM-2.5 levels met the standard. By 2013 - 2015 this was approximately 1.4 million people (99.9%). All people in both years either lived in counties with air quality rated as A or lived in counties where PM-2.5 was not measured. The standard was lowered from 65 µg/m3 to 35 µg/m3. Figure HI-2 shows the distribution of people by year. The population weighted 24-hour PM-2.5 design value in 2000 – 2002 was 10 µg/m3. By 2013 – 2015 this had increased to a value of 11 µg/m3, a 10.0 percent increase.

Annual PM-2.5

Annual PM-2.5 levels in Hawaii have historically been better than the standard. In the 2000 – 2002 time period, approximately 1.0 million people (82.7%) lived in counties where annual PM-2.5 levels met the standard. By 2013 – 2015 this had increased to approximately 1.4 million people (99.9%). All people in both years either lived in counties with air quality rated as A or lived in counties where PM-2.5 was not measured. The standard was lowered from 15 µg/m3 to 12 µg/m3. Figure HI-3 shows the distribution of people by year. The population weighted annual PM-2.5 design value in 2000 – 2002 was 4.5 µg/m3. By 2013 – 2015 this had increased to a value of 5.2 µg/m3, an increase of 15.6 percent.

Table HI-1
2014 – 2016

		Ozone			Particle Pollution (PM-2.5)				
County	Population	Avg. DV	Grade	MM	Avg. 24-Hr DV	Grade	Avg. Ann DV	Grade	MM
Hawaii	198,449	ND	ND	ND	12	A	6.9	A	Y
Honolulu	992,605	0.051	A	N	11	A	4.3	A	Y
Kauai	72,029	ND	ND	ND	10	A	3.7	A	N
Maui	165,386	ND	ND	ND	13	A	4.8	A	N

DV = Design Value ND = No Data MM = Multiple Monitors

HAWAII

Table HI-2
Population Weighted Design Values

Period	Ozone (ppm)	24-Hour PM-2.5 (µg/m3)	Annual PM-2.5 (µg/m3)
2000 – 2002	0.043	10	4.5
2001 – 2003	0.041	10	4.7
2002 – 2004	0.042	9	4.6
2003 – 2005	0.042	9	4.2
2004 – 2006	0.042	8	4.1
2005 – 2007	0.038	9	4.0
2006 – 2008	0.038	10	4.2
2007 – 2009	0.040	12	4.3
2008 – 2010	0.045	13	4.4
2009 – 2011	0.047	12	5.8
2010 – 2012	0.045	13	6.0
2011 – 2013	0.045	13	5.9
2012 – 2014	0.049	12	5.5
2013 – 2015	0.051	11	5.2
2014 – 2016	0.051	11	4.7

HAWAII

Table HI-3
People Breathing Ozone

Grade	2000-2002	2002-2004	2004-2006	2006-2008	2008-2010	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016
A	1,045,049	907,997	926,954	933,680	953,207	976,372	983,429	991,788	998,714	992,605
B	0	0	0	0	0	0	0	0	0	0
C	0	0	0	0	0	0	0	0	0	0
D	0	0	0	0	0	0	0	0	0	0
F	0	0	0	0	0	0	0	0	0	0
Subtotal	1,045,049	907,997	926,954	933,680	953,207	976,372	983,429	991,788	998,714	992,605
NM	194,564	365,572	382,777	398,533	407,094	415,941	420,625	427,773	432,889	435,952
Total	1,239,613	1,273,569	1,309,731	1,332,213	1,360,301	1,392,313	1,404,054	1,419,561	1,431,603	1,428,557

People Breathing Short-term Particle Pollution (24-Hour PM-2.5)

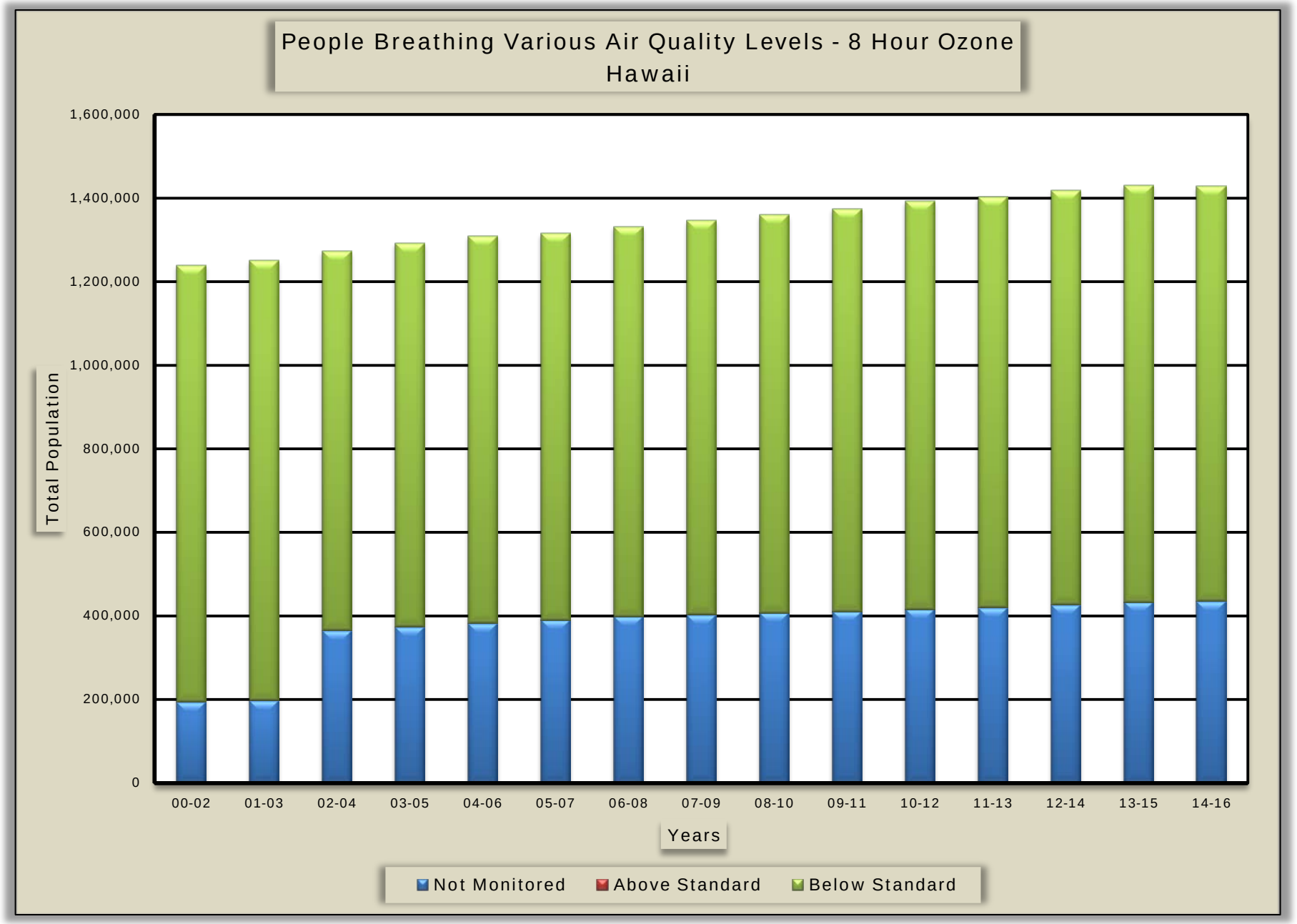
Grade	2000-2002	2002-2004	2004-2006	2006-2008	2008-2010	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016
A	1,024,923	1,048,505	1,072,621	933,680	953,207	1,322,789	1,334,452	1,256,450	1,431,514	1,428,469
B	0	0	0	0	0	0	0	0	0	0
C	0	0	0	0	0	0	0	0	0	0
D	0	0	0	0	0	0	0	0	0	0
F	0	0	0	0	0	0	0	0	0	0
Subtotal	1,024,923	1,048,505	1,072,621	933,680	953,207	1,323,789	1,334,452	1,256,453	1,431,514	1,428,469
NM	214,690	225,064	237,110	398,533	407,094	68,524	59,602	163,108	89	88
Total	1,239,613	1,273,569	1,309,731	1,332,213	1,360,301	1,392,313	1,404,054	1,419,561	1,431,603	1,428,557

People Breathing Year Round Particle Pollution (Annual PM-2.5)

Grade	2000-2002	2002-2004	2004-2006	2006-2008	2008-2010	2010-2012	2011-2013	2012-2014	2013-2015	2014-2106
A	1,024,923	1,048,505	1,072,621	933,680	953,207	1,323,789	1,296,288	1,217,615	1,431,514	1,428,469
B	0	0	0	0	0	0	0	0	0	0
C	0	0	0	0	0	0	38,164	38,838	0	0
D	0	0	0	0	0	0	0	0	0	0
F	0	0	0	0	0	0	0	0	0	0
Subtotal	1,024,923	1,043,505	1,072,621	933,680	953,207	1,323,789	1,334,452	1,256,453	1,431,514	1,428,469
NM	214,690	225,064	237,110	398,533	407,094	68,524	69,602	163,108	89	88
Total	1,239,613	1,273,569	1,309,731	1,332,213	1,360,301	1,392,313	1,404,054	1,419,561	1,431,603	1,428,557

NM = Not Monitored

Figure HI-1


People Breathing Various Air Quality Levels - 8 Hour Ozone
Hawaii
Total Population
1,600,000
1,400,000
1,200,000
1,000,000
800,000
600,000
400,000
200,000
0
00-02
01-03
02-04
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06-08
07-09
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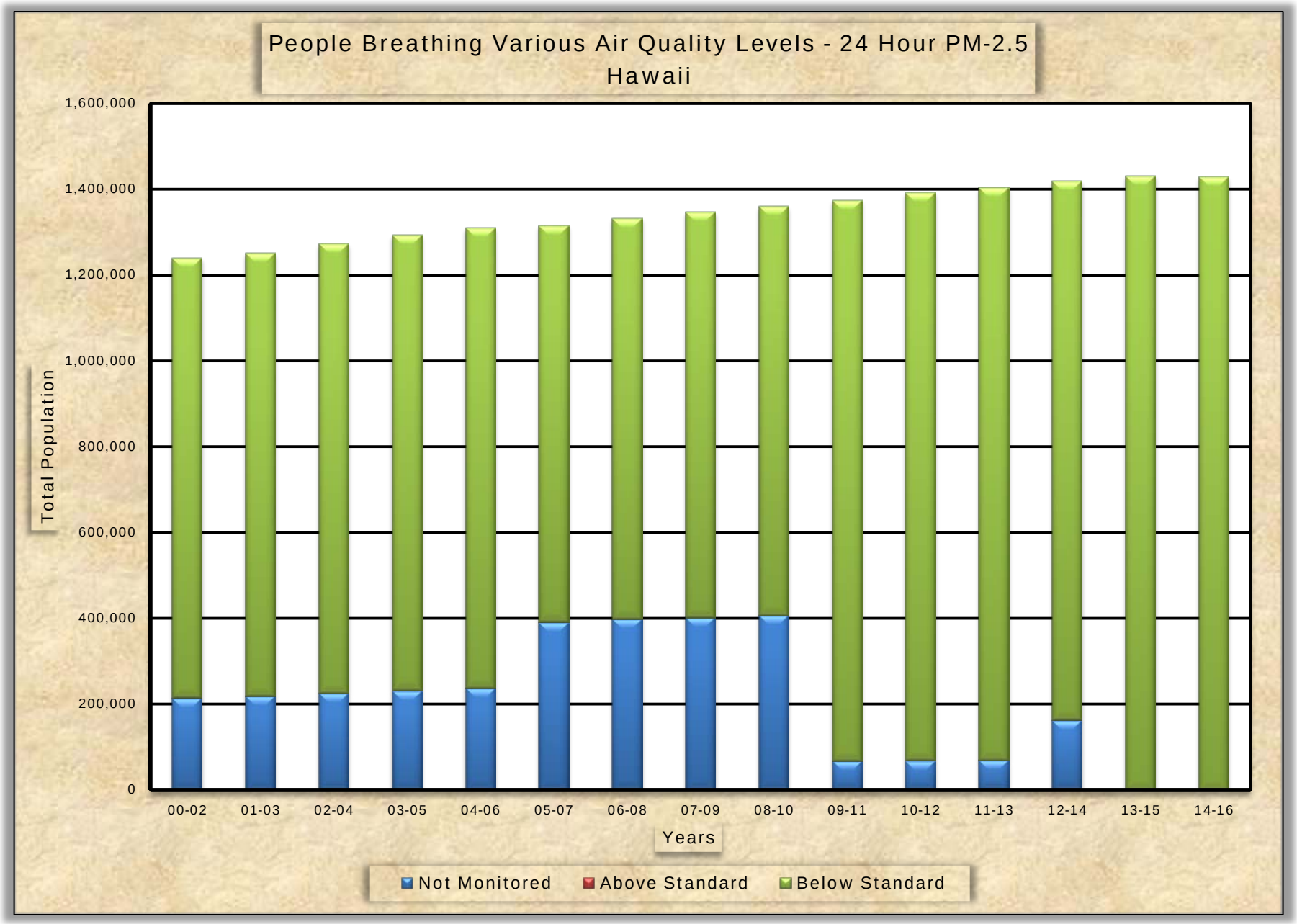
10-12
11-13
12-14
13-15
14-16
Years
Not Monitored
Above Standard
Below Standard

Figure HI-2


People Breathing Various Air Quality Levels - 24 Hour PM-2.5
Hawaii
1,600,000
1,400,000
1,200,000
1,000,000
800,000
600,000
400,000
200,000
0
Total Population
00-02
01-03
02-04
03-05
04-06
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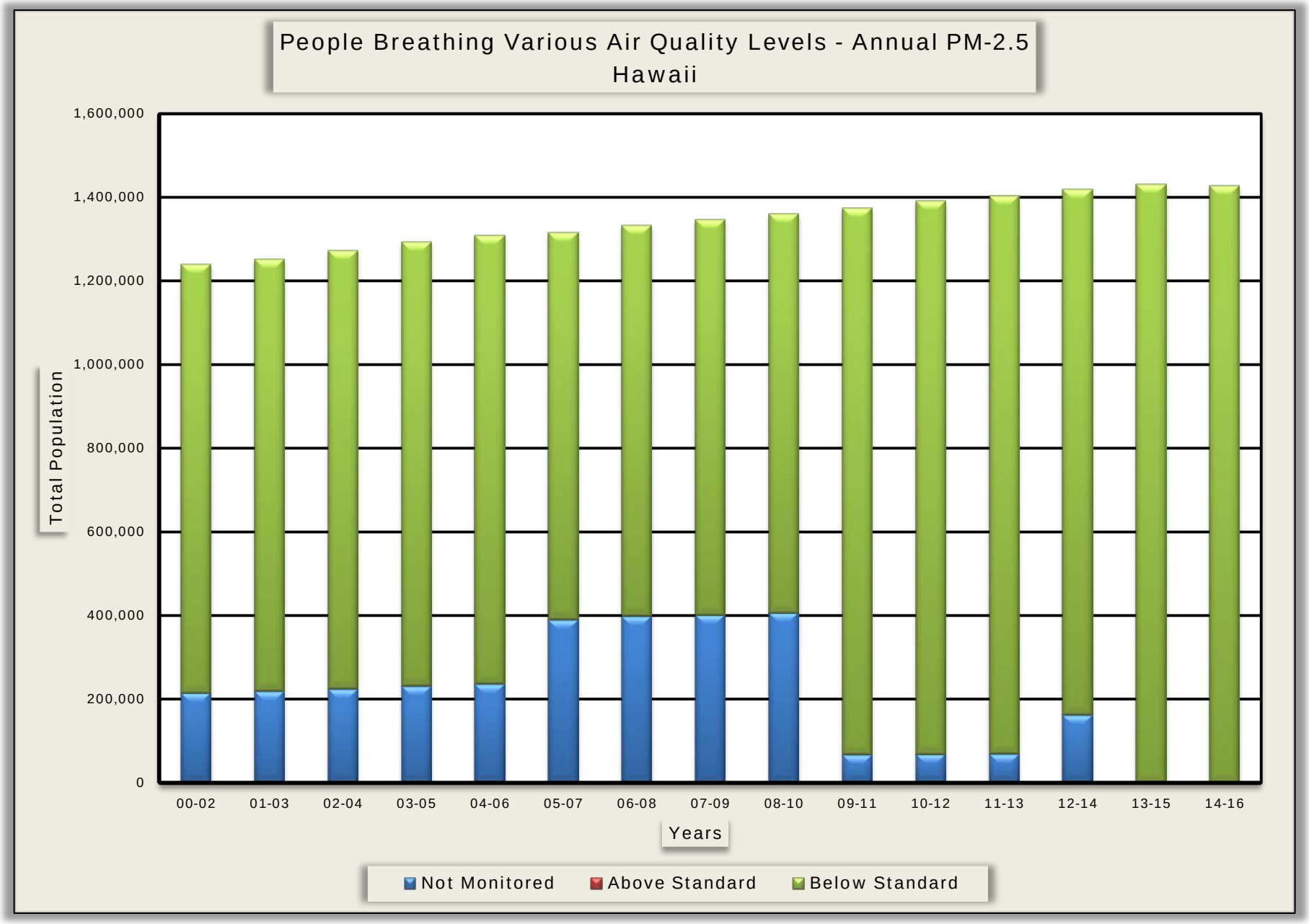
11-13
12-14
13-15
14-16
Years
Not Monitored
Above Standard
Below Standard

Figure HI-3


People Breathing Various Air Quality Levels - Annual PM-2.5
Hawaii
Total Population
1,600,000
1,400,000
1,200,000
1,000,000
800,000
600,000
400,000
200,000
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00-02
01-03
02-04
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05-07
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09-11
10-12
11-13
12-14
13-15
14-16
Years
Not Monitored
Above Standard
Below Standard

IDAHO

Ozone

In the 2000 – 2002 time period, no people lived in counties that met the ozone standard. By 2014 – 2016 this had increased to approximately 450,000 people (26.5%) and the rest of the population lived in areas where ozone is not monitored. The ozone standard was lowered from 0.085 ppm to 0.070 ppm. Figure ID-1 shows the distribution of people by year. The population weighted ozone design value in 2000 – 2002 was 0.071 ppm. By 2014 – 2016 this had lowered to a value of 0.065 ppm, a reduction of 8.5 percent.

24-Hour PM-2.5

In the 2000 – 2002 time period, approximately 0.7 million people (50.3%) lived in counties where 24-hour PM-2.5 levels met the standard. By 2014 – 2016 this was approximately 93,000 people (5.6%). The standard was lowered from 65 µg/m3 to 35 µg/m3. Figure ID-2 shows the distribution of people by year. The population weighted 24-hour PM-2.5 design value in 2000 – 2002 was 29 µg/m3. By 2014 – 2016 this had lowered to a value of 20 µg/m3, a reduction of 31.0 percent.

Annual PM-2.5

In the 2000 – 2002 time period, approximately 675,000 people (50.3%) lived in counties where annual PM-2.5 levels met the standard. By 2014 – 2016 this was approximately 93,000 people (5.6%). The standard was lowered from 15 µg/m3 to 12 µg/m3. Figure ID-3 shows the distribution of people by year. The population weighted annual PM-2.5 design value in 2000 – 2002 was 8.2 µg/m3. By 2014 - 2016 this was 7.0 µg/m3, a reduction of 14.7 percent.

Table ID-1
2014 – 2016

		Ozone			Particle Pollution (Pm-2.5)				
County	Population	Avg. DV	Grade	MM	Avg. 24-Hr DV	Grade	Avg. Ann DV	Grade	MM
Ada	444,028	0.065	C	Y	ND	ND	ND	ND	ND
Bannock	84,327	ND	ND	ND	18	A	6.9	A	N
Benewah	9,092	ND	ND	ND	29	B	8.2	A	N
Butte	2,501	0.060	B	N	ND	ND	ND	ND	ND

DV = Design Value ND = No Data MM = Multiple Monitors

IDAHO

Table ID-2
Population Weighted Design Values

Period	Ozone (ppm)	24-Hour PM-2.5 (µg/m3)	Annual PM-2.5 (µg/m3)
2000 – 2002	ND	29	8.2
2001 – 2003	ND	34	9.6
2002 – 2004	0.071	34	9.0
2003 – 2005	0.071	29	8.4
2004 – 2006	0.077	31	8.5
2005 – 2007	0.074	28	8.4
2006 – 2008	0.072	31	10.8
2007 – 2009	0.060	31	10.9
2008 – 2010	0.067	36	11.1
2009 – 2011	0.063	19	8.2
2010 – 2012	0.067	20	6.7
2011 – 2013	0.067	39	8.8
2012 – 2014	0.066	28	8.6
2013 – 2015	0.064	22	8.2
2014 – 2016	0.065	19	7.0

IDAHO

Table ID-3
People Breathing Ozone

Grade	2000-2002	2002-2004	2004-2006	2006-2008	2008-2010	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016
A	0	29,167	0	0	0	0	0	0	0	0
B	0	292,056	0	135,627	141,385	411,801	419,106	215,740	2,501	2,501
C	0	0	363.498	382,618	392,365	0	0	213,118	434,211	444,028
D	0	0	0	0	0	0	0	0	0	0
F	0	0	0	0	0	0	0	0	0	0
Subtotal	0	321,223	363,498	518,245	533,750	411,801	419,106	428,858	436,712	446,529
NM	1,340,372	1,070,579	1,105,171	1,016,075	1,033,832	1,183,927	1,193,030	1,205,606	1,218,218	1,236,611
Total	1,340,372	1,391,802	1,468,669	1,534,320	1,567,582	1,595,728	1,612,136	1,634,464	1,654,930	1,683,140

People Breathing Short-term Particle Pollution (24-Hour PM-2.5)

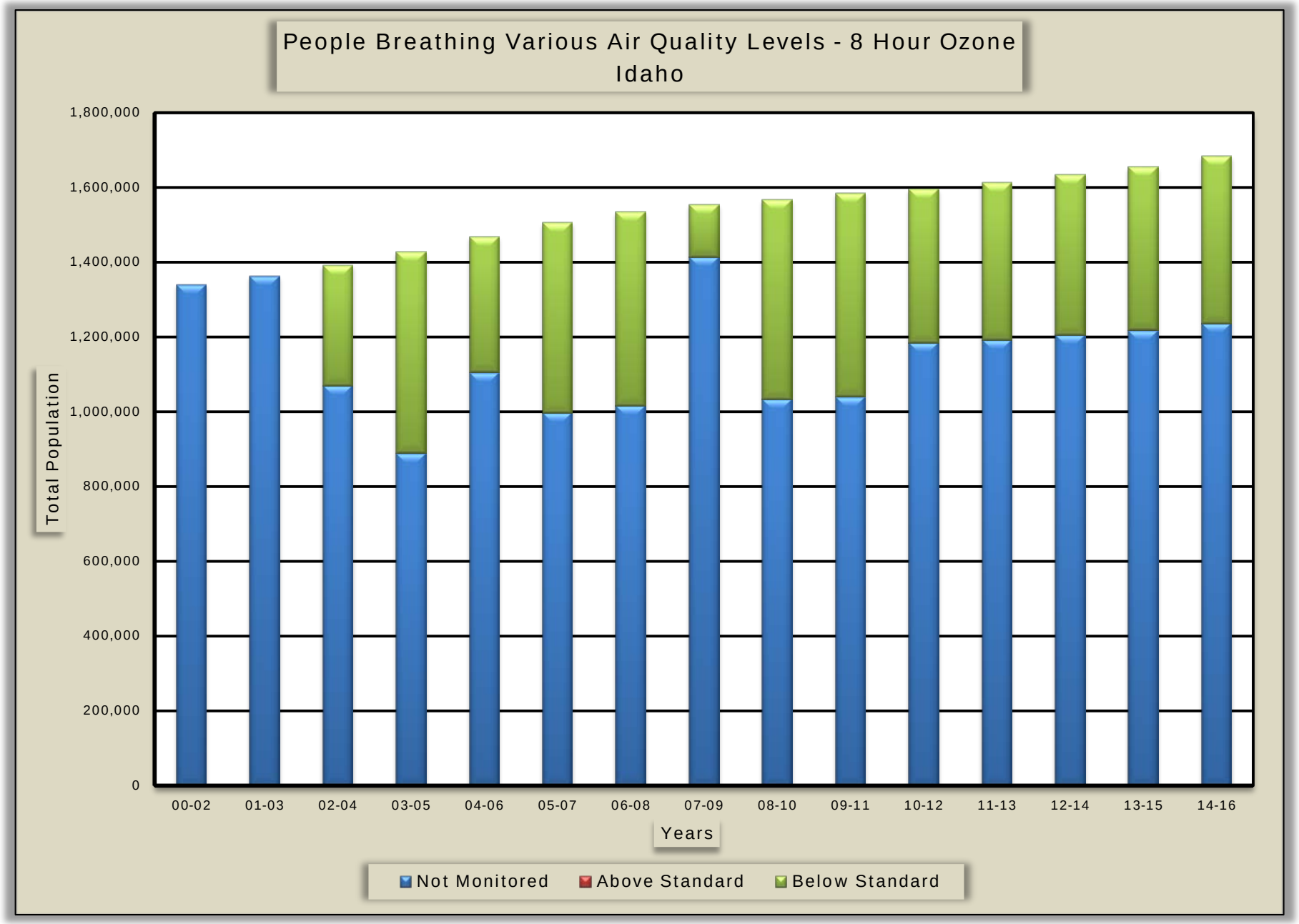
Grade	2000-2002	2002-2004	2004-2006	2006-2008	2008-2010	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016
A	674,835	177,343	0	0	0	686,749	83,249	83,347	83,744	84,377
B	0	0	623,437	9,385	0	0	207,915	0	0	9,092
C	0	0	0	13,031	7,936	0	0	0	0	0
D	0	0	0	0	12,765	7,758	14,139	7,726	0	0
F	0	0	13,014	0	0	12,702	422,891	3,021	7,735	0
Subtotal	674,835	177,343	636,451	22,416	20,701	707,209	728,194	104,094	91,479	93,469
NM	665,537	1,214,459	832,218	1,511,904	1,546,881	888,519	883,942	1,530,370	1,563,451	1,589,671
Total	1,340,372	1,391,802	1,468,669	1,534,320	1,567,582	1,595,728	1,612,136	1,634,464	1,654,930	1,683,140

People Breathing Year Round Particle Pollution (Annual PM-2.5)

Grade	2000-2002	2002-2004	2004-2006	2006-2008	2008-2010	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016
A	654,420	164,562	623,437	22,416	20,701	694,507	512,567	96,368	83,744	93,469
B	13,044	12,781	13,014	0	0	12,702	207,915	0	0	0
C	7,371	0	0	0	0	0	7,712	7,726	0	0
D	0	0	0	0	0	0	0	0	0	0
F	0	0	0	0	0	0	0	0	7,735	0
Subtotal	674,835	177,343	636,451	22,416	20,701	707,209	728,194	104,094	91,479	93,469
NM	665,537	1,214,459	832,218	1,511,904	1,546,881	888,519	883,942	1,530,370	1,563,451	1,589,671
Total	1,340,372	1,391,802	1,468,669	1,534,320	1,567,582	1,595,728	1,612,136	1,634,464	1,654,930	1,683,140

NM = Not Monitored

Figure ID-1


People Breathing Various Air Quality Levels - 8 Hour Ozone
Idaho
Total Population
1,800,000
1,600,000
1,400,000
1,200,000
1,000,000
800,000
600,000
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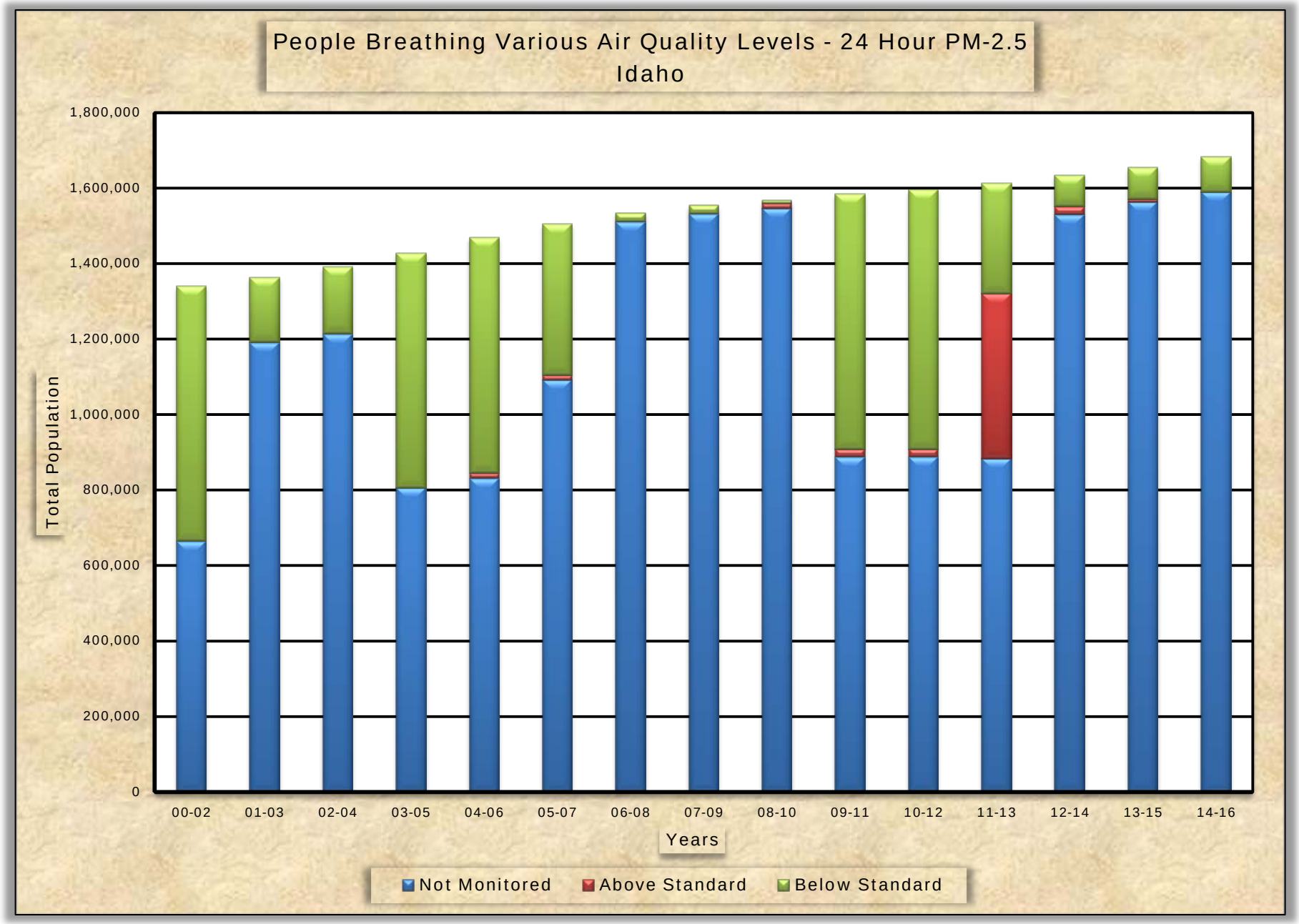
14-16
Years
Not Monitored
Above Standard
Below Standard

Figure ID-2


People Breathing Various Air Quality Levels - 24 Hour PM-2.5
Idaho
Total Population
1,800,000
1,600,000
1,400,000
1,200,000
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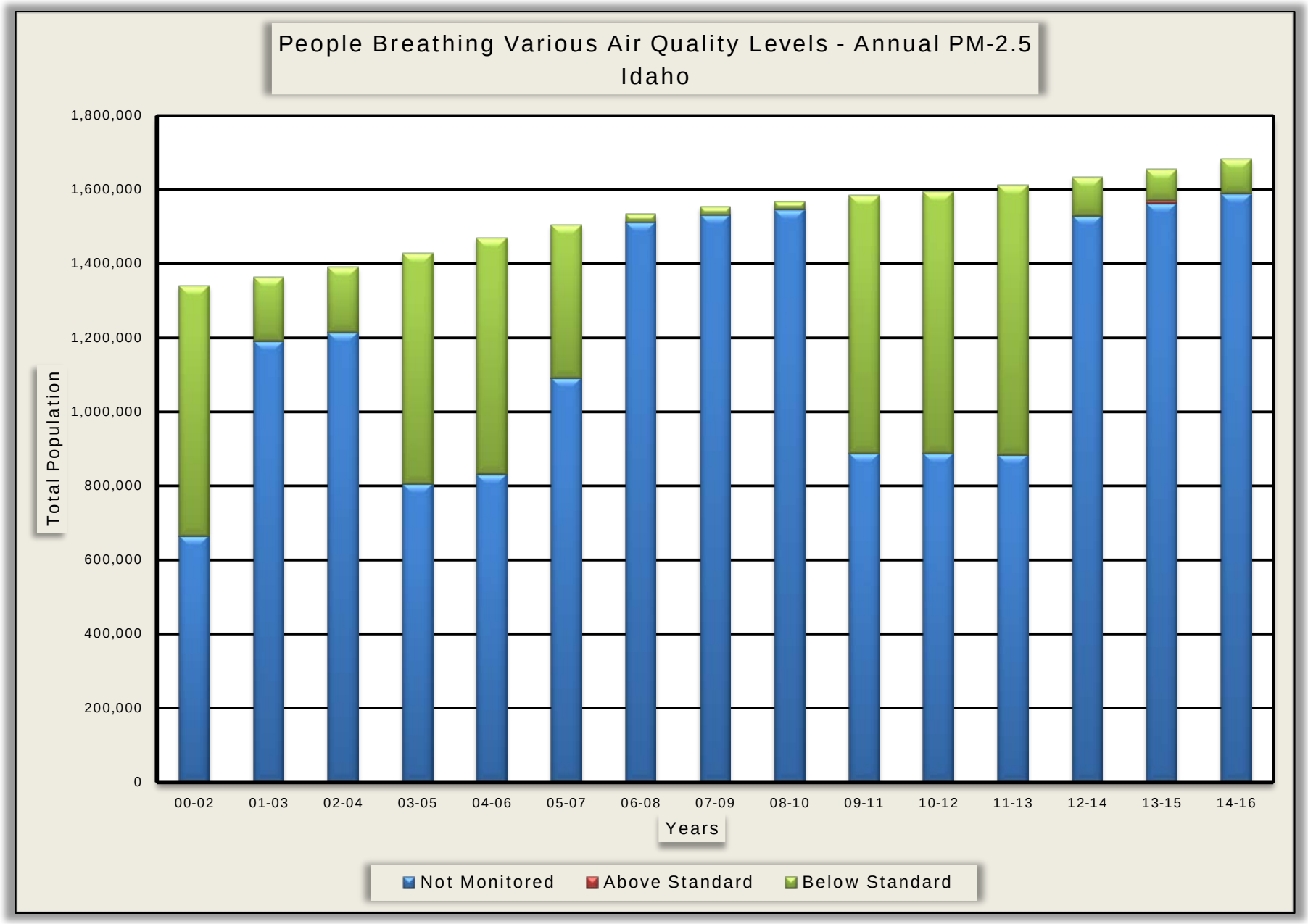
Years
Not Monitored
Above Standard
Below Standard

Figure ID-3


People Breathing Various Air Quality Levels - Annual PM-2.5
Idaho
Total Population
1,800,000
1,600,000
1,400,000
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09-11
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11-13
12-14
13-15
14-16
Years
Not Monitored
Above Standard
Below Standard

ILLINOIS

Ozone

In the 2000 – 2002 time period, approximately 9.2 million people (73.2%) lived in counties that met the ozone standard. By 2014 – 2016 this had decreased to 8.6 million people (66.9%). The ozone standard was lowered from 0.085 ppm to 0.070 ppm. Figure IL-1 shows the distribution of people by year. The population weighted ozone design value in 2000 – 2002 was 0.077 ppm. By 2014 – 2016 this had lowered to a value of 0.069, a reduction of 10.4 percent.

24-Hour PM-2.5

In the 2000 – 2002 time period, approximately 10.2 million people (81.2%) lived in counties where 24-hour PM-2.5 levels met the standard. Data for 2012 and 2013 have been removed. By 2014 -2016 this had lowered to a value of 7.7 million people (60.0%). The standard was lowered from 65 µg/m3 to 35 µg/m3. Figure IL-2 shows the distribution of people by year. The population weighted 24-hour PM-2.5 design value in 2000 -2002 was 36 µg/m3. By 2014 – 2016 this had lowered to a value of 21 µg/m3, a reduction of 41.7 percent.

Annual PM-2.5

In the 2000 – 2002 time period, approximately 3.5 million people (27.6%) lived in counties where annual PM-2.5 levels met the standard. Data for 2012 and 2013 have been removed. By 2014 – 2016 this had increased to 7.7 million people (60.0%). The standard was lowered from 15 µg/m3 to 12 µg/m3. Figure IL-3 shows the distribution of people by year. The population weighted annual PM-2.5 design value in 2000 – 2002 was 15.5 µg/m3. By 2014 – 2016 this had lowered to 9.5 µg/m3, a reduction of 38.7 percent.

ILLINOIS

Table IL-1
2014 – 2016

		Ozone			Particle Pollution (PM-2.5)				
County	Population	Avg. DV	Grade	MM	Avg. 24-Hr DV	Grade	Avg. Ann DV	Grade	MM
Adams	66,578	0.062	B	N	ND	ND	ND	ND	ND
Champaign	208,419	0.064	C	Y	18	A	8.7	A	Y
Clark	15,938	0.064	C	N	ND	ND	ND	ND	ND
Cook	5,203,499	0.068	C	N	22	A	9.9	B	Y
DuPage	929,368	0.068	C	N	19	A	8.8	A	N
Effingham	34,386	0.064	C	N	ND	ND	ND	ND	ND
Hamilton	8,061	0.065	C	N	22	A	8.6	A	N
Jersey	22,025	0.068	C	N	ND	ND	ND	ND	ND
Jo Daviess	21,770	0.065	C	N	ND	ND	ND	ND	ND
Kane	531,715	0.068	C	N	ND	ND	ND	ND	ND
Lake	**703,047**	**0.073**	**D**	N	ND	ND	ND	ND	ND
McHenry	307,004	0.068	C	N	ND	ND	ND	ND	ND
McLean	172,418	0.064	C	N	18	A	7.8	A	N
Macon	106,550	0.066	C	N	ND	ND	ND	ND	ND
Macoupin	45,908	0.064	C	N	ND	ND	ND	ND	ND
Madison	265,759	0.069	C	Y	21	A	9.7	B	Y
Peoria	185,006	0.064	C	Y	ND	ND	ND	ND	ND
Randolph	32.621	0.067	C	N	ND	ND	ND	ND	ND
Rock Island	144,784	0.062	B	N	ND	ND	ND	ND	ND
Saint Clair	262,759	0.068	C	N	ND	ND	ND	ND	ND
Sangamon	197,499	0.063	C	N	20	A	8.9	A	N
Will	689,529	0.064	C	N	20	A	8.4	A	N
Winnebago	285,873	0.068	C	N	ND	ND	ND	ND	ND

DV = Design Value ND = No Data MM = Multiple Monitors

ILLINOIS

Table IL-2
Population Weighted Design Values

Period	Ozone (ppm)	24-Hour PM-2.5 (µg/m3)	Annual PM-2.5 (µg/m3)
2000 – 2002	0.077	36	15.5
2001 – 2003	0.079	36	14.9
2002 – 2004	0.075	34	13.9
2003 – 2005	0.073	37	14.2
2004 – 2006	0.071	35	13.8
2005 – 2007	0.074	36	14.1
2006 – 2008	0.069	31	12.8
2007 – 2009	0.067	30	12.0
2008 – 2010	0.065	27	11.3
2009 – 2011	0.068	27	11.2
2010 – 2012	0.073	ND	ND
2011 – 2013	0.072	ND	ND
2012 – 2014	0.070	ND	ND
2013 – 2015	0.065	ND	ND
2014 – 2016	0.068	21	9.5

ILLINOIS

Table IL-3
People Breathing Ozone

Grade	2000-2002	2002-2004	2004-2006	2006-2008	2008-2010	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016
A	0	147,291	1,208,362	0	713,036	147,457	0	0	0	0
B	3,945,254	5,930,855	8,481,598	4,745,572	6,495,884	1,251,722	275,780	2,411,741	2,360,284	731,712
C	5,225,664	4,146,578	552,345	4,798,660	2,984,542	5,661,190	7,774,903	6,109,204	7,357,222	7,832,178
D	841,813	0	0	737,489	0	3,172,282	2,422,167	1,959,918	770,462	1,876,626
F	0	0	0	0	0	0	0	0	0	0
Subtotal	10,012,781	10,224,723	10,242,305	10,281,721	10,193,462	10,232,652	10,472,849	10,480,863	10,482,968	10,440,516
NM	2,512,825	2,365,050	2,401,650	2,465,317	2,637,170	2,642,603	2,409,286	2,399,717	2,372,027	2,361,023
Total	12,525,556	12,589,773	12,643,995	12,747,038	12,830,632	12,875,255	12,882,135	12,880,580	12,859,995	12,801,539

People Breathing Short-term Particle Pollution (24-Hour PM-2.5)

Grade	2000-2002	2002-2004	2004-2006	2006-2008	2008-2010	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016
A	10,167,076	10,206,134	33,688	1,526,684	3,742,726	0	0	0	0	7,674,552
B	0	0	2,189,335	6,339,604	5,801,620	0	0	0	0	0
C	0	0	4,448,045	2,397,936	865,779	0	0	0	0	0
D	0	0	1,424,456	0	0	0	0	0	0	0
F	0	0	2,152,290	0	0	0	0	0	0	0
Subtotal	10,167,076	10,206,134	10,247,813	10,264,223	10,410,125	0	0	0	0	7,674,552
NM	2,358,480	2,383,639	2,396,142	2,482,815	2,420,507	12,875,255	12,882,135	12,880,580	12,859,995	5,126,987
Total	12,525,556	12,589,773	12,643,955	12,747,038	12,830,632	12,875,255	12,882,135	12,880,580	12,859,995	12,801,539

People Breathing Year Round Particle Pollution (Annual PM-2.5)

Grade	2000-2002	2002-2004	2004-2006	2006-2008	2008-2010	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016
A	0	1,604,607	1,162,412	3,592,806	7,773,660	0	0	0	0	4,072,673
B	1,292,550	2,845,352	3,342,528	3,348,269	2,501,824	0	0	0	0	3,601,879
C	2,166,042	4,443,803	3,756,237	3,233,738	134,641	0	0	0	0	0
D	3,951,763	1,180,511	1,427,096	89,411	0	0	0	0	0	0
F	2,756,721	131,861	563,540	0	0	0	0	0	0	0
Subtotal	10,167,076	10,206,134	10,247,813	10,264,223	10,410,125	0	0	0	0	7,674,552
NM	2,358,480	2,383,639	2,396,142	2,482,815	2,420,507	12,875,255	12,882,135	12,880,580	12,859,995	5,126,987
Total	12,525,556	12,589,773	12,643,955	12,747,038	12,830,632	12,875,255	12,882,135	12,880,580	12,859,995	12,801,539

NM = Not Monitored

Figure IL-1

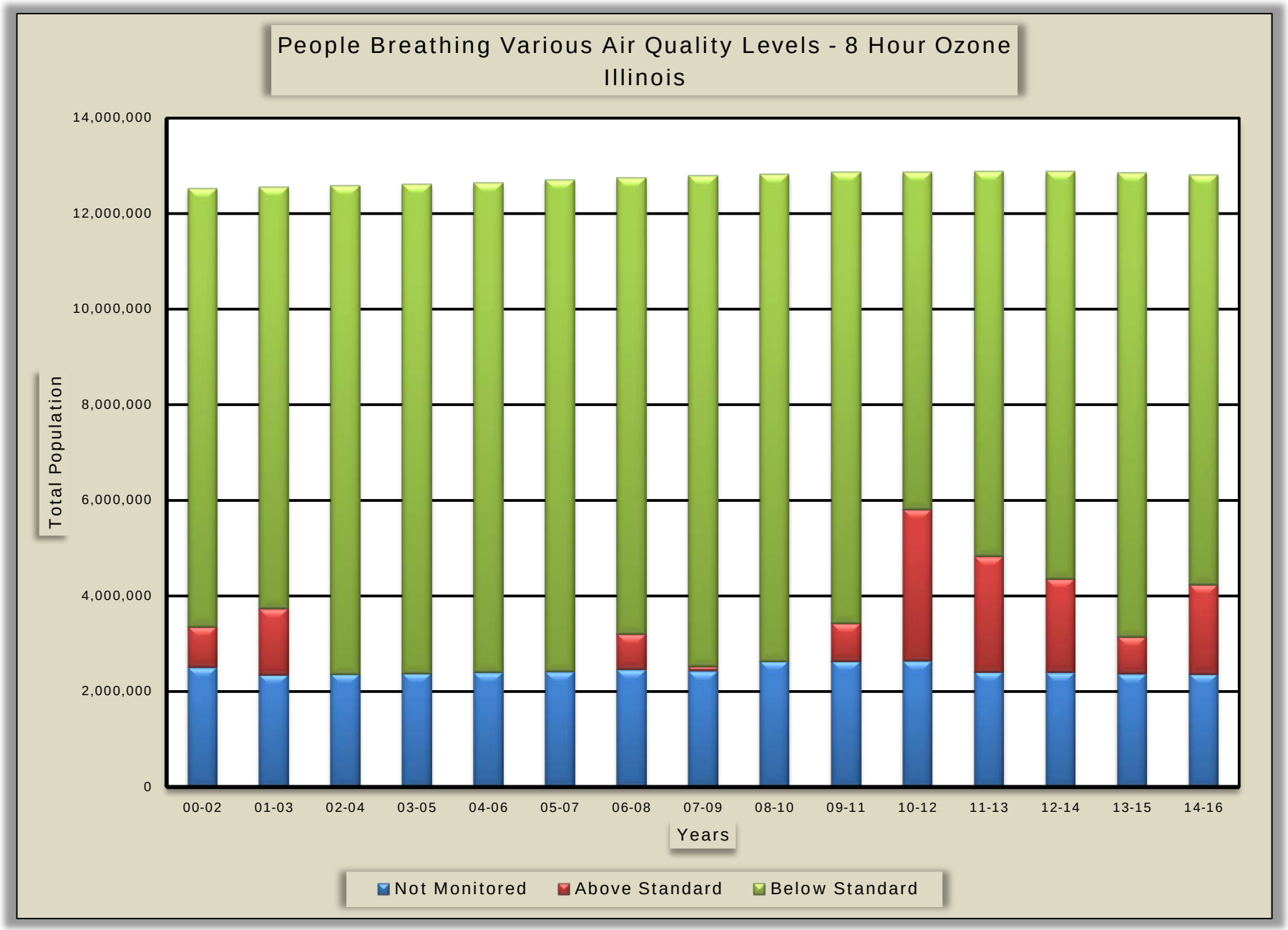
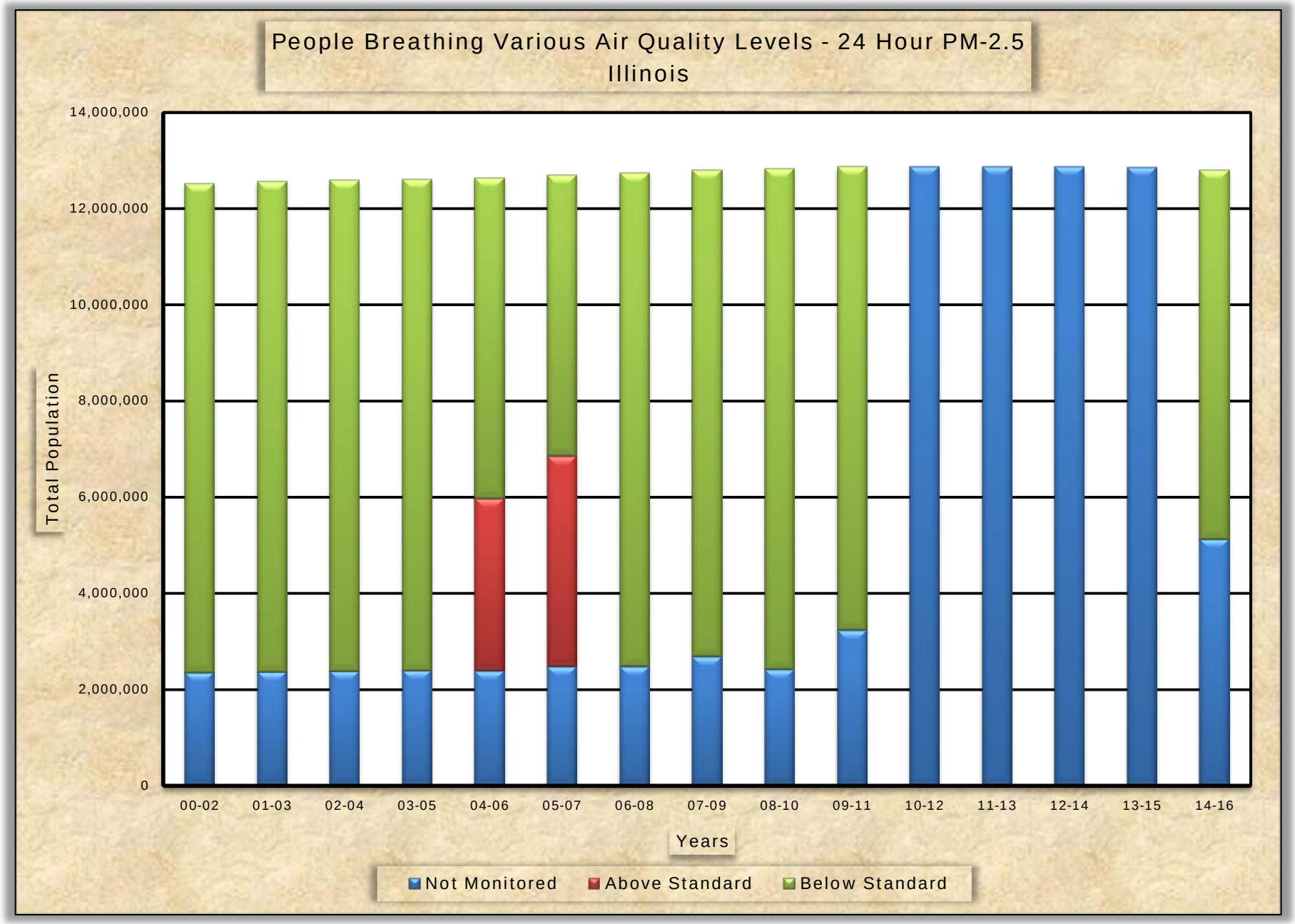

People Breathing Various Air Quality Levels - 8 Hour Ozone
Illinois
Total Population
14,000,000
12,000,000
10,000,000
8,000,000
6,000,000
4,000,000
2,000,000
0
00-02
01-03
02-04
03-05
04-06
05-07
06-08
07-09
08-10
09-11
10-12
11-13
12-14
13-15
14-16
Years
Not Monitored
Above Standard
Below Standard

Figure IL-2


People Breathing Various Air Quality Levels - 24 Hour PM-2.5
Illinois
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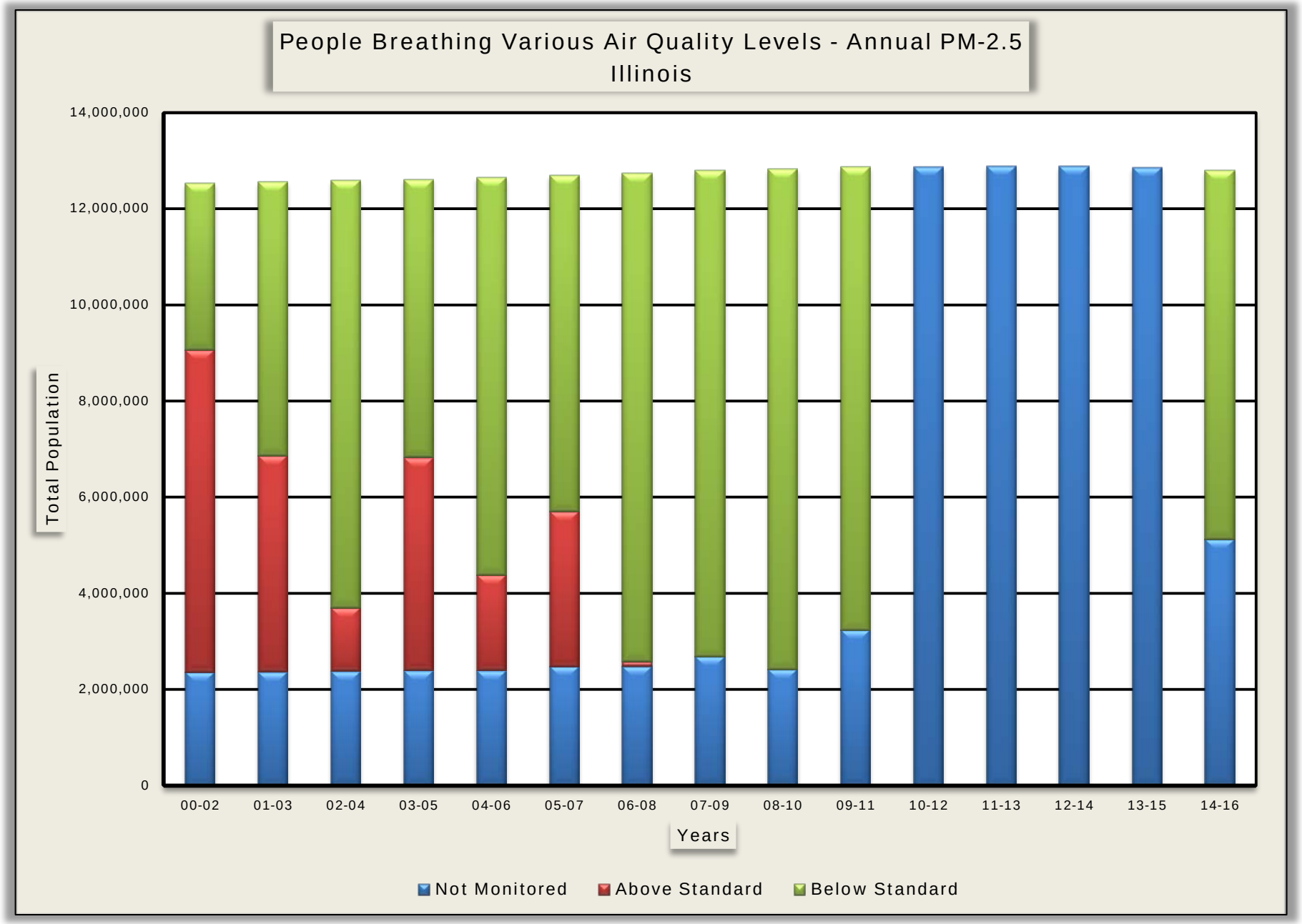
12,000,000
10,000,000
8,000,000
6,000,000
4,000,000
2,000,000
0
Total Population
00-02
01-03
02-04
03-05
04-06
05-07
06-08
07-09
08-10
09-11
10-12
11-13
12-14
13-15
14-16
Years
Not Monitored
Above Standard
Below Standard

Figure IL-3


People Breathing Various Air Quality Levels - Annual PM-2.5
Illinois
14,000,000
12,000,000
10,000,000
8,000,000
6,000,000
4,000,000
2,000,000
0
Total Population
00-02
01-03
02-04
03-05
04-06
05-07
06-08
07-09
08-10
09-11
10-12
11-13
12-14
13-15
14-16
Years
Not Monitored
Above Standard
Below Standard

INDIANA

Ozone

Significant progress has been made in ozone levels in Indiana. In the 2000 – 2002 time period, no people lived in counties that met the ozone standard. By 2014 – 2016 this had increased to approximately 4.5 million people (67.4%). Figure IN-1 shows the distribution of people by year. The population weighted ozone design value in 2000 – 2002 was 0.086 ppm. By 2014 – 2016 this had lowered to a value of 0.064, a reduction of 25.6 percent.

24-Hour PM-2.5

Significant progress has been made in 24-hour PM-2.5 levels in Indiana. In the 2000 – 2002 time period, approximately 2.1 million people (33.5%) lived in counties where 24-hour PM-2.5 levels met the standard. By 2014 - 2016 this was approximately 4.2 million people (63.4%) and the rest of the population lived in areas where PM-2.5 was not measured. Figure IN-2 shows the distribution of people by year. The population weighted 24-hour PM-2.5 design value in 2000 -2002 was 36 µg/m3. By 2014 – 2016 this had lowered to a value of 24m µg/m3, a reduction of 33.3 percent.

Annual PM-2.5

Significant progress has been made in annual PM-2.5 levels in Indiana. In the 2000 – 2002 time period, approximately 1.4 million people (23.1%) lived in counties where annual PM-2.5 levels met the standard. By 2014 – 2016 this had increased to approximately 4.2 million people (63.4%). Figure IN-3 shows the distribution of people by year. The population weighted annual PM-2.5 design value in 2000 – 2002 was 15.5 µg/m3. By 2014 – 2016 this had lowered to 9.8 µg/m3, a reduction of 36.8 percent.

INDIANA

Table IN-1
2014 – 2016

		Ozone			Particle Pollution (PM-2.5)				
County	Population	Avg. DV	Grade	MM	Avg. 24-Hr DV	Grade	Avg. Ann DV	Grade	MM
Allen	370,404	0.063	C	Y	25	A	9.8	B	N
Bartholomew	81,402	0.068	C	N	20	A	9.7	A	N
Boone	64,653	0.066	C	N	ND	ND	ND	ND	ND
Carroll	19,970	0.064	C	N	ND	ND	ND	ND	ND
Clark	116,031	0.070	C	N	22	A	9.7	B	Y
Delaware	115,603	0.059	B	N	22	A	9.0	A	N
Dubois	42,552	ND	ND	ND	24	A	9.8	B	N
Elkhart	203,781	0.061	B	N	28	B	10.1	B	N
Floyd	76,990	0.068	C	N	21	A	9.3	A	N
Greene	32,211	0.066	C	N	22	A	8.8	A	N
Hamilton	316,373	0.063	C	N	25	A	9.0	A	N
Hendricks	160,610	0.060	B	N	ND	ND	ND	ND	ND
Henry	48,521	ND	ND	ND	20	A	8.4	A	N
Howard	22,568	ND	ND	ND	23	A	10.9	C	N
Huntington	36,400	0.058	B	N	ND	ND	ND	ND	ND
Jackson	44,013	0.066	C	N	ND	ND	ND	ND	ND
Johnson	151,982	0.060	B	N	ND	ND	ND	ND	ND
Knox	37,744	0.065	C	N	ND	ND	ND	ND	ND
Lake	485,846	0.066	C	Y	24	A	10.0	B	Y
LA Porte	110,015	0.063	C	N	22	A	8.9	A	N
Madison	129,723	0.057	B	N	21	A	10.9	C	N
Marion	941,229	0.065	C	Y	25	A	10.9	C	Y
Monroe	145,496	ND	ND	ND	19	A	8.8	A	N
Morgan	89,698	0.064	C	N	ND	ND	ND	ND	ND
Perry	18,966	0.067	C	N	ND	ND	ND	ND	ND
Porter	167,791	0.067	C	N	22	A	9.2	A	N
Posey	25,476	0.066	C	N	ND	ND	ND	ND	ND
St Joseph	269,141	0.065	C	Y	23	A	9.3	A	N
Shelby	44,324	0.062	B	N	ND	ND	ND	ND	ND
Spencer	20,648	ND	ND	ND	22	A	9.6	B	N
Tippecanoe	188,059	ND	ND	ND	23	A	9.1	A	N
Vanderburgh	181,721	0.069	C	Y	22	A	10.0	B	Y
Vigo	107,831	0.063	C	Y	23	A	9.8	B	N
Wabash	31,762	0.068	C	N	ND	ND	ND	ND	ND
Warrick	62,498	0.067	C	Y	ND	ND	ND	ND	ND
Whitley	33,449	ND	ND	ND	22	A	8.9	A	N

DV = Design Value ND = No Data MM = Multiple Monitors

Table IN-2
Population Weighted Design Values

Period	Ozone (ppm)	24-Hour PM-2.5 (µg/m3)	Annual PM-2.5 (µg/m3)
2000 – 2002	0.086	36	15.5
2001 – 2003	0.086	36	15.2
2002 – 2004	0.083	34	14.4
2003 – 2005	0.077	35	14.8
2004 – 2006	0.074	33	14.2
2005 – 2007	0.078	34	14.3
2006 – 2008	0.073	30	13.2
2007 – 2009	0.071	29	12.8
2008 – 2010	0.066	29	12.3
2009 – 2011	0.067	28	12.1
2010 – 2012	0.071	28	12.0
2011 – 2013	0.070	24	10.7
2012 – 2014	0.067	25	10.6
2013 – 2015	0.062	24	10.4
2014 – 2016	0.064	24	9.8

INDIANA

Table IN-3
People Breathing Ozone

Grade	2000-2002	2002-2004	2004-2006	2006-2008	2008-2010	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016
A	0	0	0	0	88,977	0	0	71,978	806,871	0
B	0	0	141,666	131,537	2,925,391	705,918	790,747	2,321,562	3,208,243	856,329
C	0	139,888	2,611,995	2,833,363	1,276,613	3,324,068	3,272,236	1,990,803	0	3,617,659
D	336,195	1,224,054	1,751,273	1,186,522	0	220,174	221,963	55,722	0	0
F	3,661,236	2,682,843	0	0	0	55,623	55,641	0	0	0
Subtotal	3,997,431	4,046,785	4,504,934	4,201,422	4,290,981	4,305,783	4,340,586	4,440,065	4,451,648	4,473,988
NM	2,158,536	2,186,222	1,827,735	2,223,384	2,192,821	2,231,551	2,230,315	2,156,790	2,168,032	2,159,065
Total	6,155,967	6,233,007	6,332,669	6,424,806	6,483,802	6,537,334	6,570,902	6,596,855	6,619,680	6,633,053

People Breathing Short-term Particle Pollution (24-Hour PM-2.5)

Grade	2000-2002	2002-2004	2004-2006	2006-2008	2008-2010	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016
A	48,258	0	53,099	54,309	1,322,253	2,041,292	3,630,112	3,372,884	3,782,858	4,003,207
B	282,122	805,129	939,795	2,544,254	2,349,907	1,595,905	98,291	398,062	0	203,781
C	1,733,725	2,211,629	1,844,126	1,027,975	95,578	0	0	0	0	0
D	948,579	349,670	712,717	0	0	0	0	0	0	0
F	469,029	139,259	0	0	0	0	0	0	0	0
Subtotal	3,481,713	3,505,687	3,569,737	3,626,538	3,767,738	3,737,197	3,728,403	3,770,946	3,782,858	4,206,988
NM	2,674,254	2,727,320	2,762,932	2,798,268	2,716,064	2,800,137	2,842,499	2,825,909	2,836,822	2,426,065
Total	6,155,967	6,233,007	6,332,669	6,424,806	6,483,802	6,537,334	6,570,902	6,596,855	6,619,680	6,633,053

People Breathing Year Round Particle Pollution (Annual PM-2.5)

Grade	2000-2002	2002-2004	2004-2006	2006-2008	2008-2010	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016
A	0	0	0	194,018	1,957,183	2,682,307	0	139,529	485,792	1,690,961
B	103,036	451,273	1,144,686	1,957,594	1,153,178	1,021,950	1,893,203	2,088,873	2,195,424	1,610,105
C	1,317,105	2,390,802	1,949,498	1,421,223	857,377	0	1,778,731	1,542,544	1,101,642	705,922
D	1,524,300	613,394	455,567	53,703	0	0	56,469	0	0	0
F	537,274	50,218	0	0	0	0	0	0	0	0
Subtotal	3,481,715	3,505,687	3,549,738	3,626,538	3,767,738	3,704,257	3,728,403	3,770,946	3,782,858	4,206,988
NM	2,674,252	2,727,320	2,782,931	2,798,268	2,716,064	2,833,077	2,842,499	2,825,909	2,836,822	2,426,065
Total	6,155,967	6,233,007	6,332,669	6,424,806	6,483,802	6,537,334	6,570,902	6,596,855	6,619,680	6,633,053

NM = Not Monitored

Figure IN-1

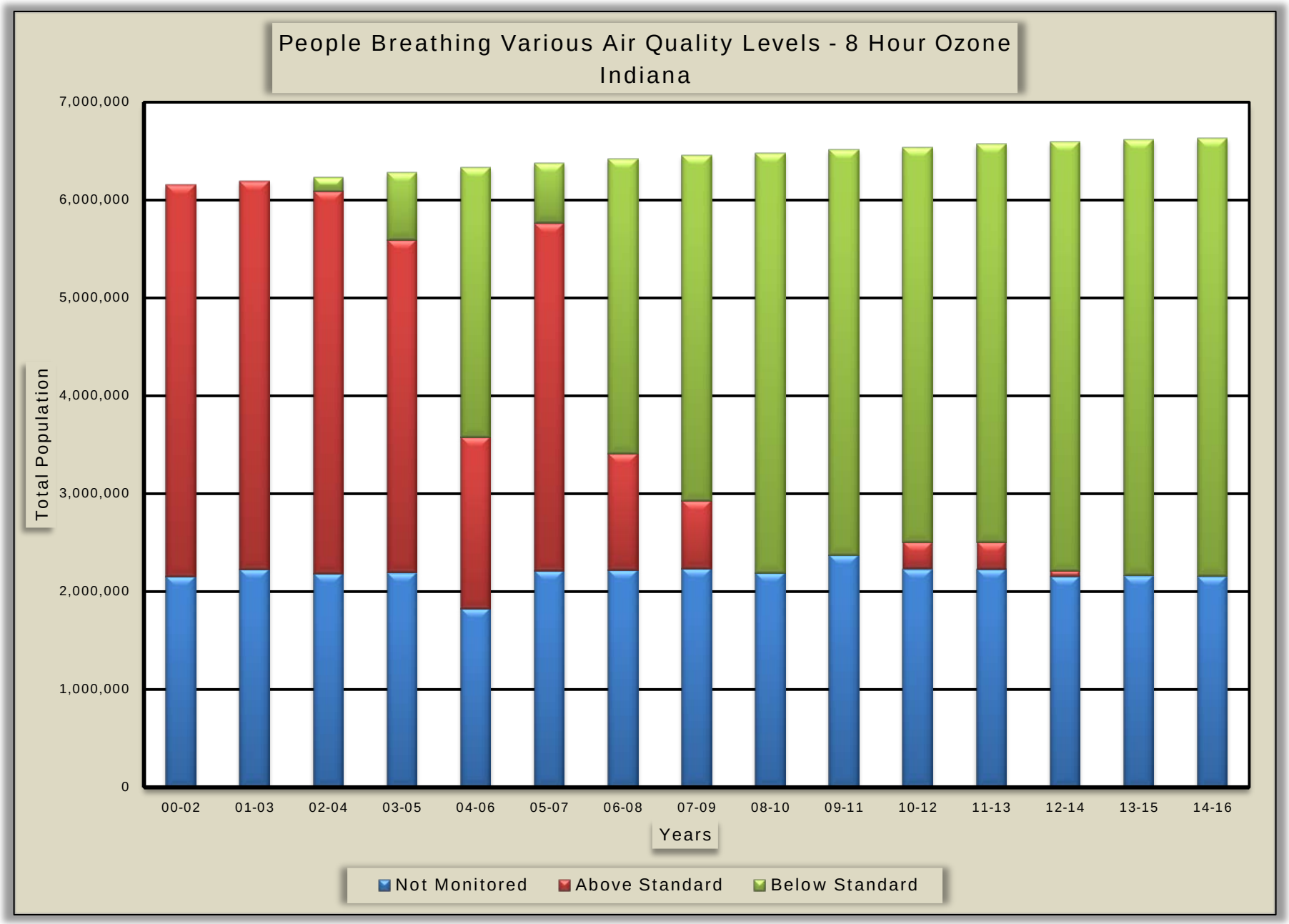

People Breathing Various Air Quality Levels - 8 Hour Ozone
Indiana
Total Population
7,000,000
6,000,000
5,000,000
4,000,000
3,000,000
2,000,000
1,000,000
0
00-02
01-03
02-04
03-05
04-06
05-07
06-08
07-09
08-10
09-11
10-12
11-13
12-14
13-15
14-16
Years
Not Monitored
Above Standard
Below Standard

Figure IN-2

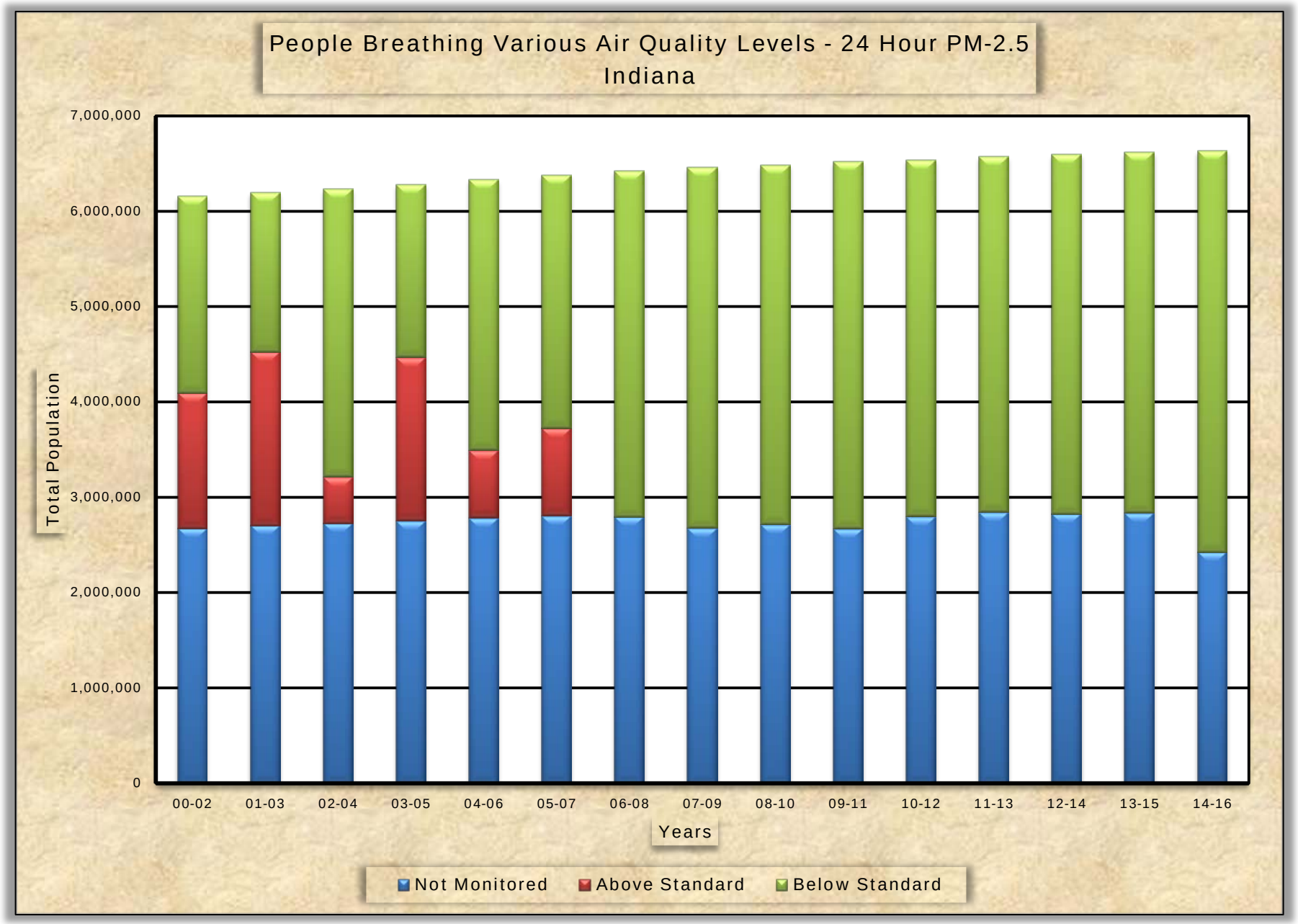
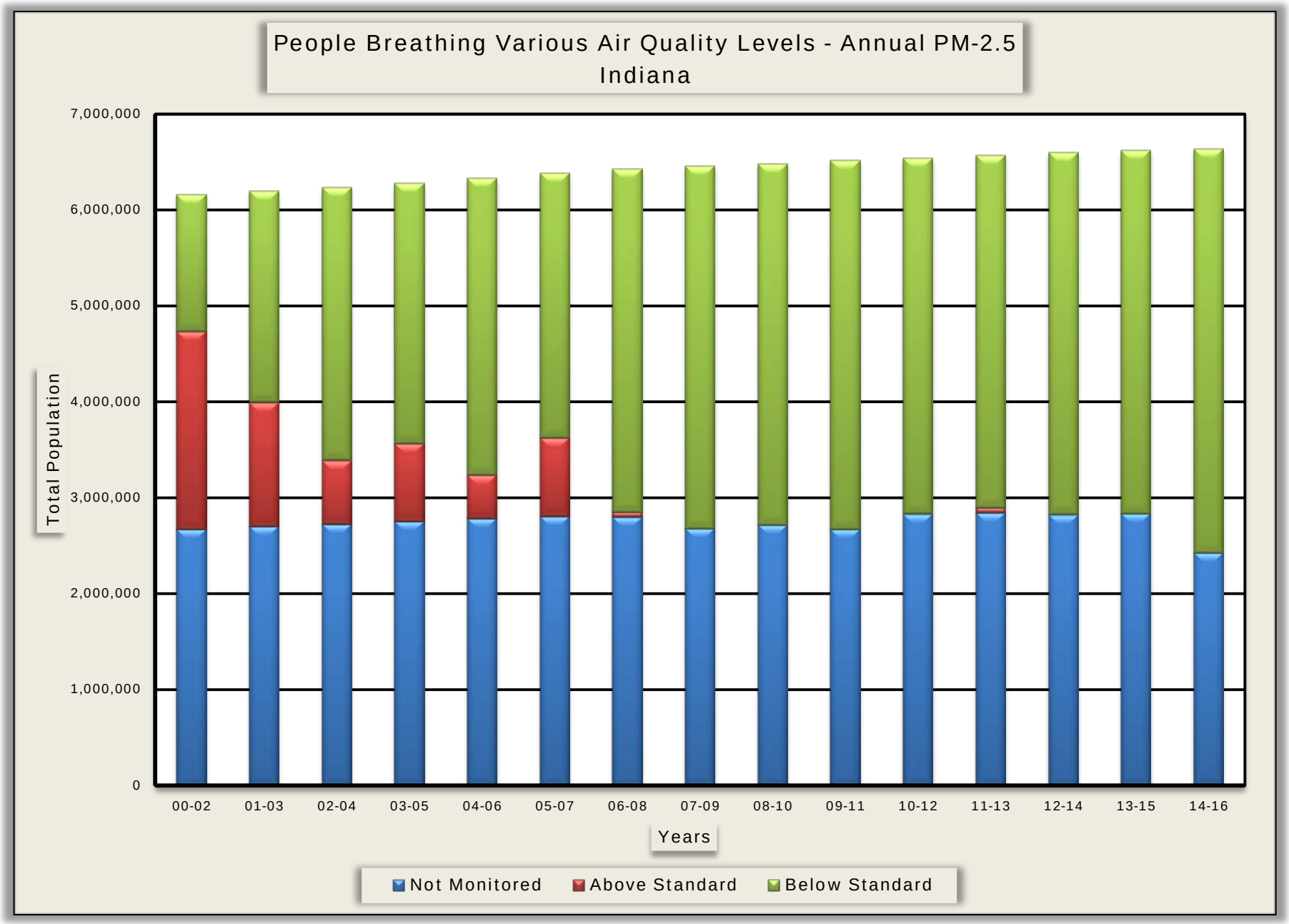

People Breathing Various Air Quality Levels - 24 Hour PM-2.5
Indiana
7,000,000
6,000,000
5,000,000
4,000,000
3,000,000
2,000,000
1,000,000
0
Total Population
00-02
01-03
02-04
03-05
04-06
05-07
06-08
07-09
08-10
09-11
10-12
11-13
12-14
13-15
14-16
Years
Not Monitored
Above Standard
Below Standard

Figure IN-3


People Breathing Various Air Quality Levels - Annual PM-2.5
Indiana
7,000,000
6,000,000
5,000,000
4,000,000
3,000,000
2,000,000
1,000,000
0
Total Population
00-02
01-03
02-04
03-05
04-06
05-07
06-08
07-09
08-10
09-11
10-12
11-13
12-14
13-15
14-16
Years
Not Monitored
Above Standard
Below Standard

IOWA

Ozone

In the 2000 – 2002 time period, approximately 0.7 million people (25.4%) lived in counties that met the ozone standard. By 2014 – 2016 this had increased to approximately 1.1 million people (36.0%). The remainder of the population lived in counties where ozone was not measured. The ozone standard was lowered from 0.085 ppm to 0.070 ppm. Figure IA-1 shows the distribution of people by year. The population weighted ozone design value in 2000 – 2002 was 0.069 ppm. By 2014 – 2016 this had lowered to a value of 0.060 ppm, a reduction of 13.0 percent.

24-Hour PM-2.5

In the 2000 – 2002 time period, approximately 1.4 million people (46.5%) lived in counties where 24-hour PM-2.5 levels met the standard. By 2014 - 2016 this was approximately 1.5 million people (48.3%). The remainder of the population lived in counties where PM-2.5 was not measured. The standards was lowered from 65 µg/m3 to 35 µg/m3. Figure IA-2 shows the distribution of people by year. The population weighted 24-hour PM-2.5 design value in 2000 – 2002 was 28 µg/m3. By 2014 – 2016 this had lowered to a value of 21 µg/m3, a reduction of 25.0 percent.

Annual PM-2.5

In the 2000 – 2002 time period, approximately 1.4 million people (46.5%) lived in counties where annual PM-2.5 levels met the standard. By 2014 – 2016 this had decreased to approximately 1.5 million people (48.3%). The remainder of the population lived in counties where PM-2.5 was not measured. The standard was lowered from 15 µg/m3 to 12 µg/m3. Figure IA-3 shows the distribution of people by year. The population weighted annual PM-2.5 design value in 2000 – 2002 was 10.9 µg/m3. By 2014 – 2016 this had lowered to a value of 8.2 µg/m3, a reduction of 24.7 percent.

IOWA

Table IA-1
2014 – 2016

		Ozone			Particle Pollution (PM-2.5)				
County	Population	Avg. DV	Grade	MM	Avg. 24-Hr DV	Grade	Avg. Ann DV	Grade	MM
Black Hawk	132,904	ND	ND	ND	21	A	8.5	A	N
Bremer	24,798	0.061	B	N	ND	ND	ND	ND	ND
Clinton	47,309	0.063	C	N	23	A	9.1	A	Y
Delaware	17,327	ND	ND	ND	21	A	8.2	A	N
Harrison	14,149	0.062	B	Y	ND	ND	ND	ND	ND
Johnson	146,547	ND	ND	ND	21	A	8.3	A	N
Lee	34,615	ND	ND	ND	22	A	9.3	A	N
Linn	221,661	0.061	B	Y	22	A	8.8	A	N
Montgomery	10,225	0.060	B	N	18	A	6.9	A	N
Muscatine	42,940	ND	ND	ND	24	A	8.9	A	Y
Palo Alto	9,047	0.061	B	N	17	A	7.3	A	N
Polk	474,045	0.060	B	N	19	A	7.6	A	Y
Pottawattamie	93,582	ND	ND	ND	19	A	8.2	A	N
Scott	172,474	0.061	B	Y	23	A	9.0	A	Y
Van Buren	7,271	0.061	B	N	20	A	7.6	A	N
Warren	49,691	0.058	B	N	ND	ND	ND	ND	ND
Woodbury	102,779	ND	ND	ND	20	A	7.7	A	N

DV = Design Value ND = No Data MM = Multiple Monitors

Table IA-2
Population Weighted Design Values

Period	Ozone (ppm)	24-Hour PM-2.5 (µg/m3)	Annual PM-2.5 (µg/m3)
2000 – 2002	0.069	28	10.9
2001 – 2003	0.065	29	11.1
2002 – 2004	0.063	29	10.8
2003 – 2005	0.065	31	11.1
2004 – 2006	0.066	29	10.7
2005 – 2007	0.069	29	11.3
2006 – 2008	0.065	27	10.8
2007 – 2009	0.063	28	10.7
2008 – 2010	0.059	29	10.5
2009 – 2011	0.060	28	10.4
2010 – 2012	0.064	27	10.3
2011 – 2013	0.063	23	9.7
2012 – 2014	0.063	23	9.4
2013 – 2015	0.059	22	8.9
2014 – 2016	0.060	21	8.2

IOWA

Table IA-3
People Breathing Ozone

Grade	2000-2002	2002-2004	2004-2006	2006-2008	2008-2010	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016
A	317,558	760,488	790,095	9,486	520,182	0	0	0	0	0
B	227,095	230,720	224,430	506,317	538,726	1,000,880	1,029,584	1,105,113	1,101,601	994,214
C	223,166	0	0	104,279	0	79,989	62,851	0	16,266	133,546
D	0	0	0	0	0	0	0	0	0	0
F	0	0	0	0	0	0	0	0	0	0
Subtotal	767,819	991,208	1,014,525	620,082	1,058,908	1,080,869	1,092,435	1,105,113	1,117,866	1,127,760
NM	2,166,415	1,962,427	1,968,119	2,396,652	1,987,447	1,993,317	1,997,981	2,002,013	2,006,033	2,006,933
Total	2,934,234	2,953,635	2,982,644	3,016,734	3,046,355	3,074,186	3,090,416	3,107,126	3,123,899	3,134,693

People Breathing Short-term Particle Pollution (24-Hour PM-2.5)

Grade	2000-2002	2002-2004	2004-2006	2006-2008	2008-2010	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016
A	1,366,876	1,295,248	303,638	747,834	372,077	894,436	1,525,540	1,479,483	1,493,141	1,512,726
B	0	0	808,421	503,135	949,955	536,951	10,709	10,726	10,753	0
C	0	0	213,858	121,108	55,075	14,293	0	0	0	0
D	0	0	0	0	42,745	0	0	0	0	0
F	0	0	0	0	0	0	0	0	0	0
Subtotal	1,366,876	1,295,248	1,325,967	1,372,077	1,419,846	1,445,680	1,536,249	1,490,209	1,503,894	1,512,726
NM	1,567,358	1,658,387	1,656,677	1,644,657	1,626,509	1,628,506	1,554,167	1,616,917	1,620,005	1,621,967
Total	2,934,234	2,953,635	2,982,644	3,016,784	3,046,355	3,074,186	3,090,416	3,107,126	3,123,899	3,134,693

People Breathing Year Round Particle Pollution (Annual PM-2.5)

Grade	2000-2002	2002-2004	2004-2006	2006-2008	2008-2010	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016
A	1,159,131	1,253,490	1,234,335	1,250,969	1,297,468	1,431,387	658,386	905,729	1,297,912	1,512,726
B	207,745	41,758	91,632	96,456	122,378	14,293	743,248	527,743	205,982	0
C	0	0	0	24,652	0	0	134,615	56,738	0	0
D	0	0	0	0	0	0	0	0	0	0
F	0	0	0	0	0	0	0	0	0	0
Subtotal	1,366,876	1,295,248	1,325,967	1,372,077	1,419,846	1,445,680	1,536,249	1,490,209	1,503,894	1,512,728
NM	1,567,358	1,658,387	1,656,677	1,644,657	1,626,509	1,628,506	1,554,167	1,616,917	1,620,005	1,621,967
Total	2,934,234	2,953,635	2,982,644	3,016,784	3,046,355	3,074,186	3,090,416	3,107,126	3,123,899	3,134,693

NM = Not Monitored

Figure IA-1

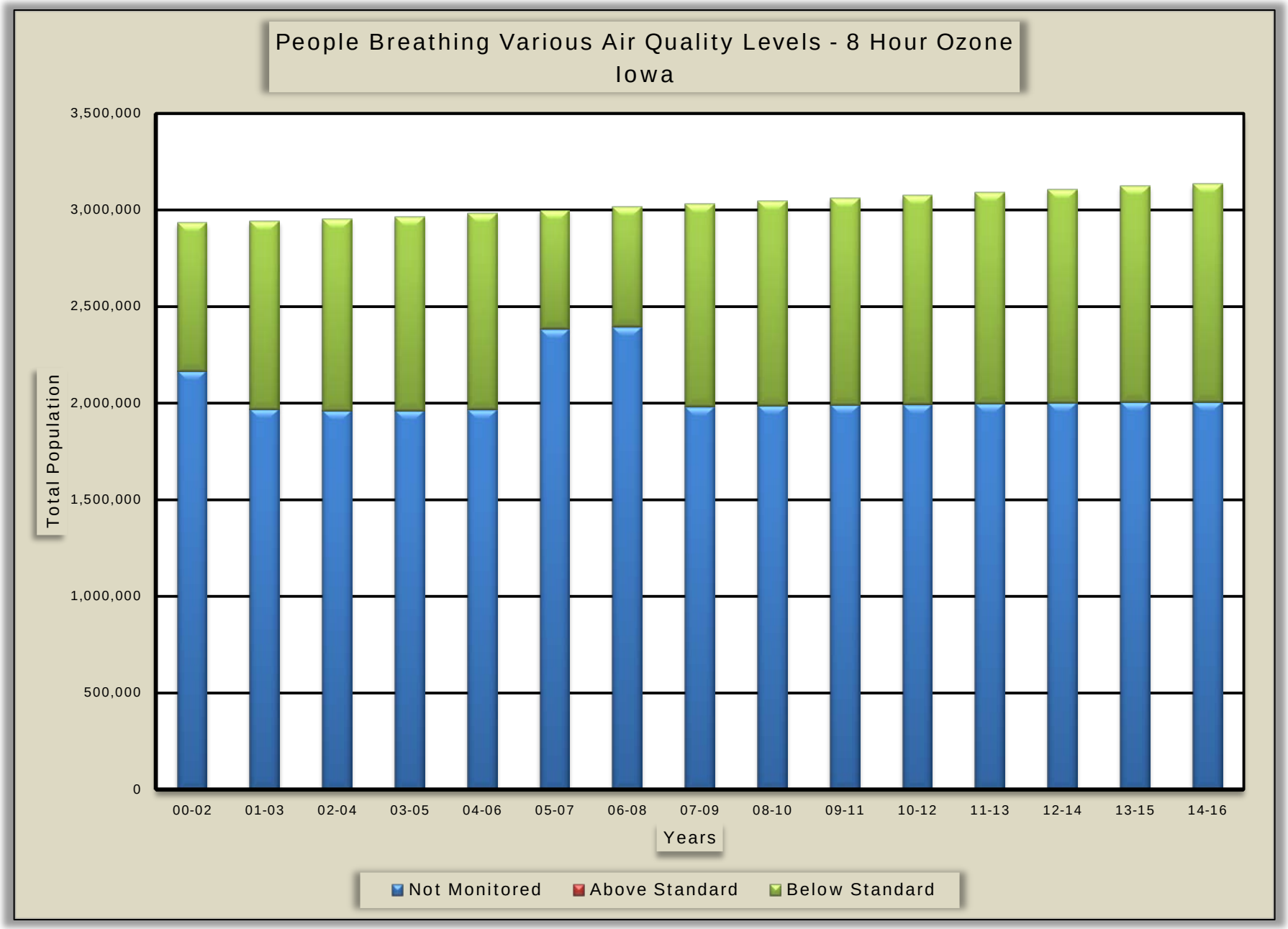

People Breathing Various Air Quality Levels - 8 Hour Ozone
Iowa
Total Population
3,500,000
3,000,000
2,500,000
2,000,000
1,500,000
1,000,000
500,000
0
00-02
01-03
02-04
03-05
04-06
05-07
06-08
07-09
08-10
09-11
10-12
11-13
12-14
13-15
14-16
Years
Not Monitored
Above Standard
Below Standard

Figure IA-2

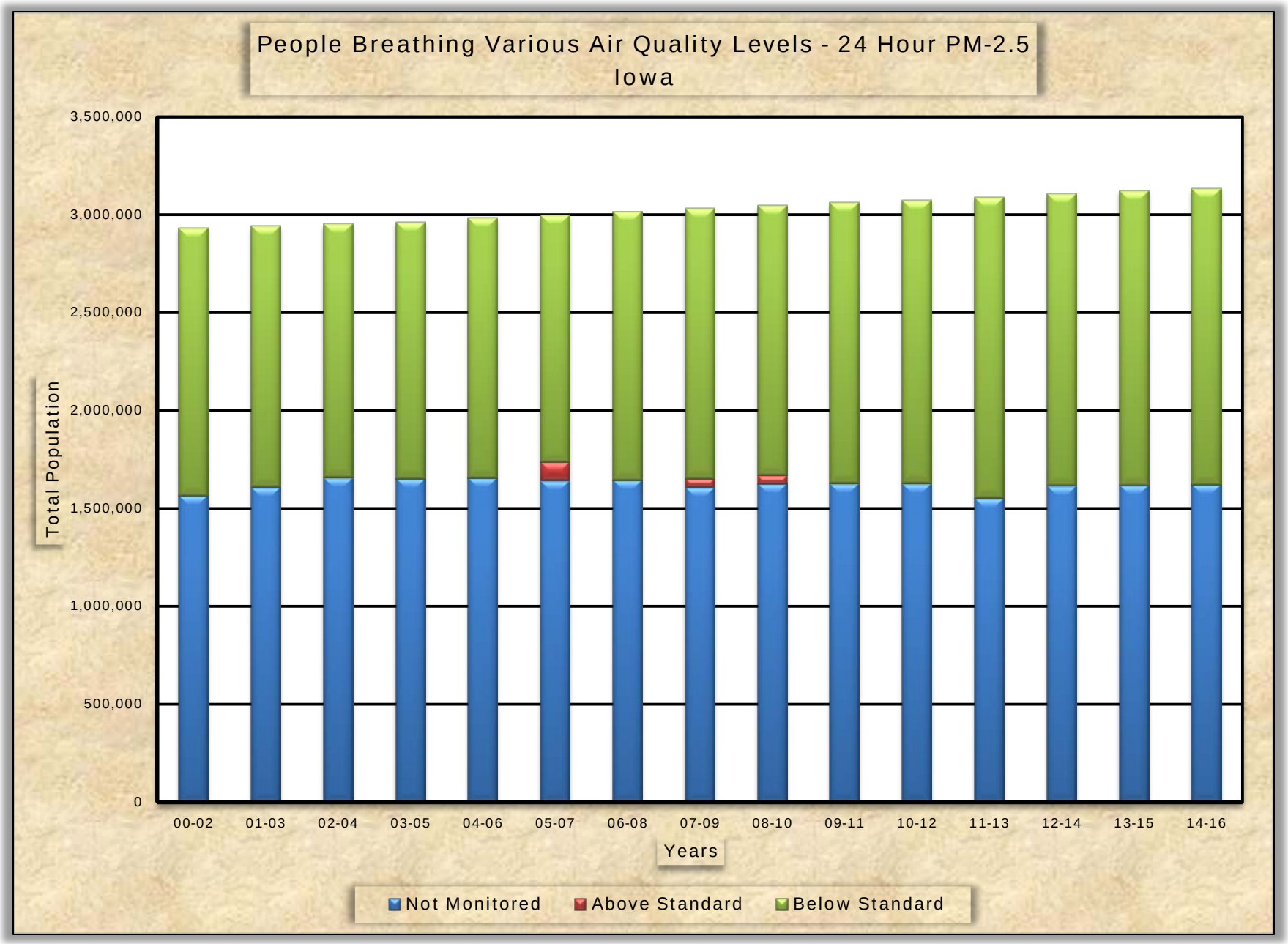
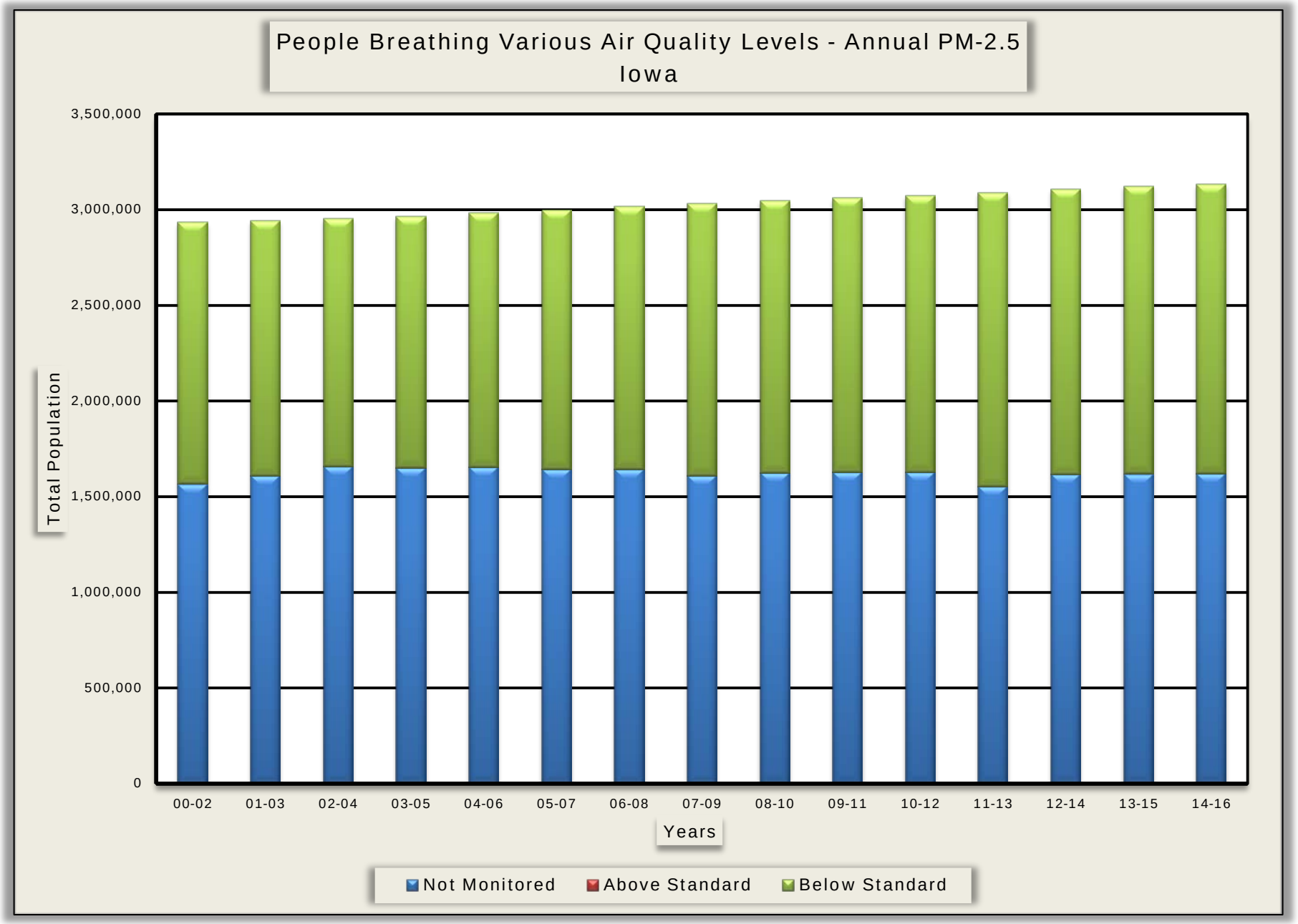

People Breathing Various Air Quality Levels - 24 Hour PM-2.5
Iowa
Total Population
3,500,000
3,000,000
2,500,000
2,000,000
1,500,000
1,000,000
500,000
0
00-02
01-03
02-04
03-05
04-06
05-07
06-08
07-09
08-10
09-11
10-12
11-13
12-14
13-15
14-16
Years
Not Monitored
Above Standard
Below Standard

Figure IA-3


People Breathing Various Air Quality Levels - Annual PM-2.5
Iowa
3,500,000
3,000,000
2,500,000
2,000,000
1,500,000
1,000,000
500,000
0
Total Population
00-02
01-03
02-04
03-05
04-06
05-07
06-08
07-09
08-10
09-11
10-12
11-13
12-14
13-15
14-16
Years
Not Monitored
Above Standard
Below Standard

KANSAS

Ozone

In the 2000 – 2002 time period, approximately 657 thousand people (24.2%) lived in counties that met the ozone standard. By 2014 – 2016 this had increased to approximately 1.6 million people (53.7%). The ozone standard was lowered from 0.085 ppm to 0.070 ppm. Figure KS-1 shows the distribution of people by year. The population weighted ozone design value in 2000 – 2002 was 0.077 ppm. By 2014 – 2016 this had lowered to a value of 0.062 ppm, a reduction of 19.5 percent.

24-Hour PM-2.5

In the 2000 – 2002 time period, approximately 1.3 million people (48.1%) lived in counties where 24-hour PM-2.5 levels met the standard. By 2014 - 2016 this was approximately 1.5 million people (50.8%). The remainder of the population lived in counties where PM-2.5 was not measured. The standard was lowered from 65 µg/m3 to 35 µg/m3. Figure KS-2 shows the distribution of people by year. The population weighted 24-hour PM-2.5 design value in 2000 – 2002 was 26 µg/m3. By 2014 – 2016 this had lowered to a value of 20 µg/m3, a reduction of 23.1 percent.

Annual PM-2.5

In the 2000 – 2002 time period, approximately 1.3 million people (48.1%) lived in counties where annual PM-2.5 levels met the standard. By 2014 – 2016 this had increased to approximately 1.5 million people (50.8%). The remainder of the population lived in counties where PM-2.5 was not measured. The standard was lowered from 15 µg/m3 to 12 µg/m3. Figure KS-3 shows the distribution of people by year. The population weighted annual PM-2.5 design value in 2000 – 2002 was 11.5 µg/m3. By 2014 – 2016 this had lowered to a value of 7.6 µg/m3, a reduction of 33.9 percent.

Table KS-1
2014 – 2016

		Ozone			Particle Pollution (PM-2.5)				
County	Population	Avg. DV	Grade	MM	Avg. 24-Hr DV	Grade	Avg. Ann DV	Grade	MM
Johnson	584,451	0.060	B	N	18	A	6.8	A	Y
Leavenworth	80,204	0.063	C	N	ND	ND	ND	ND	ND
Neosho	16,146	0.061	B	N	19	A	8.2	A	N
Sedgwick	511,995	0.064	C	Y	22	A	8.0	A	Y
Shawnee	178,146	0.063	C	N	19	A	7.6	A	N
Sumner	23,272	0.064	C	N	21	A	7.2	A	N
Trego	2,872	0.063	C	N	ND	ND	ND	ND	ND
Wyandotte	163,831	0.063	C	N	20	A	9.0	A	N

DV = Design Value ND = No Data

KANSAS

Table KS-2
Population Weighted Design Values

Period	Ozone (ppm)	24-Hour PM-2.5 (µg/m3)	Annual PM-2.5 (µg/m3)
2000 – 2002	0.077	26	11.5
2001 – 2003	0.076	27	11.5
2002 – 2004	0.071	27	11.1
2003 – 2005	0.073	28	11.1
2004 – 2006	0.071	24	10.2
2005 – 2007	0.072	24	10.2
2006 – 2008	0.067	21	9.5
2007 – 2009	0.065	21	9.6
2008 – 2010	0.065	19	8.8
2009 – 2011	0.069	20	8.8
2010 – 2012	0.075	19	8.5
2011 – 2013	0.074	20	8.6
2012 – 2014	0.071	20	8.4
2013 – 2015	0.064	20	8.1
2014 – 2016	0.062	20	7.6

KANSAS

Table KS-3
People Breathing Ozone

Grade	2000-2002	2002-2004	2004-2006	2006-2008	2008-2010	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016
A	3,137	235,131	235,830	0	0	0	0	0	0	0
B	240,234	421,861	427,016	486,077	597,279	159,129	0	0	0	600,597
C	413,508	0	0	192,004	273,315	191,418	604,419	875,275	880,130	960,320
D	0	0	0	0	0	527,563	276,299	0	0	0
F	0	0	0	0	0	0	0	0	0	0
Subtotal	656,879	656,991	662,845	678,081	870,593	878,110	880,717	875,275	880,130	1,560,917
NM	2,056,656	2,077,382	2,100,086	2,129,995	1,982,525	2,007,795	2,013,240	2,028,746	2,031,511	1,346,372
Total	2,713,535	2,734,373	2,762,931	2,808,076	2,853,118	2,885,905	2,893,957	2,904,021	2,911,641	2,907,289

People Breathing Short-term Particle Pollution (24-Hour PM-2.5)

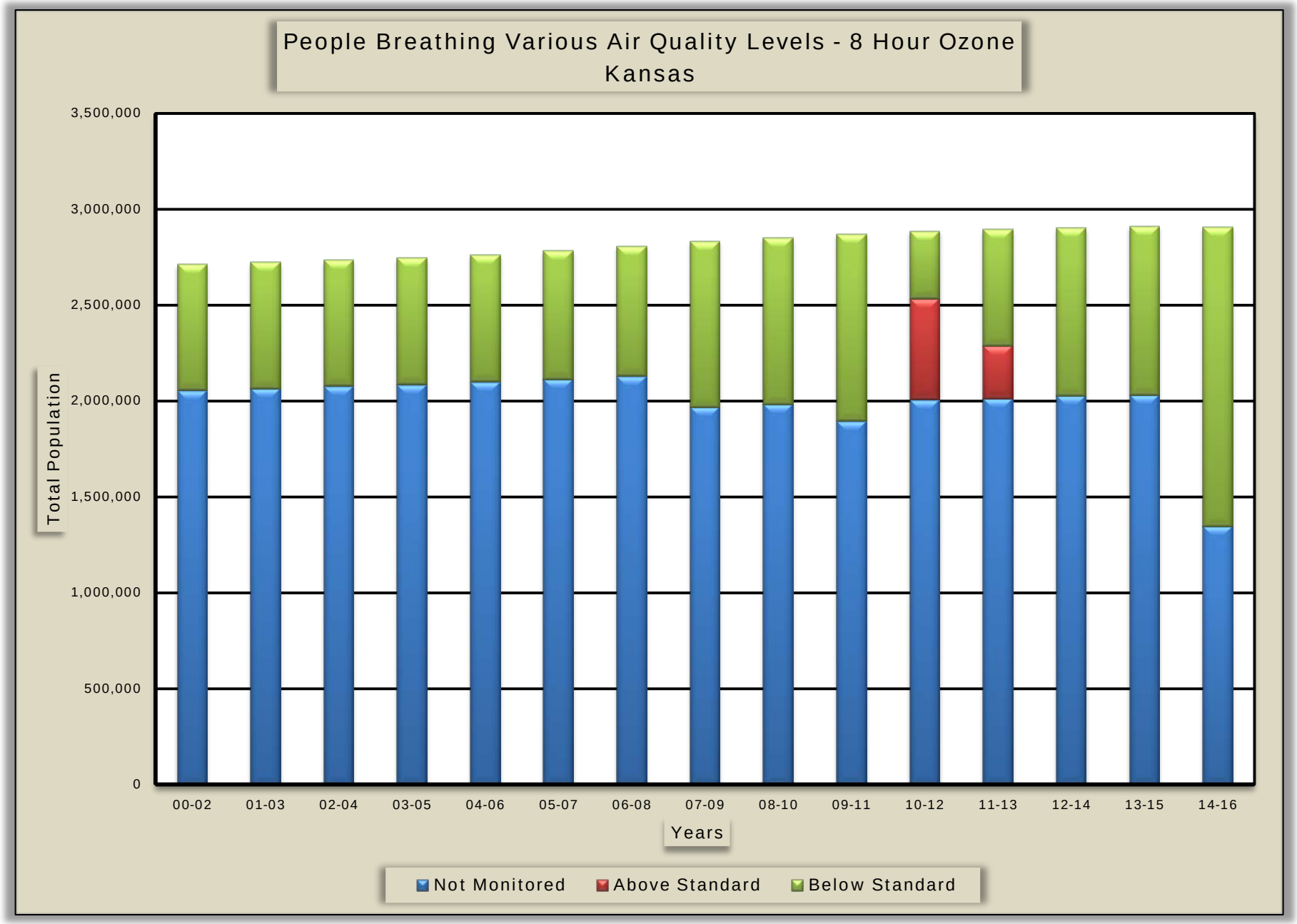
Grade	2000-2002	2002-2004	2004-2006	2006-2008	2008-2010	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016
A	1,299,330	1,320,645	1,270,809	1,207,313	1,411,771	1,435,037	1,444,670	1,446,645	1,457,362	1,477,841
B	0	0	76,845	0	0	0	0	0	0	0
C	0	0	0	0	0	0	0	0	0	0
D	0	0	0	0	0	0	0	0	0	0
F	0	0	0	0	0	0	0	0	0	0
Subtotal	1,299,330	1,320,645	1,347,653	1,207,313	1,411,771	1,435,037	1,444,670	1,446,643	1,457,362	1,477,841
NM	1,414,205	1,413,728	1,415,278	1,600,763	1,441,347	1,450,868	1,449,287	1,457,376	1,454,279	1,429,448
Total	2,713,535	2,734,373	2,762,931	2,808,076	2,853,118	2,885,905	2,893,957	2,904,021	2,911,641	2,907,289

People Breathing Year Round Particle Pollution (Annual PM-2.5)

Grade	2000-2002	2002-2004	2004-2006	2006-2008	2008-2010	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016
A	1,062,168	1,243,208	1,270,809	1,207,313	1,411,771	1,435,037	1,284,286	1,446,645	1,457,362	1,477,841
B	237,162	77,437	76,845	0	0	0	160,384	0	0	0
C	0	0	0	0	0	0	0	0	0	0
D	0	0	0	0	0	0	0	0	0	0
F	0	0	0	0	0	0	0	0	0	0
Subtotal	1,299,330	1,320,645	1,347,653	1,207,313	1,411,771	1,435,037	1,444,670	1,446,645	1,457,362	1,477,841
NM	1,414,205	1,413,728	1,415,278	1,600,763	1,441,347	1,450,868	1,449,287	1,457,376	1,454,279	1,429,448
Total	2,713,535	2,734,373	2,762,931	2,808,076	2,853,118	2,885,905	2,893,957	2,904,021	2,911,641	2,907,289

NM = Not Monitored

Figure KS-1


People Breathing Various Air Quality Levels - 8 Hour Ozone
Kansas
Total Population
3,500,000
3,000,000
2,500,000
2,000,000
1,500,000
1,000,000
500,000
0
00-02
01-03
02-04
03-05
04-06
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06-08
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10-12
11-13
12-14
13-15
14-16
Years
Not Monitored
Above Standard
Below Standard

Figure KS-2

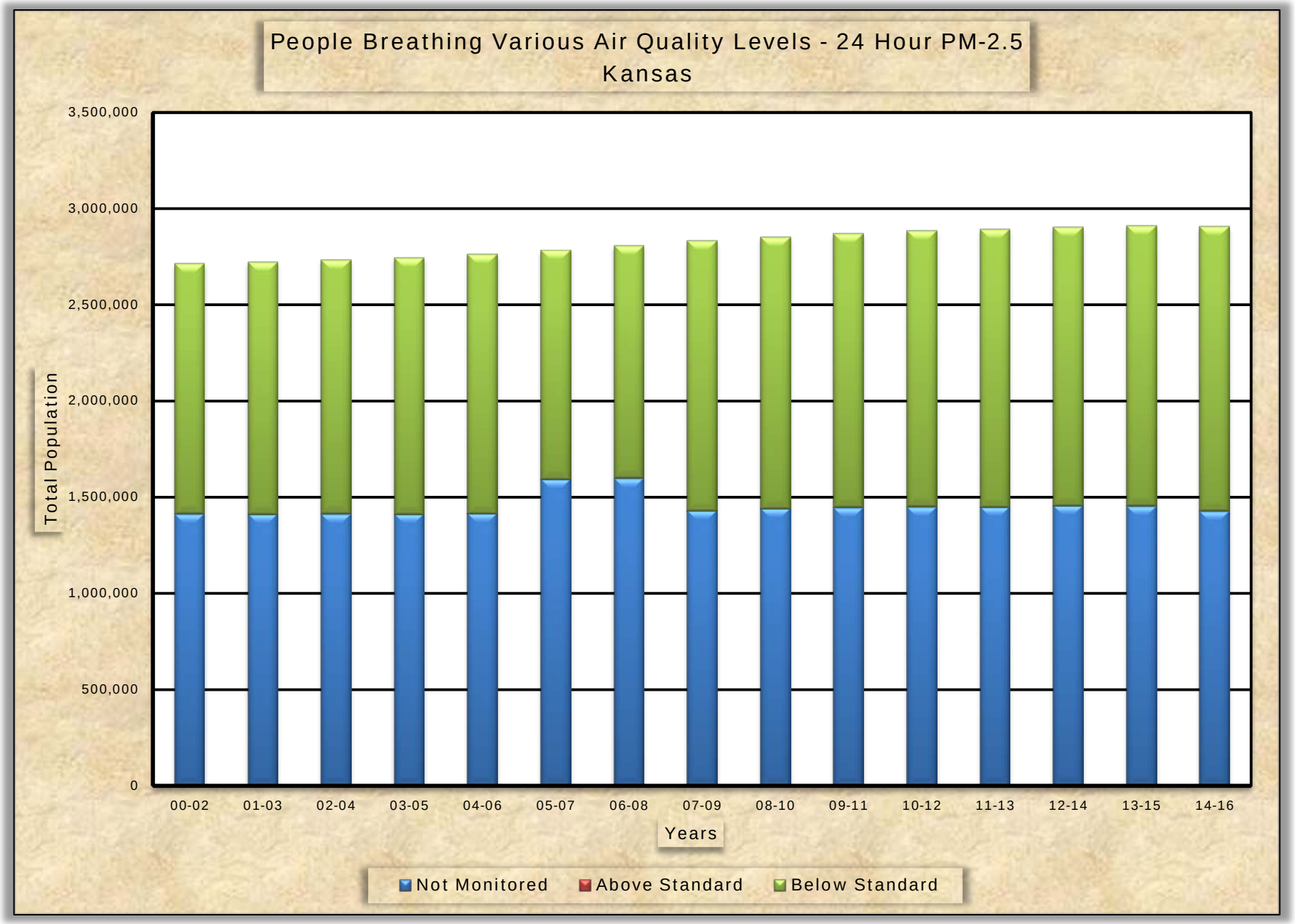
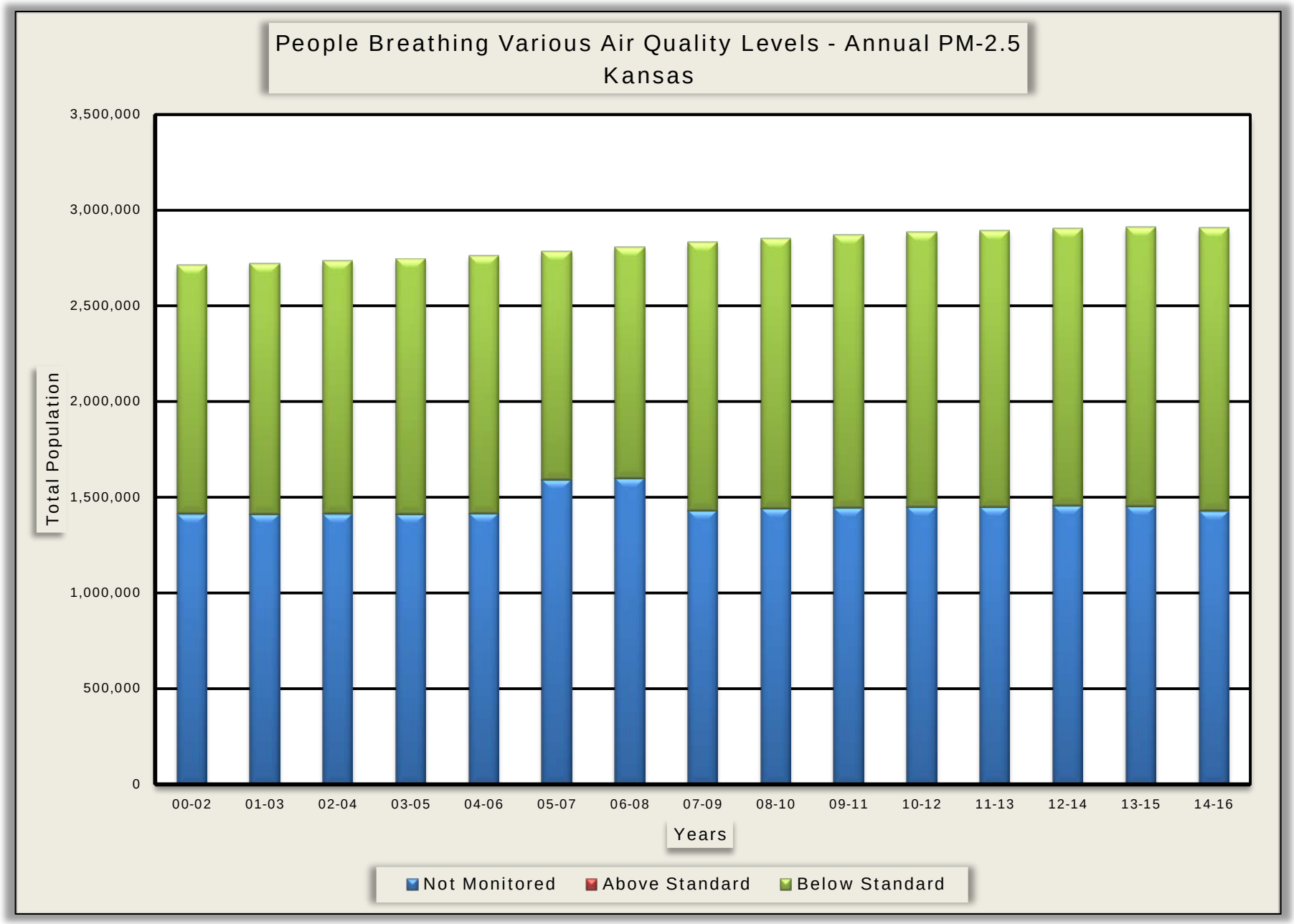

People Breathing Various Air Quality Levels - 24 Hour PM-2.5
Kansas
3,500,000
3,000,000
2,500,000
2,000,000
1,500,000
1,000,000
500,000
0
Total Population
00-02
01-03
02-04
03-05
04-06
05-07
06-08
07-09
08-10
09-11
10-12
11-13
12-14
13-15
14-16
Years
Not Monitored
Above Standard
Below Standard

Figure KS-3


People Breathing Various Air Quality Levels - Annual PM-2.5
Kansas
Total Population
3,500,000
3,000,000
2,500,000
2,000,000
1,500,000
1,000,000
500,000
0
00-02
01-03
02-04
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05-07
06-08
07-09
08-10
09-11
10-12
11-13
12-14
13-15
14-16
Years
Not Monitored
Above Standard
Below Standard

KENTUCKY

Ozone

In the 2000 – 2002 time period, approximately 1.9 million people (45.4%) lived in counties that met the ozone standard. By 2014 – 2016 this had increased to approximately 2.1 million people (48.3%). The ozone standard was lowered from 0.085 ppm to 0.070 ppm. Figure KY-1 shows the distribution of people by year. The population weighted ozone design value in 2000 – 2002 was 0.082 ppm. By 2014 – 2016 this had lowered to a value of 0.066 ppm, a reduction of 19.5 percent.

24-Hour PM-2.5

In the 2000 – 2002 time period, approximately 1.8 million people (45.1%) lived in counties where 24-hour PM-2.5 levels met the standard. By 2014 - 2016 this was approximately 2.0 million people (45.9%). The remainder of the population lived in counties where PM-2.5 was not measured. The standard was lowered from 65 µg/m3 to 35 µg/m3. Figure KY-2 shows the distribution of people by year. The population weighted 24-hour PM-2.5 design value in 2000 – 2002 was 36 µg/m3. By 2014 – 2016 this had lowered to a value of 20 µg/m3, a reduction of 44.4 percent.

Annual PM-2.5

In the 2000 – 2002 time period, approximately 1.4 million people (33.7%) lived in counties where annual PM-2.5 levels met the standard. By 2014 – 2016 this had increased to approximately 2.0 million people (45.9%). The remainder of the population lived in counties where PM-2.5 was not measured. The standard was lowered from 15 µg/m3 to 12 µg/m3. Figure KY-3 shows the distribution of people by year. The population weighted annual PM-2.5 design value in 2000 – 2002 was 15.6 µg/m3. By 2014 – 2016 this had lowered to a value of 9.1 µg/m3, a reduction of 41.7 percent.

KENTUCKY

Table KY-1
2014 – 2016

		Ozone			Particle Pollution (Pm-2.5)				
County	Population	Avg. DV	Grade	MM	Avg. 24-Hr DV	Grade	Avg. Ann DV	Grade	MM
Bell	27,117	0.061	B	N	26	A	8.3	A	N
Boone	128,536	0.063	C	N	ND	ND	ND	ND	ND
Boyd	48,132	0.066	C	N	20	A	8.6	A	N
Bullitt	19,151	0.066	C	N	ND	ND	ND	ND	ND
Campbell	92,211	0.070	C	N	21	A	9.1	A	N
Carter	27,046	0.062	B	N	18	A	7.3	A	N
Christian	72,351	0.062	B	N	21	A	9.2	A	N
Daviess	99,674	0.065	C	N	22	A	9.8	B	N
Edmonson	12,114	0.064	C	N	ND	ND	ND	ND	ND
Fayette	318,449	0.067	C	N	19	A	8.7	A	N
Greenup	35,893	0.063	C	N	ND	ND	ND	ND	ND
Hancock	8,810	0.068	C	N	ND	ND	ND	ND	ND
Hardin	107,316	0.065	C	N	20	A	9.3	A	N
Henderson	46,253	0.069	C	N	21	A	9.6	B	N
Jefferson	165,352	0.070	C	Y	21	A	9.5	A	Y
Jessamine	52,357	0.065	C	N	ND	ND	ND	ND	ND
Livingston	9.269	0.065	C	N	ND	ND	ND	ND	ND
McCracken	65,162	0.063	C	N	20	A	9.2	A	N
Madison	89,547	ND	ND	ND	18	A	8.0	A	N
Morgan	13,298	0.064	C	N	ND	ND	ND	ND	ND
Oldham	65,560	0.070	C	N	ND	ND	ND	ND	ND
Perry	27,343	0.058	B	N	20	A	8.5	A	N
Pike	60,555	0.060	B	N	22	A	8.0	A	N
Pulaski	63,956	0.068	B	N	19	A	8.5	A	N
Simpson	18,083	0.064	C	N	ND	ND	ND	ND	ND
Trigg	14,264	0.063	C	N	ND	ND	ND	ND	ND
Warren	125,532	0.062	B	N	19	A	8.7	A	N
Washington	12,189	0.064	C	N	ND	ND	ND	ND	ND

DV = Design Value ND = No Data MM = Multiple Monitors

KENTUCKY

Table KY-2
Population Weighted Design Values

Period	Ozone (ppm)	24-Hour PM-2.5 (µg/m3)	Annual PM-2.5 (µg/m3)
2000 – 2002	0.082	36	15.6
2001 – 2003	0.080	35	15.0
2002 – 2004	0.077	33	14.2
2003 – 2005	0.077	33	14.3
2004 – 2006	0.073	32	14.1
2005 – 2007	0.076	34	14.4
2006 – 2008	0.074	30	13.4
2007 – 2009	0.072	28	12.7
2008 – 2010	0.070	25	12.1
2009 – 2011	0.071	25	11.6
2010 – 2012	0.076	23	10.7
2011 – 2013	0.073	21	9.9
2012 – 2014	0.069	20	9.6
2013 – 2015	0.065	21	9.4
2014 – 2016	0.066	20	9.1

KENTUCKY

Table KY-3
People Breathing Ozone

Grade	2000-2002	2002-2004	2004-2006	2006-2008	2008-2010	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016
A	0	38,051	205,618	0	0	0	0	0	0	0
B	181,412	1,250,072	1,612,222	0	447,486	28,183	365,999	947,435	507,540	403,900
C	1,674,067	968,161	450,269	1,325,582	1,845,115	1,045,051	1,062,851	1,308,420	1,786,723	1,736,956
D	394,992	137,524	0	994,520	0	810,046	802,472	0	92,066	0255,117
F	27,262	0	0	0	0	311,688	0	0	0	0
Subtotal	2,277,733	2,393,808	2,268,108	2,320,102	2,292,601	2,194,968	2,231,322	2,255,855	2,386,329	2,395,973
NM	1,812,142	1,752,293	1,951,131	1,969,776	2,046,766	2,185,447	2,163,975	2,157,602	2,038,763	2,041,001
Total	4,089,875	4,146,101	4,219,239	4,289,878	4,339,367	4,380,415	4,395,295	4,413,457	4,425,092	4,436,974

People Breathing Short-term Particle Pollution (24-Hour PM-2.5)

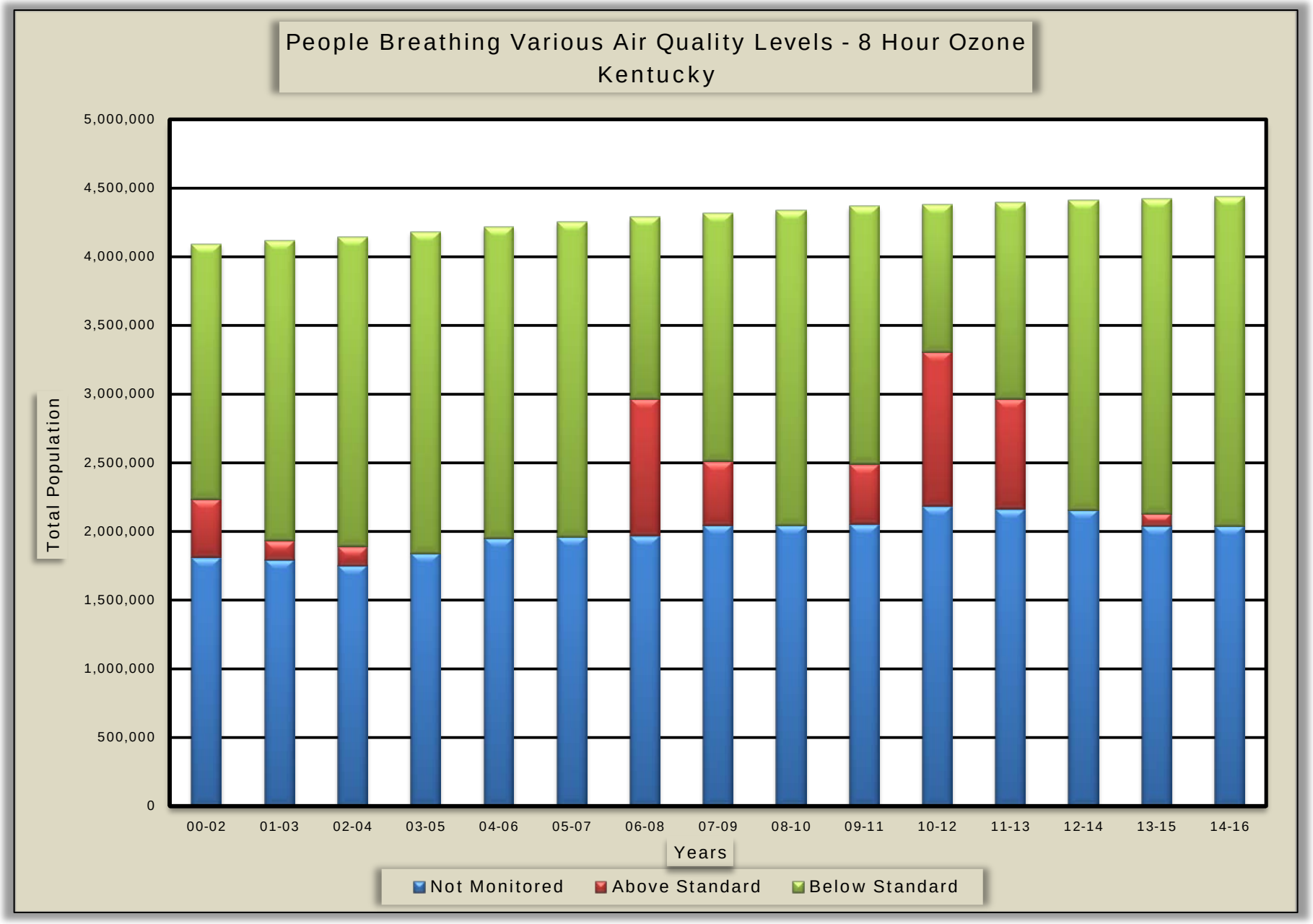
Grade	2000-2002	2002-2004	2004-2006	2006-2008	2008-2010	2010-2012	2011-2013	2012-2014	203-2015	2014-2016
A	1,844,029	2,092,991	0	260,679	1,607,165	1,042,417	979,282	1,047,920	1,934,660	2,035,996
B	0	0	947,592	1,079,932	494,064	0	0	0	0	0
C	0	0	450,025	365,097	0	0	0	0	0	0
D	0	0	357,575	182,549	0	0	0	0	0	0
F	0	0	178,787	0	0	0	0	0	0	0
Subtotal	1,844,029	2,092,991	1,933,978	1,888,256	2,101,229	1,042,417	979,282	1,047,920	1,934,660	2,035,9976
NM	2,245,846	2,053,110	2,285,261	2,401,622	2,238,138	3,337,998	3,416,013	3,365,537	2,490,432	2,400,978
Total	4,089,875	4,146,101	4,219,239	4,289,878	4,339,367	4,380,415	4,395,295	4,413,457	4,425,092	4,436,974

People Breathing Year Round Particle Pollution (Annual PM-2.5)

Grade	2000-2002	2002-2004	2004-2006	2006-2008	2008-2010	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016
A	0	0	278,941	109,273	1,142,908	1,042,417	176,172	628,829	753,557	1,507,393
B	27,262	606,615	823,515	976,051	958,321	0	596,701	419,091	1,181,103	528,603
C	556,314	956,255	831,523	802,932	0	0	206,409	0	0	0
D	793,913	530,121	0	0	0	0	0	0	0	0
F	466,540	0	0	0	0	0	0	0	0	0
Subtotal	1,844,029	2,092,991	1,933,978	1,888,256	2,101,229	1,042,417	978,282	1,047,920	1,934,660	2,035,996
NM	2,245,846	2,053,110	2,285,261	2,401,622	2,238,138	3,337,998	3,416,013	3,365,537	2,490,432	2,400,978
Total	4,089,875	4,146,101	4,219,239	4,289,878	4,339,367	4,380,415	4,395,295	4,413,457	4,425,092	4,436,974

NM = Not Monitored

Figure KY-1


People Breathing Various Air Quality Levels - 8 Hour Ozone
Kentucky
Total Population
5,000,000
4,500,000
4,000,000
3,500,000
3,000,000
2,500,000
2,000,000
1,500,000
1,000,000
500,000
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04-06
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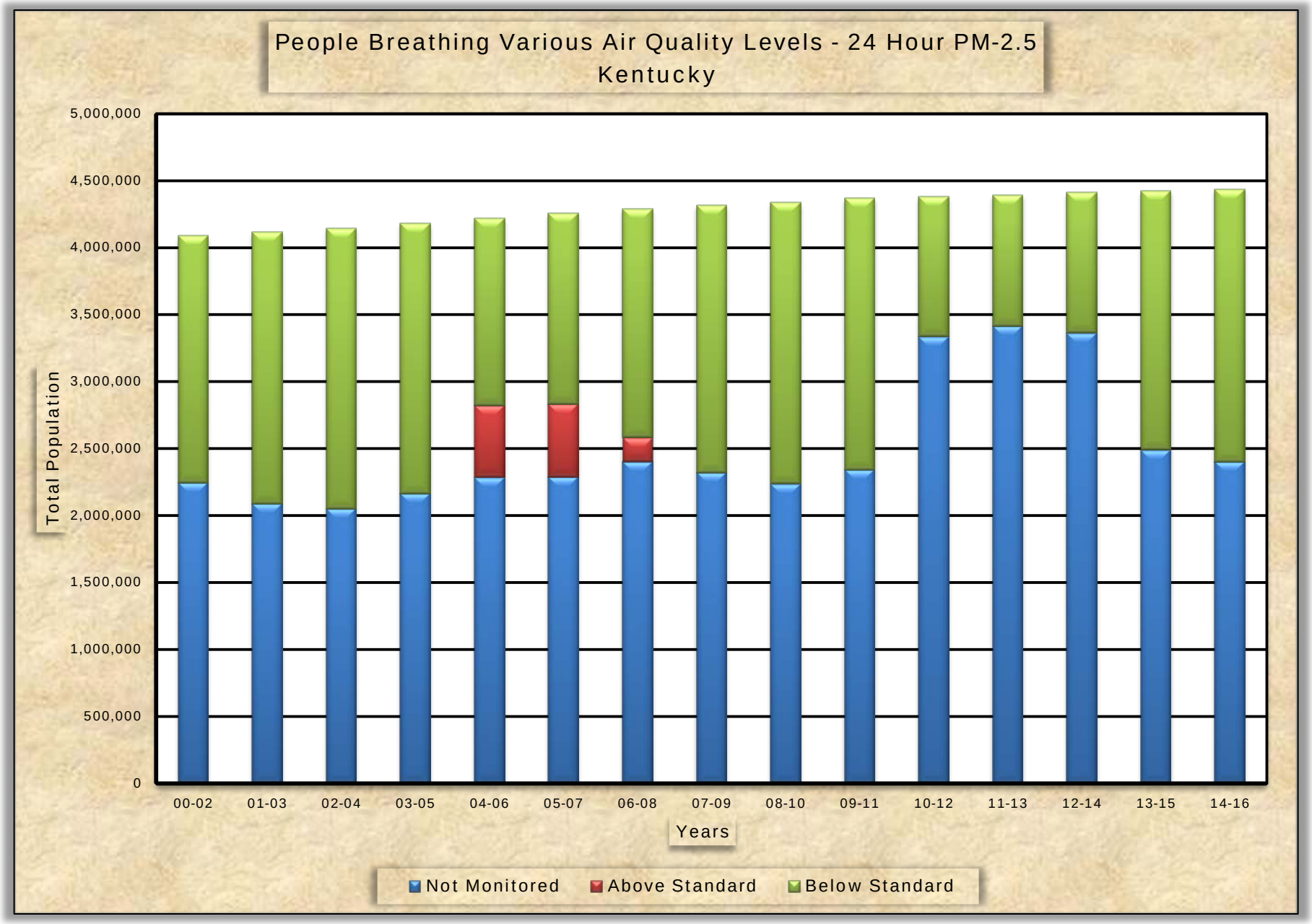
10-12
11-13
12-14
13-15
14-16
Years
Not Monitored
Above Standard
Below Standard

Figure KY-2


People Breathing Various Air Quality Levels - 24 Hour PM-2.5
Kentucky
Total Population
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4,000,000
3,500,000
3,000,000
2,500,000
2,000,000
1,500,000
1,000,000
500,000
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06-08
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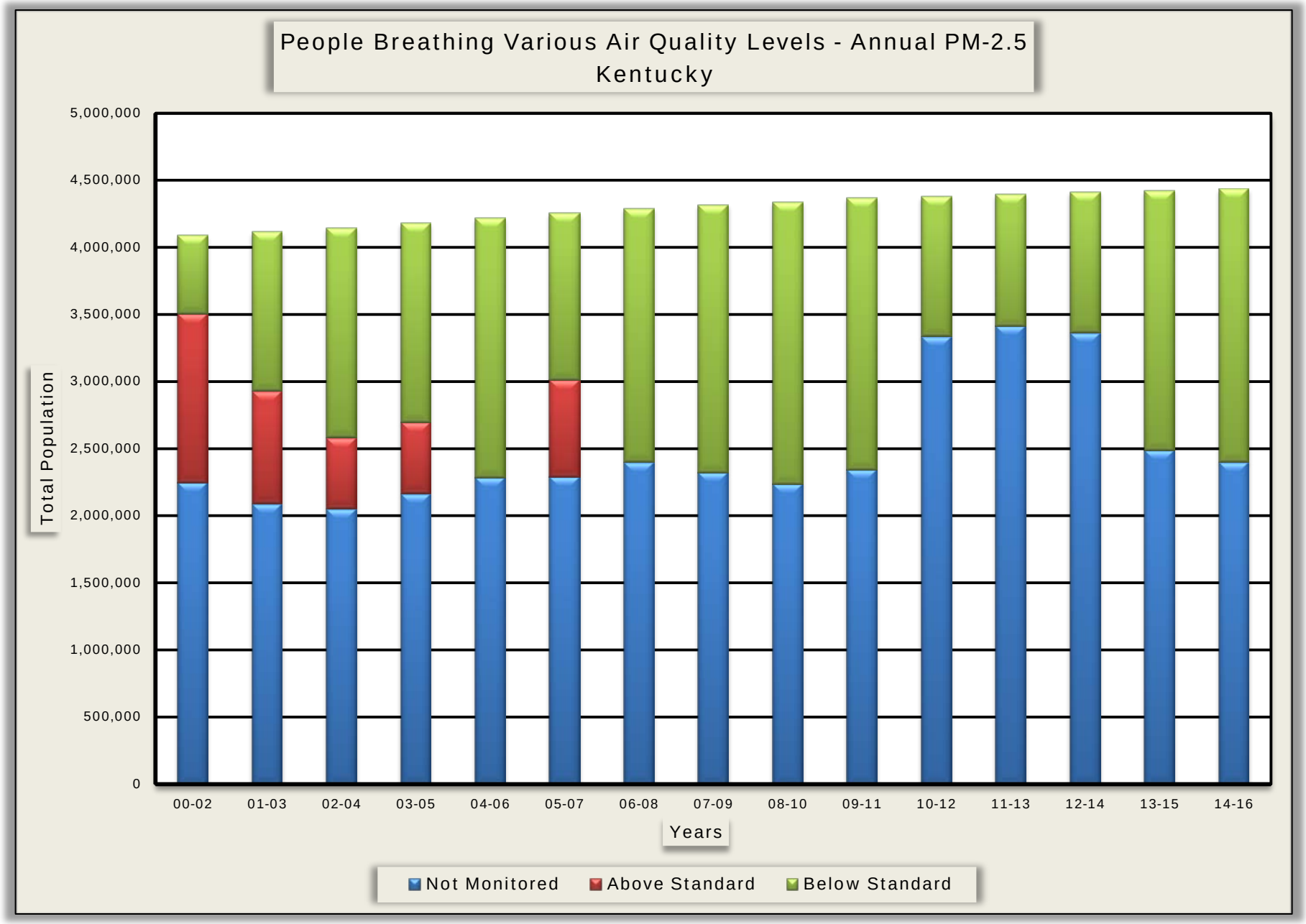
10-12
11-13
12-14
13-15
14-16
Years
Not Monitored
Above Standard
Below Standard

Figure KY-3


People Breathing Various Air Quality Levels - Annual PM-2.5
Kentucky
Total Population
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4,500,000
4,000,000
3,500,000
3,000,000
2,500,000
2,000,000
1,500,000
1,000,000
500,000
0
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03-05
04-06
05-07
06-08
07-09
08-10
09-11
10-12
11-13
12-14
13-15
14-16
Years
Not Monitored
Above Standard
Below Standard

LOUISIANA

Ozone

In the 2000 – 2002 time period, approximately 2.8 million people (61.2%) lived in counties that met the ozone standard. By 2014 – 2016 this had decreased to approximately 2.3 million people (49.5%). The ozone standard was lowered from 0.085 ppm to 0.070 ppm. Figure LA-1 shows the distribution of people by year. The population weighted ozone design value in 2000 – 2002 was 0.080 ppm. By 2014 – 2016 this had lowered to a value of 0.066 ppm, a reduction of 17.5 percent.

24-Hour PM-2.5

In the 2000 – 2002 time period, approximately 2.6 million people (57.5%) lived in counties where 24-hour PM-2.5 levels met the standard. By 2014 - 2016 this was approximately 2.2 million people (46.7%). The remainder of the population lived in counties where PM-2.5 was not measured. The standard was lowered from 65 µg/m3 to 35 µg/m3. Figure LA-2 shows the distribution of people by year. The population weighted 24-hour PM-2.5 design value in 2000 – 2002 was 29 µg/m3. By 2014 – 2016 this had lowered to a value of 24 µg/m3, a reduction of 17.2 percent.

Annual PM-2.5

In the 2000 – 2002 time period, approximately 2.6 million people (57.5%) lived in counties where annual PM-2.5 levels met the standard. By 2014 – 2016 this had increased to approximately 2.2 million people (46.7%). The remainder of the population lived in counties where PM-2.5 was not measured. The standard was lowered from 15 µg/m3 to 12 µg/m3. Figure LA-3 shows the distribution of people by year. The population weighted annual PM-2.5 design value in 2000 – 2002 was 12.2 µg/m3. By 2014 – 2016 this had lowered to a value of 9.8 µg/m3, a reduction of 19.7 percent.

LOUISIANA

Table LA-1
2014 – 2016

		Ozone			Particle Pollution (PM-2.5)				
County	Population	Avg. DV	Grade	MM	Avg.24-Hr DV	Grade	Avg. Ann DV	Grade	MM
Ascension	**121,587**	**0.071**	**D**	**N**	ND	ND	ND	ND	ND
Bossier	126,057	0.065	C	N	ND	ND	ND	ND	ND
Caddo	248,851	0.064	C	N	20	A	10.0	A	N
Calcasieu	200,601	0.066	C	Y	16	A	7.3	A	N
E. baton Rouge	447,037	0.069	C	Y	21	A	10.0	A	Y
Iberville	32,920	0.064	C	N	20	A	8.6	A	N
Jefferson	436,523	0.068	C	N	17	A	7.5	A	N
Lafayette	241,398	0.066	C	N	14	A	7.6	A	N
Lafourche	98,305	0.065	C	N	ND	ND	ND	ND	ND
Livingston	140,138	0.070	C	N	ND	ND	ND	ND	ND
Ouachita	156,983	0.059	B	N	18	A	8.0	A	N
Pointe Coupee	22,159	0.068	C	N	ND	ND	ND	ND	ND
Rapides	132,424	ND	ND	ND	16	A	7.6	A	N
St. Bernard	45,688	0.066	C	N	21	A	9.5	A	N
St. James	21,557	0.065	C	N	ND	ND	ND	ND	ND
St. John the Baptist	43,631	0.066	C	N	ND	ND	ND	ND	ND
St. Tammany	253,602	0.068	C	N	ND	ND	ND	ND	ND
Tangipahoa	130,710	ND	ND	ND	15	A	7.5	A	N
Terrebonne	113,220	ND	ND	ND	15	A	7.1	A	N
W. Baton Rouge	25,795	0.066	C	N	ND	ND	ND	ND	ND

DV = Design Value ND = No Data MM = Multiple Monitors

Table LA-2
Population Weighted Design Values

Period	Ozone (ppm)	24-Hour PM-2.5 (µg/m3)	Annual PM-2.5 (µg/m3)
2000 – 2002	0.080	29	12.2
2001 – 2003	0.077	26	11.8
2002 – 2004	0.077	25	11.4
2003 – 2005	0.081	27	11.8
2004 – 2006	0.080	28	11.9
2005 – 2007	0.080	27	11.9
2006 – 2008	0.076	24	11.1
2007 – 2009	0.073	20	9.8
2008 – 2010	0.072	19	9.5
2009 – 2011	0.074	20	9.5
2010 – 2012	0.073	21	10.0
2011 – 2013	0.070	20	9.2
2012 – 2014	0.068	19	8.8
2013 – 2015	0.067	19	8.6
2014 – 2016	0.066	24	9.8

LOUISIANA

Table LA-3
People Breathing Ozone

Grade	2000-2002	2002-2004	2004-2006	2006-2008	2008-2010	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016
A	0	0	0	0	0	0	0	156,325	0	0
B	627,700	1,225,912	234,930	214,703	217,976	155,363	295,689	876,305	156,761	182,778
C	2,126,838	1,475,747	1,615,151	422,818	2,396,786	2,217,853	2,754,063	2,040,272	2,346,724	2,134,948
D	113,837	207,081	216,737	1,547,456	110,043	827,267	0	0	148,918	345,106
F	0	0	0	125,857	0	0	0	0	0	0
Subtotal	2,868,375	2,908,740	2,066,818	2,310,834	2,724,805	3,200,483	3,049,751	3,072,902	2,652,403	2,662,832
NM	1,628,892	1,643,498	2,235,847	2,124,752	1,808,567	1,401,210	1,575,719	1,576,774	2,018,321	2,018,834
Total	4,497,267	4,552,238	4,302,665	4,435,586	4,533,372	4,601,693	4,625,470	4,649,676	4,670,724	4,681,666

People Breathing Short-term Particle Pollution (24-Hour PM-2.5)

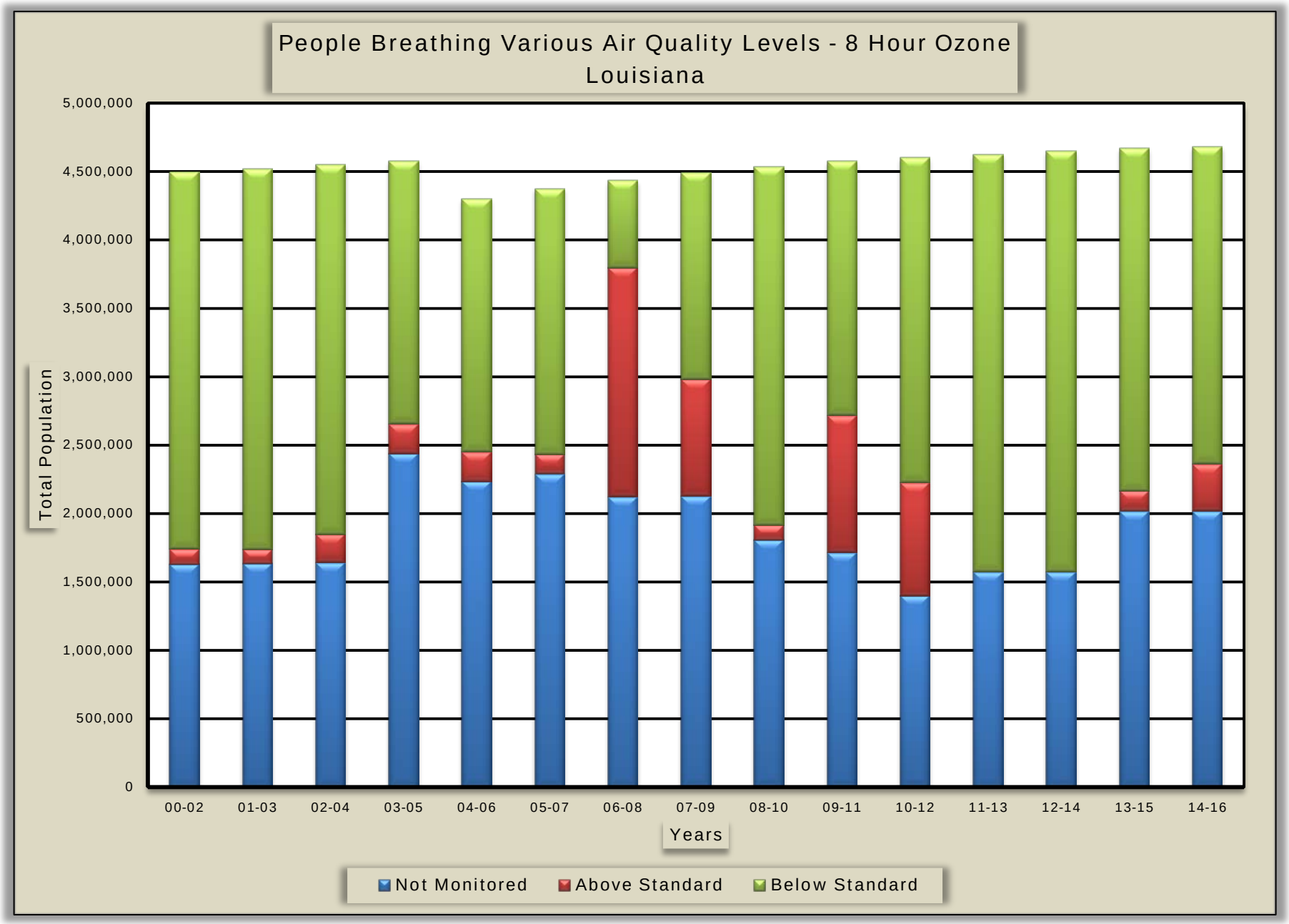
Grade	2000-2002	2002-2004	2004-2006	2006-2008	2008-2010	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016
A	2,587,207	2,505,313	741,820	1,839,072	2,129,612	2,178,882	2,189,548	2,085,892	2,138,098	2,186,355
B	0	0	1,094,595	251,953	0	0	0	0	0	203,781
C	0	0	0	0	0	0	0	0	0	0
D	0	0	0	0	0	0	0	0	0	0
F	0	0	0	0	0	0	0	0	0	0
Subtotal	2,587,207	2,505,313	1,836,415	2,091,025	2,129,612	2,178,882	2,189,548	2,085,892	2,138,098	2,186,355
NM	1,911,060	2,046,925	2,466,250	2,344,561	2,403,760	2,423,011	2,435,922	2,563,784	2,532,626	2,495,311
Total	4,497,267	4,552,238	4,302,665	4,435,586	4,533,372	4,601,893	4,625,470	4,649,676	4,670,724	4,681,666

People Breathing Year Round Particle Pollution (Annual PM-2.5)

Grade	2000-2002	2002-2004	2004-2006	2006-2008	2008-2010	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016
A	477,592	2,010,668	1,253,008	2,013,875	2,129,612	2,137,247	1,643,993	1,387,247	1,729,877	1,713,986
B	1,835,600	494,646	344,004	508,909	0	41,635	24,573	446,042	408,221	1,248,851
C	274,016	0	239,403	0	0	0	520,983	252,603	0	223,519
D	0	0	0	0	0	0	0	0	0	0
F	0	0	0	0	0	0	0	0	0	0
Subtotal	2,587,207	2,505,313	1,836,415	2,522,784	2,129,612	2,178,882	2,189,548	2,085,892	2,138,098	2,186,355
NM	1,911,060	2,046,925	2,466,250	1,912,802	2,403,760	2,423,011	2,435,922	2,563,784	2,532,626	2,495,311
Total	4,497,267	4,552,238	4,302,665	4,435,586	4,533,372	4,601,893	4,625,470	4,649,676	4,670,724	4,681,666

NM = Not Monitored

Figure LA-1


People Breathing Various Air Quality Levels - 8 Hour Ozone
Louisiana
Total Population
5,000,000
4,500,000
4,000,000
3,500,000
3,000,000
2,500,000
2,000,000
1,500,000
1,000,000
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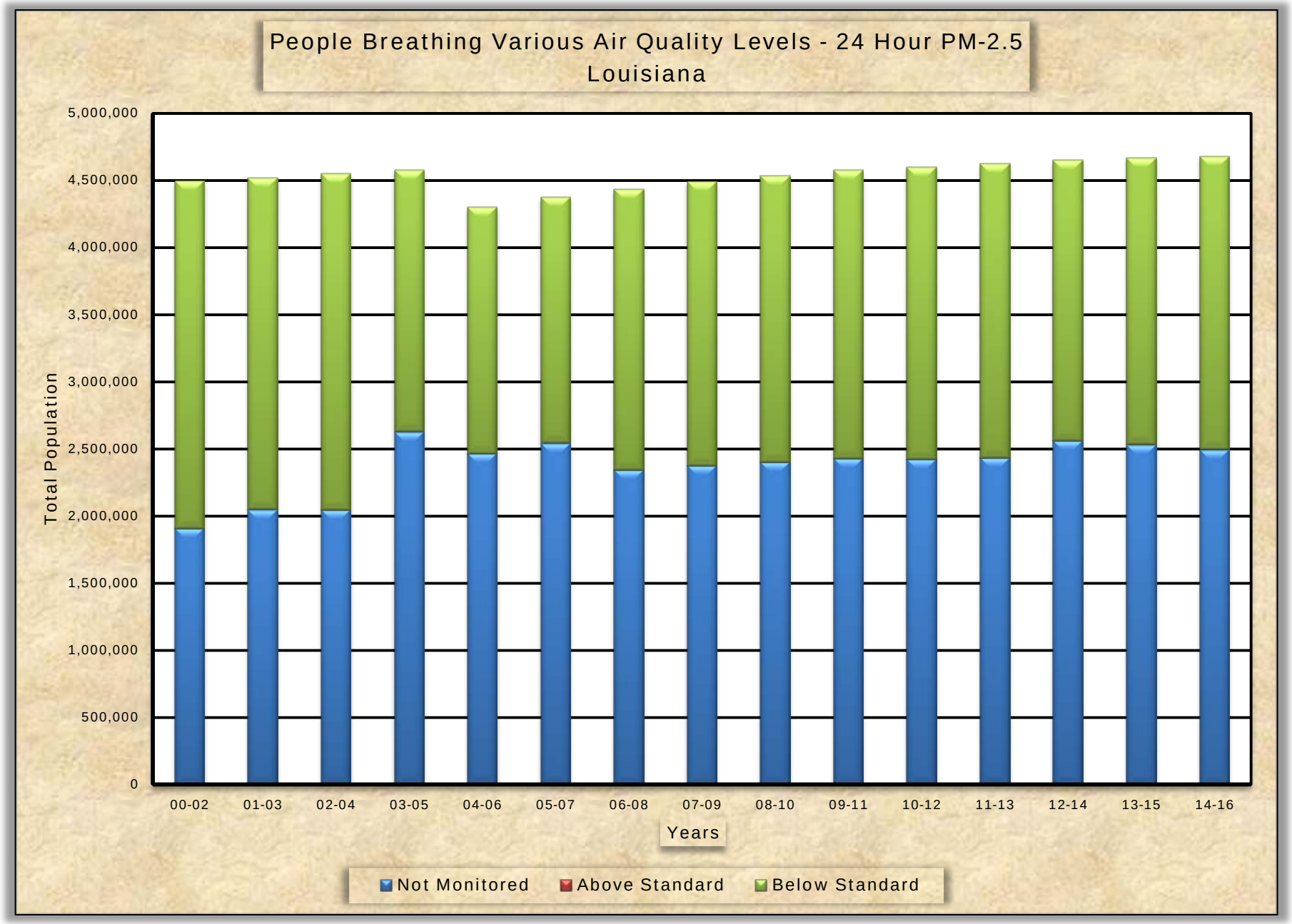
12-14
13-15
14-16
Years
Not Monitored
Above Standard
Below Standard

Figure LA-2


People Breathing Various Air Quality Levels - 24 Hour PM-2.5
Louisiana
Total Population
5,000,000
4,500,000
4,000,000
3,500,000
3,000,000
2,500,000
2,000,000
1,500,000
1,000,000
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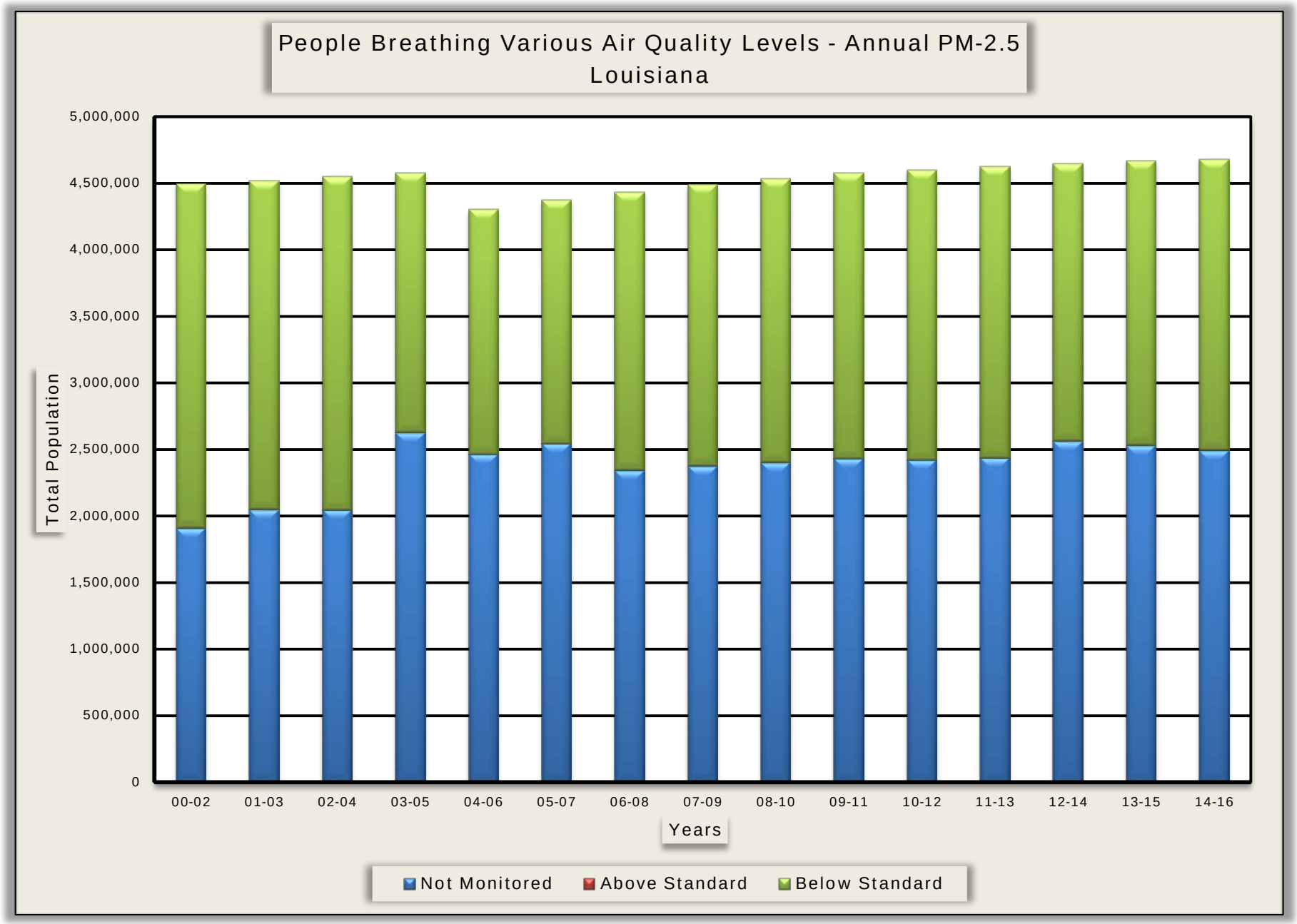
11-13
12-14
13-15
14-16
Years
Not Monitored
Above Standard
Below Standard

Figure LA-3


People Breathing Various Air Quality Levels - Annual PM-2.5
Louisiana
Total Population
5,000,000
4,500,000
4,000,000
3,500,000
3,000,000
2,500,000
2,000,000
1,500,000
1,000,000
500,000
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01-03
02-04
03-05
04-06
05-07
06-08
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08-10
09-11
10-12
11-13
12-14
13-15
14-16
Years
Not Monitored
Above Standard
Below Standard

MAINE

Ozone

In the 2000 – 2002 time period, approximately 240 thousand people (18.6%) lived in counties that met the ozone standard. By 2014 – 2016 this had increased to approximately 1.1 million people (84.5%). The remainder of the population lived in counties where ozone was not measured. The ozone standard was lowered from 0.085 ppm to 0.070 ppm. Figure ME-1 shows the distribution of people by year. The population weighted ozone design value in 2000 – 2002 was 0.083 ppm. By 2014 – 2016 this had lowered to a value of 0.061 ppm, a reduction of 26.5 percent.

24-Hour PM-2.5

In the 2000 – 2002 time period, approximately 1.0 million people (74.4%) lived in counties where 24-hour PM-2.5 levels met the standard. By 2014 - 2016 this was approximately 0.62 million people (46.5%). The remainder of the population lived in counties where PM-2.5 was not measured. The standard was lowered from 65 µg/m3 to 35 µg/m3. Figure ME-2 shows the distribution of people by year. The population weighted 24-hour PM-2.5 design value in 2000 – 2002 was 28 µg/m3. By 2014 – 2016 this had lowered to a value of 17 µg/m3, a reduction of 39.3 percent.

Annual PM-2.5

In the 2000 – 2002 time period, approximately 1.0 million people (74.4%) lived in counties where annual PM-2.5 levels met the standard. By 2014 – 2016 this had decreased to approximately 0.62 million people (46.5%). The remainder of the population lived in counties where PM-2.5 was not measured. The standard was lowered from 15 µg/m3 to 12 µg/m3. Figure ME-3 shows the distribution of people by year. The population weighted annual PM-2.5 design value in 2000 – 2002 was 10.1 µg/m3. By 2014 – 2016 this had lowered to a value of 6.9 µg/m3, a reduction of 31.7 percent.

MAINE

Table ME-1
2014 – 2016

		Ozone			Particle Pollution (PM-2.5)				
County	Population	Avg. DV	Grade	MM	Avg. 24-Hr DV	Grade	Avg. Ann DV	Grade	MM
Androscoggin	107,319	0.060	B	N	18	A	7.0	A	N
Aroostook	67,959	0.053	A	N	15	A	6.1	A	Y
Cumberland	292,041	0.065	C	N	18	A	7.0	A	N
Hancock	54,419	0.065	C	Y	ND	ND	ND	ND	ND
Kennebec	120,560	0.060	B	N	ND	ND	ND	ND	ND
Knox	39,744	0.064	C	N	ND	ND	ND	ND	ND
Oxford	57,517	0.053	A	N	ND	ND	ND	ND	ND
Penobscot	151,806	0.058	B	N	16	A	6.9	A	N
Washington	31,450	0.058	B	N	ND	ND	ND	ND	ND
York	202,343	0.062	B	Y	ND	ND	ND	ND	ND

DV = Design Value ND = No Data MM = Multiple Monitors

Table ME-2
Population Weighted Design Values

Period	Ozone (ppm)	24-Hour PM-2.5 (µg/m3)	Annual PM-2.5 (µg/m3)
2000 – 2002	0.083	28	10.1
2001 – 2003	0.085	30	10.8
2002 – 2004	0.077	29	10.7
2003 – 2005	0.071	28	10.8
2004 – 2006	0.067	26	10.1
2005 – 2007	0.072	24	9.7
2006 – 2008	0.070	22	9.1
2007 – 2009	0.069	21	8.5
2008 – 2010	0.063	22	7.9
2009 – 2011	0.062	21	7.4
2010 – 2012	0.062	20	7.4
2011 – 2013	0.062	19	7.3
2012 – 2014	0.062	18	7.1
2013 – 2015	0.062	16	6.1
2014 – 2016	0.061	17	6.9

MAINE

Table ME-3
People Breathing Ozone

Grade	2000-2002	2002-2004	2004-2006	2006-2008	2008-2010	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016
A	55,843	56,763	401,442	89,187	283,626	314,557	312,886	311,637	125,830	125,476
B	0	388,891	576,105	228,155	541,848	571,040	598,350	600,629	545,643	573,249
C	185,033	464,910	18,003	470,239	293,821	235,575	209,701	210,802	441,547	426,442
D	490,797	17,871	0	224,836	0	0	0	0	0	0
F	0	0	0	0	0	0	0	0	0	0
Subtotal	731,672	928,435	935,550	1,012,415	1,119,294	1,121,171	1,120,936	1,123,068	1,113,020	1,125,167
NM	564,288	385,253	388,069	318,094	209,067	208,021	207,366	207,021	216,308	206,312
Total	1,295,960	1,313,688	1,323,619	1,330,509	1,328,361	1,329,192	1,328,302	1,330,089	1,329,328	1,331,479

People Breathing Short-term Particle Pollution (24-Hour PM-2.5)

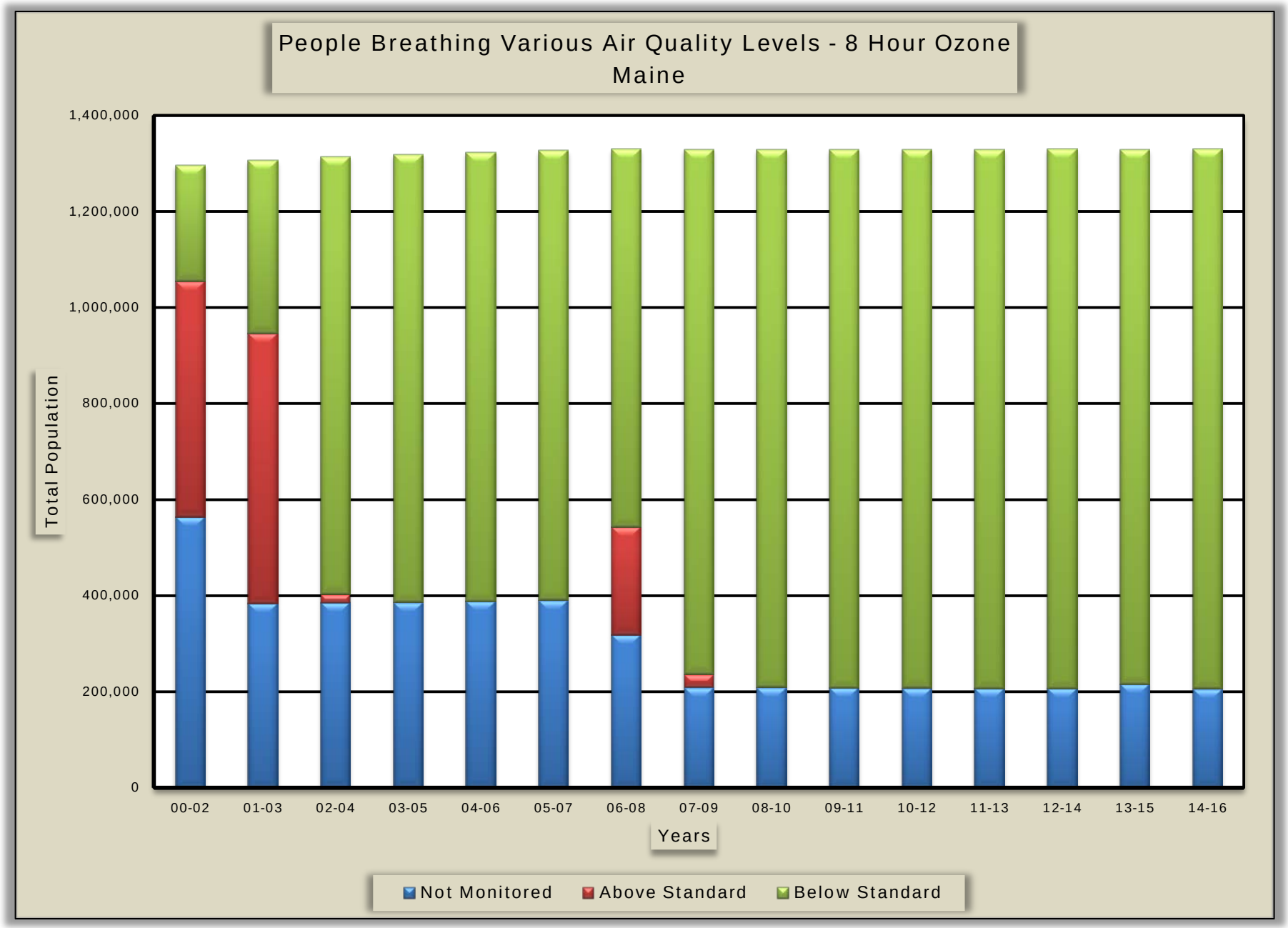
Grade	2000-2002	2002-2004	2004-2006	2006-2008	2008-2010	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016
A	964,390	780,626	453,713	795,146	795,153	850,036	849,765	803,906	328,553	619,125
B	0	0	334,640	0	0	0	0	0	0	0
C	0	0	0	0	0	0	0	0	0	0
D	0	0	0	0	0	0	0	0	0	0
F	0	0	0	0	0	0	0	0	0	0
Subtotal	964,390	780,626	788,353	795,146	795,153	850,036	849,765	803,906	328,553	619,125
NM	331,570	533,062	535,266	535,363	533,208	479,156	478,537	526,183	1,000,775	712,354
Total	1,295,960	1,313,688	1,323,619	1,330,509	1,328,361	1,329,192	1,328,302	1,330,089	1,329,328	1,331,479

People Breathing Year Round Particle Pollution (Annual PM-2.5)

Grade	2000-2002	2002-2004	2004-2006	2006-2008	2008-2010	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016
A	964,390	780,626	788,353	795,146	795,153	850,036	849,765	803,906	328,553	619,125
B	0	0	0	0	0	0	0	0	0	0
C	0	0	0	0	0	0	0	0	0	0
D	0	0	0	0	0	0	0	0	0	0
F	0	0	0	0	0	0	0	0	0	0
Subtotal	964,390	780,626	788,353	795,146	795,153	850,036	849,765	803,906	328,553	619,125
NM	331,570	533,062	535,266	535,363	533,208	479,156	478,537	526,183	1,000,775	712,354
Total	1,295,960	1,313,688	1,323,619	1,330,509	1,328,361	1,329,192	1,328,302	1,330,089	1,329,328	1,331,479

NM = Monitored

Figure ME-1


People Breathing Various Air Quality Levels - 8 Hour Ozone
Maine
1,400,000
1,200,000
1,000,000
800,000
600,000
400,000
200,000
0
Total Population
00-02
01-03
02-04
03-05
04-06
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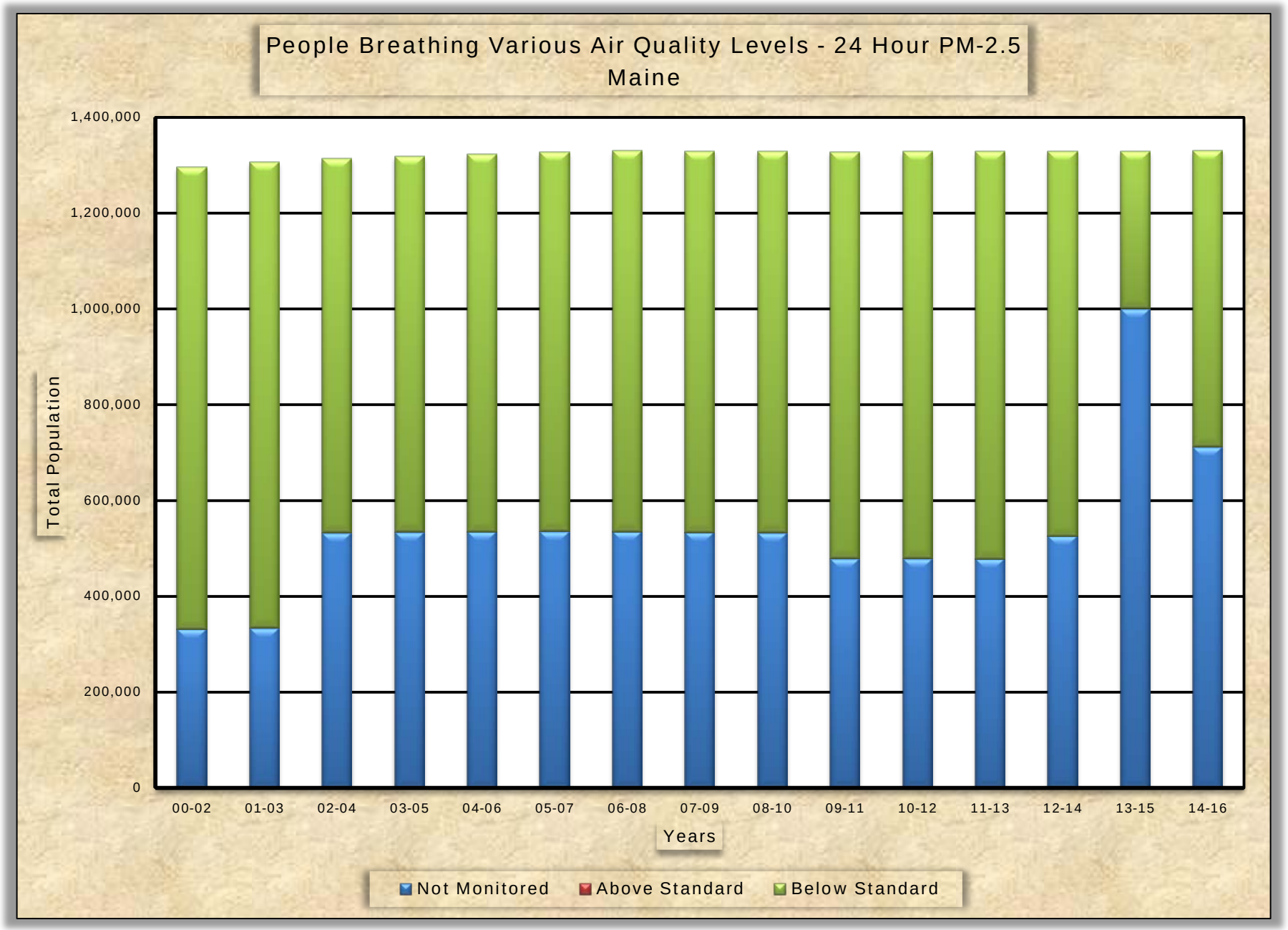
10-12
11-13
12-14
13-15
14-16
Years
Not Monitored
Above Standard
Below Standard

Figure ME-2


People Breathing Various Air Quality Levels - 24 Hour PM-2.5
Maine
1,400,000
1,200,000
1,000,000
800,000
600,000
400,000
200,000
0
Total Population
00-02
01-03
02-04
03-05
04-06
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07-09
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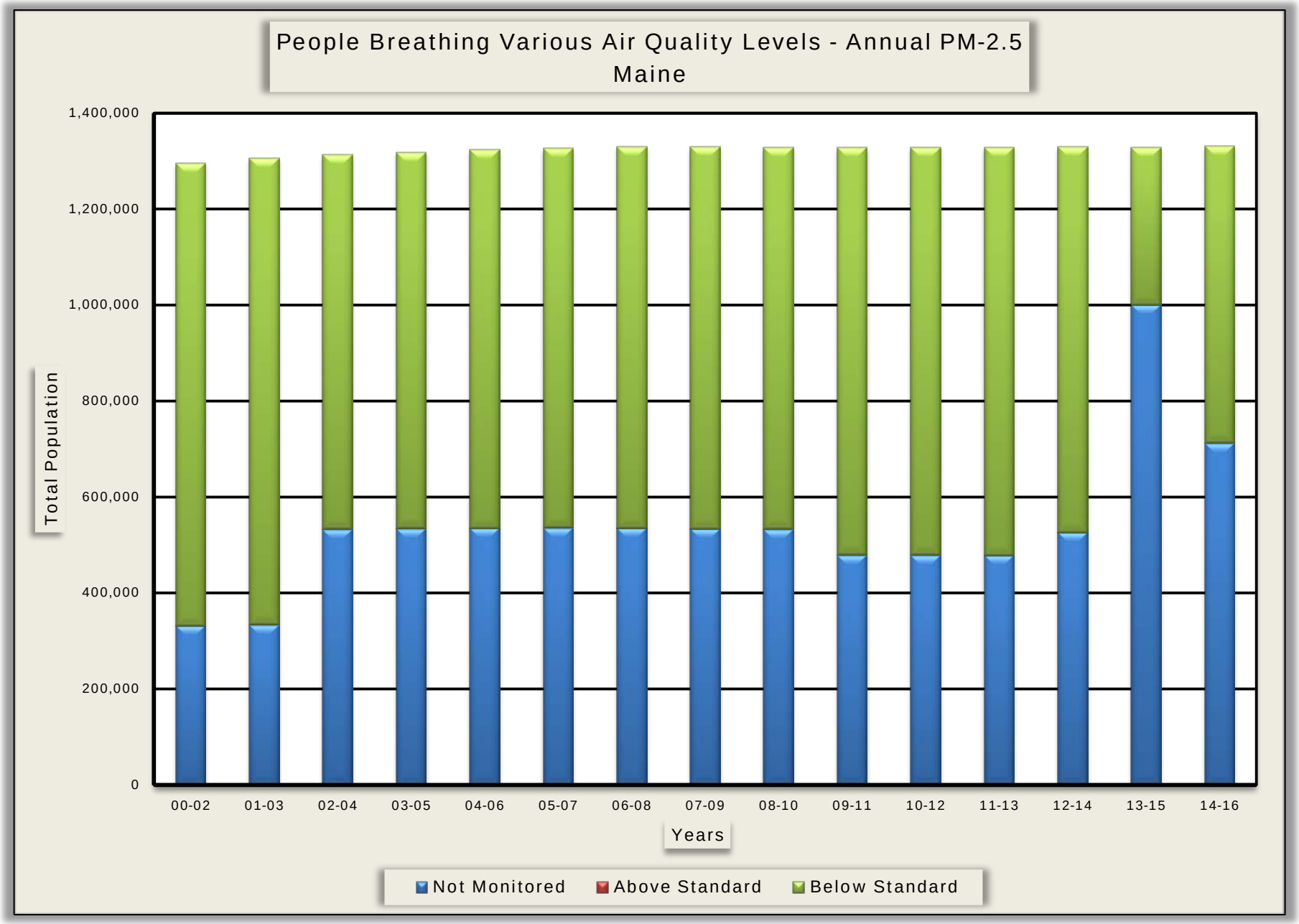
10-12
11-13
12-14
13-15
14-16
Years
Not Monitored
Above Standard
Below Standard

Figure ME-3


People Breathing Various Air Quality Levels - Annual PM-2.5
Maine
1,400,000
1,200,000
1,000,000
800,000
600,000
400,000
200,000
0
Total Population
00-02
01-03
02-04
03-05
04-06
05-07
06-08
07-09
08-10
09-11
10-12
11-13
12-14
13-15
14-16
Years
Not Monitored
Above Standard
Below Standard

MARYLAND

Ozone

In the 2000 – 2002 time period, no people lived in counties that met the ozone standard. By 2014 – 2016 this had increased to approximately 5.2 million people (86.7%). The ozone standard was lowered from 0.085 ppm to 0.070 ppm. Figure MD-1 shows the distribution of people by year. The population weighted ozone design value in 2000 – 2002 was 0.094 ppm. By 2014 – 2016 this had lowered to a value of 0.068 ppm, a reduction of 27.7 percent.

24-Hour PM-2.5

In the 2000 – 2002 time period, approximately 4.1 million people (75.2%) lived in counties where 24-hour PM-2.5 levels met the standard. By 2014 - 2016 this was approximately 4.6 million people (75.6%). The standard was lowered from 65 µg/m3 to 35 µg/m3. Figure MD-2 shows the distribution of people by year. The population weighted 24-hour PM-2.5 design value in 2000 – 2002 was 37 µg/m3. By 2014 – 2016 this had lowered to a value of 21 µg/m3, a reduction of 43.2 percent.

Annual PM-2.5

In the 2000 – 2002 time period, approximately 2.1 million people (39.1%) lived in counties where annual PM-2.5 levels met the standard. By 2014 – 2016 this had increased to approximately 4.6 million people (75.6%). The standard was lowered from 15 µg/m3 to 12 µg/m3. Figure MD-3 shows the distribution of people by year. The population weighted annual PM-2.5 design value in 2000 – 2002 was 15.1 µg/m3. By 2014 – 2016 this had lowered to a value of 8.7 µg/m3, a reduction of 42.4 percent.

MARYLAND

Table MD-1
2014 – 2016

		Ozone			Particle Pollution (PM-2.5)				
County	Population	Avg. DV	Grade	MM	Avg. 24-Hr DV	Grade	Avg. Ann DV	Grade	MM
Anne Arundel	568,346	0.070	C	N	22	A	9.0	A	N
Baltimore	**831,026**	**0.071**	**D**	**Y**	21	A	9.0	A	Y
Calvert	91,251	0.068	C	N	ND	ND	ND	ND	ND
Carroll	167,656	0.066	C	N	ND	ND	ND	ND	ND
Cecil	**102,603**	**0.074**	**D**	N	23	A	8.7	A	N
Charles	157,705	0.069	C	N	ND	ND	ND	ND	ND
Dorchester	32,258	0.065	C	Y	18	A	8.1	A	N
Frederick	247,591	0.066	C	N	ND	ND	ND	ND	ND
Garrett	29,425	0.065	C	N	15	A	5.7	A	N
Harford	**251,032**	**0.072**	**D**	**Y**	21	A	8.8	A	N
Kent	19,730	0.069	C	N	19	A	7.9	A	N
Montgomery	1,043,863	0.067	C	N	19	A	8.4	A	N
Prince Georges	906,049	0.068	C	Y	19	A	8.3	A	Y
Washington	150,292	0.065	C	N	23	A	8.9	A	N
Baltimore (City)	614,664	0.066	C	N	24	A	9.3	A	Y

DV = Design Value ND = No Data MM = Multiple Monitors

Table MD-2
Population Weighted Design Values

Period	Ozone (ppm)	24-Hour PM-2.5 (µg/m3)	Annual PM-2.5 (µg/m3)
2000 – 2002	0.094	37	15.1
2001 – 2003	0.092	37	13.9
2002 – 2004	0.088	36	13.7
2003 – 2005	0.084	35	13.8
2004 – 2006	0.086	33	13.7
2005 – 2007	0.087	32	13.3
2006 – 2008	0.084	31	12.3
2007 – 2009	0.076	28	11.6
2008 – 2010	0.076	25	10.7
2009 – 2011	0.078	25	10.5
2010 – 2012	0.081	24	10.2
2011 – 2013	0.077	24	9.9
2012 – 2014	0.070	22	9.3
2013 – 2015	0.068	22	9.1
2014 – 2016	0.068	21	8.7

MARYLAND

Table MD-3
People Breathing Ozone

Grade	2000-2002	2002-2004	2004-2006	2006-2008	2008-2010	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016
A	0	0	0	0	0	0	0	0	0	0
B	0	0	30,147	0	620,961	0	0	772,366	0	0
C	0	1,828,291	2,019,756	30,222	949,437	800,376	2,259,891	4,009,505	4,567,282	4,028,830
D	2,175,242	1,016,163	2,106,646	1,006,857	2,685,497	2,405,307	2,758,652	403,860	643,091	1,184,661
F	1,798,729	1,220,004	0	2,305,391	122,413	1,866,012	124,608	0	0	0
Subtotal	3,973,971	4,064,457	4,156,548	3,342,469	4,378,308	5,071,694	5,143,150	5,185,731	5,210,373	5,213,491
NM	1,466,410	1,482,478	1,470,819	2,342,496	1,395,244	812,869	785,664	790,676	796,028	802,956
Total	5,440,389	5,546,935	5,627,367	5,684,965	5,773,552	5,884,563	5,928,814	5,976,407	6,006,401	6,016,447

People Breathing Short-term Particle Pollution (24-Hour PM-2.5)

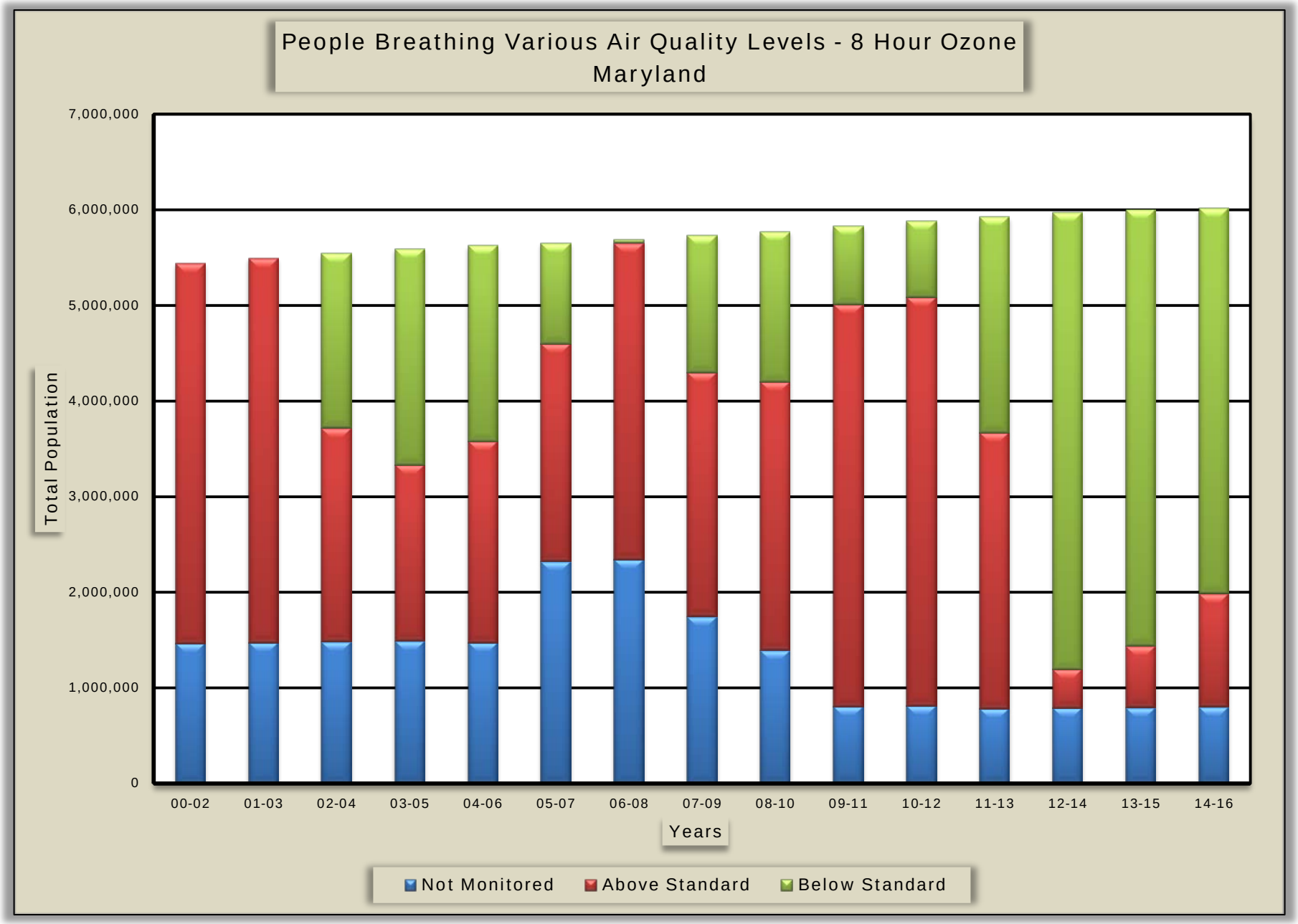
Grade	2000-2002	2002-2004	2004-2006	2006-2008	2008-2010	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016
A	4,093,440	3,211,115	0	0	3,041,556	3,668,018	4,220,912	4,466,639	4,281,584	4,551,188
B	0	0	1,266,476	2,282,600	1,250,651	207,114	207,368	0	207,283	0
C	0	0	2,411,972	1,944,139	0	0	0	0	0	0
D	0	0	248,444	0	0	0	0	0	0	0
F	0	0	124,222	0	0	0	0	0	0	0
Subtotal	4,093,440	3,211,115	4,051,113	4,226,739	4,292,207	3,875,132	4,428,280	4,466,639	4,488,867	4,551,288
NM	1,346,949	2,335,820	1,576,254	1,458,226	1,481,345	2,009,431	1,500,534	1,509,768	1,517,534	1,465,159
Total	5,440,389	5,546,935	5,627,367	5,684,965	5,773,552	5,884,563	5,928,814	5,976,407	6,006,401	6,016,447

People Breathing Year Round Particle Pollution (Annual PM-2.5)

Grade	2000-2002	2002-2004	2004-2006	2006-2008	2008-2010	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016
A	0	0	0	2,135,926	4,292,207	3,668,018	1,063,916	3,144,424	3,562,842	3,892,376
B	993,201	1,406,470	2,118,573	1,381,396	0	207,114	3,156,996	1,114,617	718,742	658,912
C	1,132,347	1,260,183	1,559,875	709,418	0	0	0	207,598	207,283	0
D	1,138,999	544,463	372,665	0	0	0	207,368	0	0	0
F	828,893	0	0	0	0	0	0	0	0	0
Subtotal	4,093,440	3,211,115	4,051,113	4,226,739	4,292,207	3,875,132	4,428,280	4,466,639	4,488,867	4,551,288
NM	1,346,949	2,335,820	1,576,254	1,458,226	1,481,345	2,009,431	1,500,534	1,509,768	1,517,534	1,465,159
Total	5,440,389	5,546,935	5,627,367	5,684,965	5,773,552	5,884,563	5,928,814	5,976,407	6,006,401	6,016,447

NM = Not Monitored

Figure MD-1


People Breathing Various Air Quality Levels - 8 Hour Ozone
Maryland
Total Population
7,000,000
6,000,000
5,000,000
4,000,000
3,000,000
2,000,000
1,000,000
0
00-02
01-03
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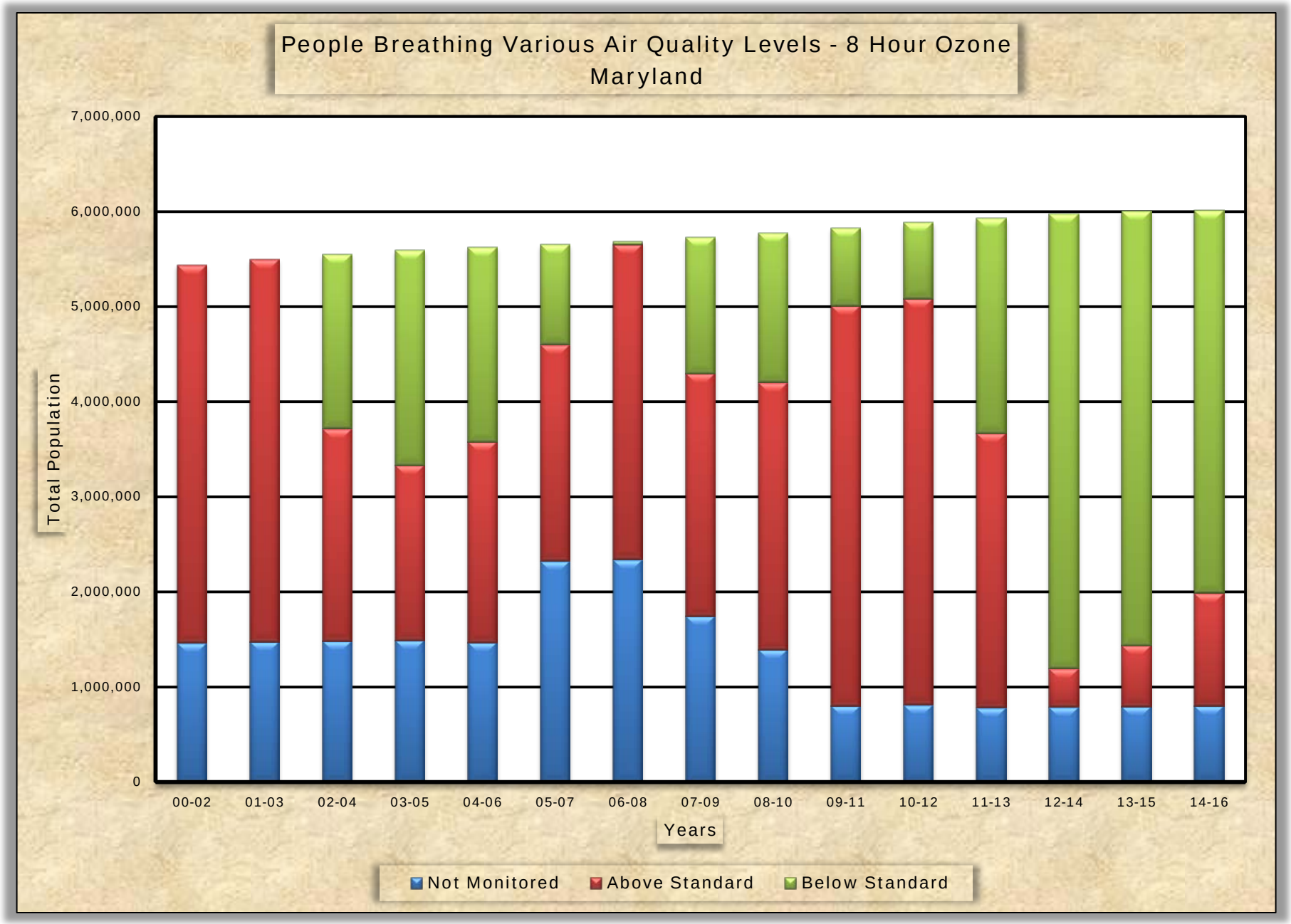
07-09
08-10
09-11
10-12
11-13
12-14
13-15
14-16
Years
Not Monitored
Above Standard
Below Standard

Figure MD-2


People Breathing Various Air Quality Levels - 8 Hour Ozone
Maryland
Total Population
7,000,000
6,000,000
5,000,000
4,000,000
3,000,000
2,000,000
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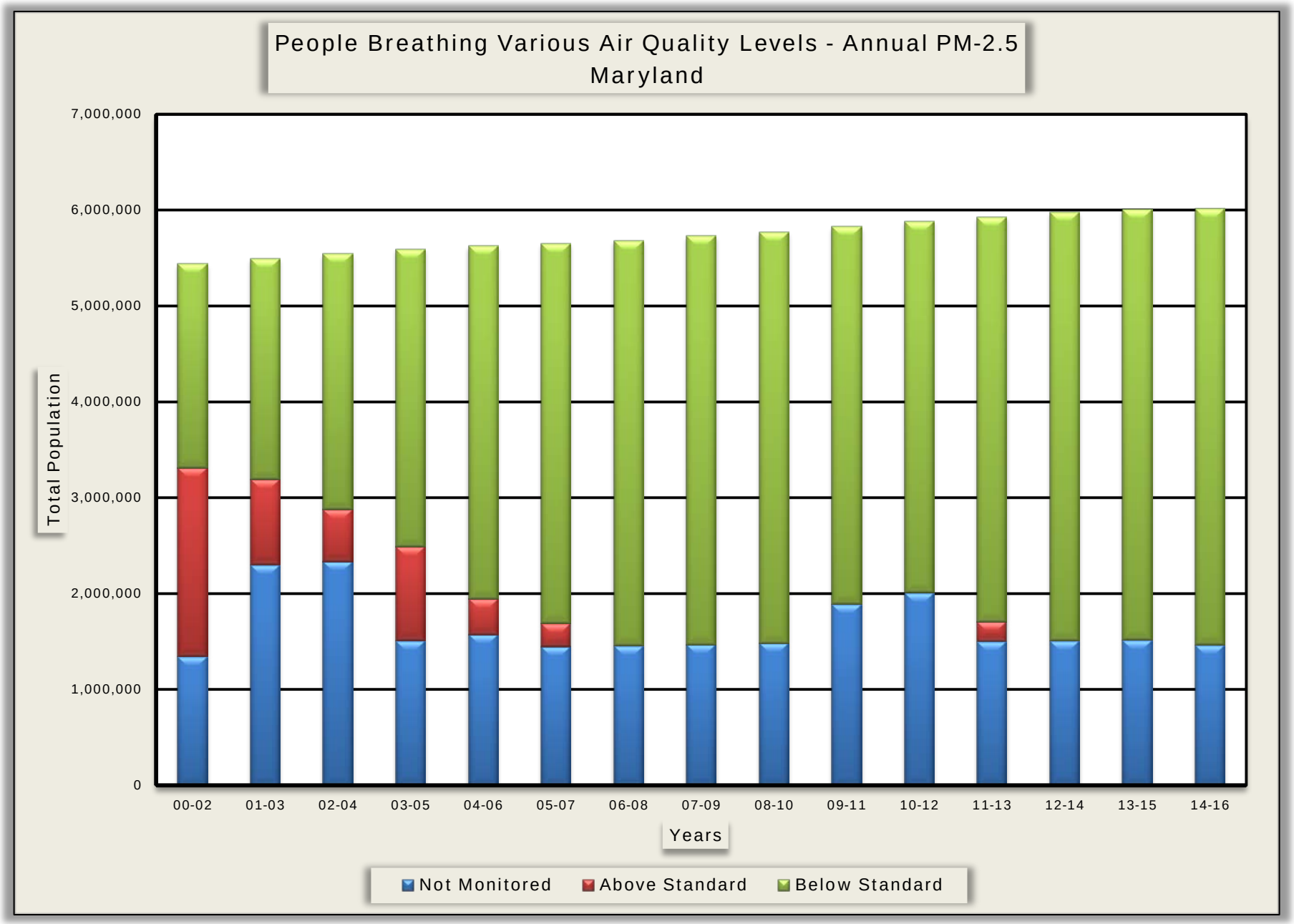
11-13
12-14
13-15
14-16
Years
Not Monitored
Above Standard
Below Standard

Figure MD-3


People Breathing Various Air Quality Levels - Annual PM-2.5
Maryland
7,000,000
6,000,000
5,000,000
4,000,000
3,000,000
2,000,000
1,000,000
0
Total Population
00-02
01-03
02-04
03-05
04-06
05-07
06-08
07-09
08-10
09-11
10-12
11-13
12-14
13-15
14-16
Years
Not Monitored
Above Standard
Below Standard

MASSACHUSETTS

Ozone

In the 2000 – 2002 time period, approximately 1 million people (16.1%) lived in counties that met the ozone standard. By 2014 – 2016 this had increased to approximately 6.4 million people (94.6%). The remainder of the population lived in counties where ozone was no monitored. The ozone standard was lowered from 0.085 ppm to 0.070 ppm. Figure MA-1 shows the distribution of people by year. The population weighted ozone design value in 2000 – 2002 was 0.086 ppm. By 2014 – 20165 this had lowered to a value of 0.064 ppm, a reduction of 25.6 percent.

24-Hour PM-2.5

In the 2000 – 2002 time period, approximately 6.1 million people (95.0%) lived in counties where 24-hour PM-2.5 levels met the standard. By 2014 - 2016 this was approximately 4.1 million people (60.5%). The remainder of the population lived in counties where PM-2.5 was not measured. The standard was lowered from 65 µg/m3 to 35 µg/m3. Figure MA-2 shows the distribution of people by year. The population weighted 24-hour PM-2.5 design value in 2000 – 2002 was 29 µg/m3. By 2014 – 2016 this had lowered to a value of 16 µg/m3, a reduction of 44.8 percent.

Annual PM-2.5

In the 2000 – 2002 time period, approximately 6.1 million people (95.0%) lived in counties where annual PM-2.5 levels met the standard. By 2014 – 2016 this was approximately 4.1 million people (60.5%). The remainder of the population lived in counties where PM-2.5 was not measured. The standard was lowered from 15 µg/m3 to 12 µg/m3. Figure MA-3 shows the distribution of people by year. The population weighted annual PM-2.5 design value in 2000 – 20002 was 11.3 µg/m3. By 2014 – 2016 this had lowered to a value of 6.3 µg/m3, a reduction of 44.2 percent.

Table MA-1
2014 – 2016

		Ozone			Particle Pollution (PM-2.5)				
County	Population	Avg. DV	Grade	MM	Avg. 24-Hr DV	Grade	Avg. Ann DV	Grade	MM
Berkshire	126,903	ND	ND	ND	16	A	6.3	A	N
Bristol	558,324	0.066	C	Y	16	A	6.9	A	N
Essex	779,018	ND	ND	ND	15	A	5.9	A	Y
Franklin	70,382	0.063	C	N	15	A	6.2	A	N
Hampden	468,467	0.070	C	N	17	A	6.3	A	Y
Hampshire	161,816	0.070	C	N	ND	ND	ND	ND	ND
Middlesex	1,589,774	0.063	C	N	ND	ND	ND	ND	ND
Norfolk	697,181	0.068	C	N	ND	ND	ND	ND	ND
Plymouth	513,565	0.064	C	N	14	A	5.5	A	N
Suffolk	754,230	0.056	B	N	16	A	6.9	A	Y
Worcester	819,589	0.064	C	Y	16	A	6.3	A	Y

DV = Design Value ND = No Data MM = Multiple Monitors

MASSACHUSETTS

Table MA-2

Population Weighted Design Values

Period	Ozone (ppm)	24-Hour PM-2.5 (µg/m3)	Annual PM-2.5 (µg/m3)
2000 – 2002	0.086	29	11.3
2001 – 2003	0.090	33	11.8
2002 – 2004	0.084	32	11.2
2003 – 2005	0.079	30	10.9
2004 – 2006	0.079	28	10.3
2005 – 2007	0.081	27	10.0
2006 – 2008	0.078	25	9.5
2007 – 2009	0.076	24	9.2
2008 – 2010	0.072	23	8.7
2009 – 2011	0.069	21	8.2
2010 – 2012	0.069	21	8.3
2011 – 2013	0.068	19	7.9
2012 – 2014	0.068	17	6.9
2013 – 2015	0.064	16	6.3
2014 – 2016	0.064	16	6.3

MASSACHUSETTS

Table MA-3
People Breathing Ozone

Grade	2000-2002	2002-2004	2004-2006	2006-2008	2008-2010	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016
A	0	0	343,596	0	0	0	0	383,627	0	0
B	594,744	423,146	2,031,317	702,201	361,012	824,324	2,414,905	2,896,132	778,121	1,043,903
C	439,650	2,034,709	2,927,382	817,332	4,036,650	4,542,085	3,018,020	2,876,909	4,903,630	5,398,443
D	3,381,572	2,594,251	539,492	3,820,330	1,556,970	17,041	0	0	0	0
F	0	0	0	556,993	0	0	0	0	0	0
Subtotal	4,415,965	5,052,105	5,841,786	5,896,855	5,954,631	5,383,449	5,432,924	6,156,668	5,681,751	6,442,346
NM	2,001,241	1,360,176	568,298	572,112	481,998	1,262,695	1,259,900	588,740	1,112,671	369,433
Total	6,417,206	6,412,281	6,410.084	6,468,967	6,547,629	6,646,144	6,692,824	6,745,408	6,794,422	6,811,779

People Breathing Short-term Particle Pollution (24-Hour PM-2.5)

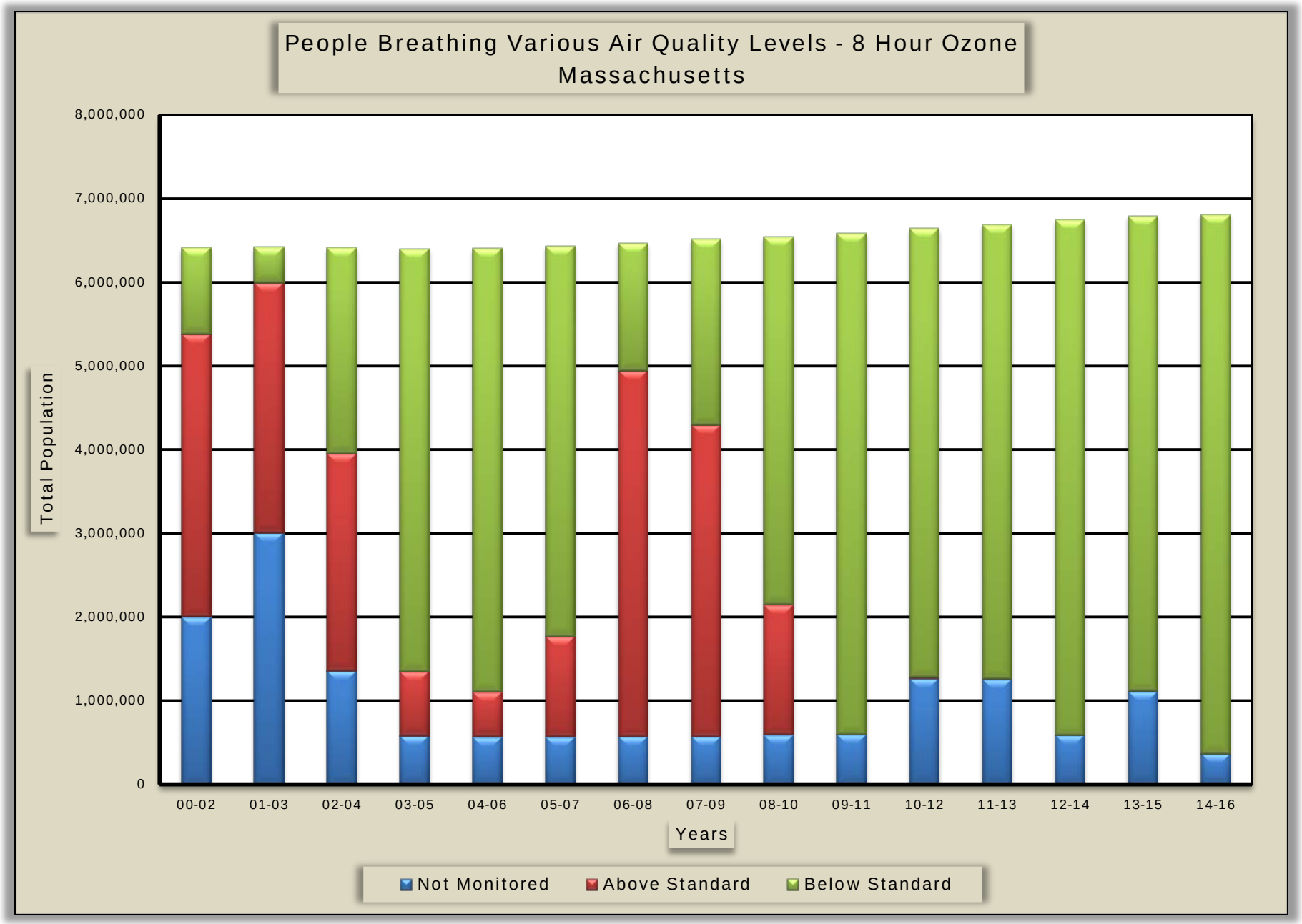
Grade	2000-2002	2002-2004	2004-2006	2006-2008	2008-2010	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016
A	6,094,986	2,499,982	1,184,593	2,933,416	5,404,732	3,952,987	3,678,758	4,007,912	3,528,417	4,120,498
B	0	0	2,642,050	2,401,294	0	0	0	0	0	0
C	0	0	0	0	0	0	0	0	0	0
D	0	0	0	0	0	0	0	0	0	0
F	0	0	0	0	0	0	0	0	0	0
Subtotal	6,094,986	2,499,982	3,826,643	5,334,710	5,404,732	3,952,987	3,678,758	4,007,912	3,528,417	4,120,498
NM	322,220	3,912,299	2,583,441	1,134,257	1,142.897	2,693,157	3,013,866	2,737,496	3,266,005	2,691,281
Total	6,417,206	6,412,281	6,410,084	6,468,967	6,547,629	6,646,144	6,692,824	6,745,408	6,794,422	6,811,779

People Breathing Year round Particle Pollution (Annual PM-2.5)

Grade	2000-2002	2002-2004	2004-2006	2006-2008	2008-2010	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016
A	4,170,584	1,827,914	3,329,244	5,334,710	5,404,732	3,952,987	3,678,758	4,007,912	3,528,417	4,120,498
B	1,092,549	499,250	497,399	0	0	0	0	0	0	0
C	831,853	172,818	0	0	0	0	0	0	0	0
D	0	0	0	0	0	0	0	0	0	0
F	0	0	0	0	0	0	0	0	0	0
Subtotal	6,094,986	2,499,982	3,826,643	5,334,710	5,404,732	3,952,987	3,678,725	4,007,912	3,528,417	4,120,498
NM	322,220	3,912,299	2,583,441	1,134,257	1,142,897	2,693,157	3,013,866	2,737,496	35,266,005	2,691,281
Total	6,417,206	6,412,281	5,410,084	6,468,967	6,547,629	6,646,144	6,692,824	6,745,408	6,794,422	6,811,779

NM = Not Monitored

Figure MA-1


People Breathing Various Air Quality Levels - 8 Hour Ozone
Massachusetts
Total Population
8,000,000
7,000,000
6,000,000
5,000,000
4,000,000
3,000,000
2,000,000
1,000,000
0
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07-09
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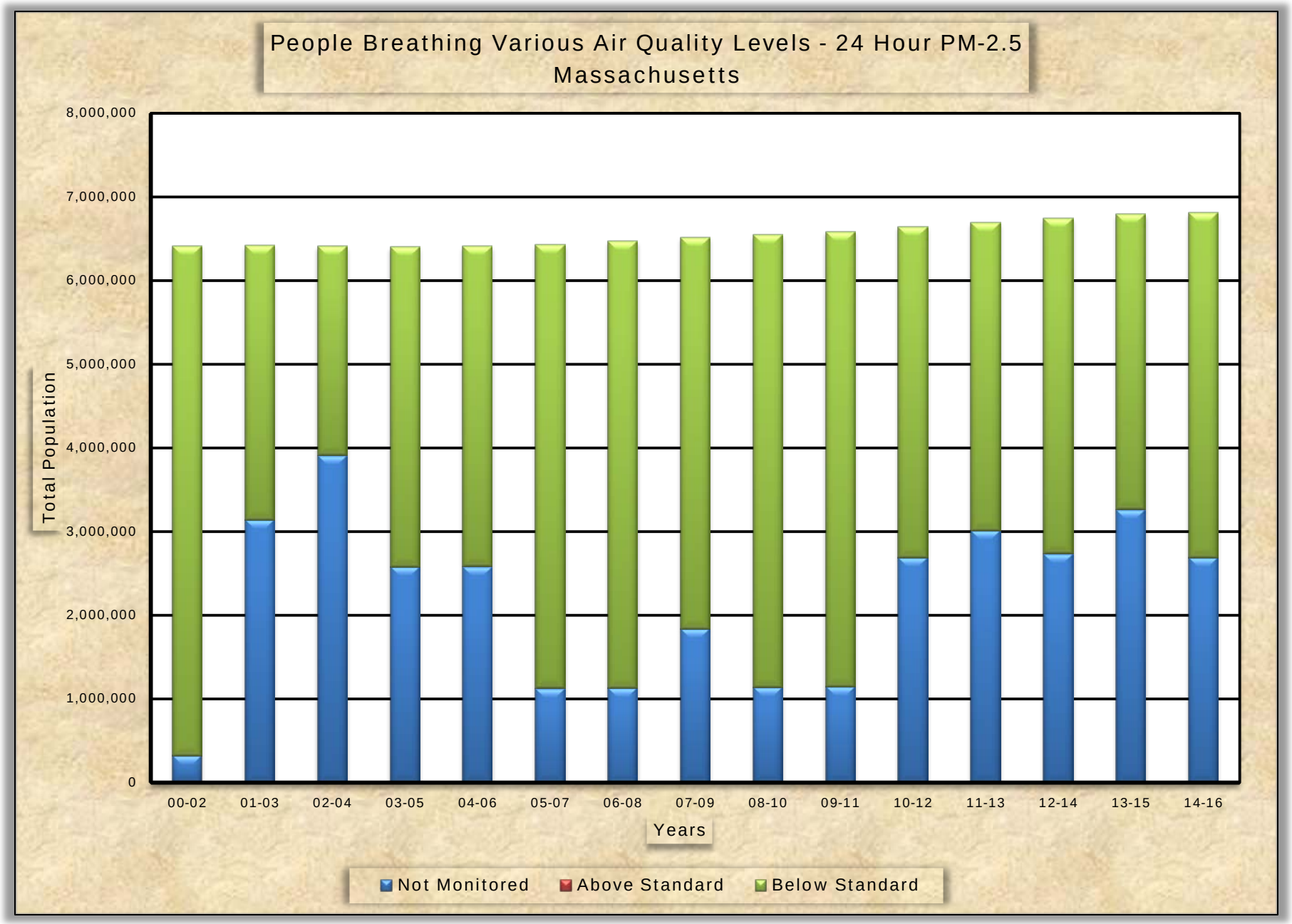
09-11
10-12
11-13
12-14
13-15
14-16
Years
Not Monitored
Above Standard
Below Standard

Figure MA-2


People Breathing Various Air Quality Levels - 24 Hour PM-2.5
Massachusetts
Total Population
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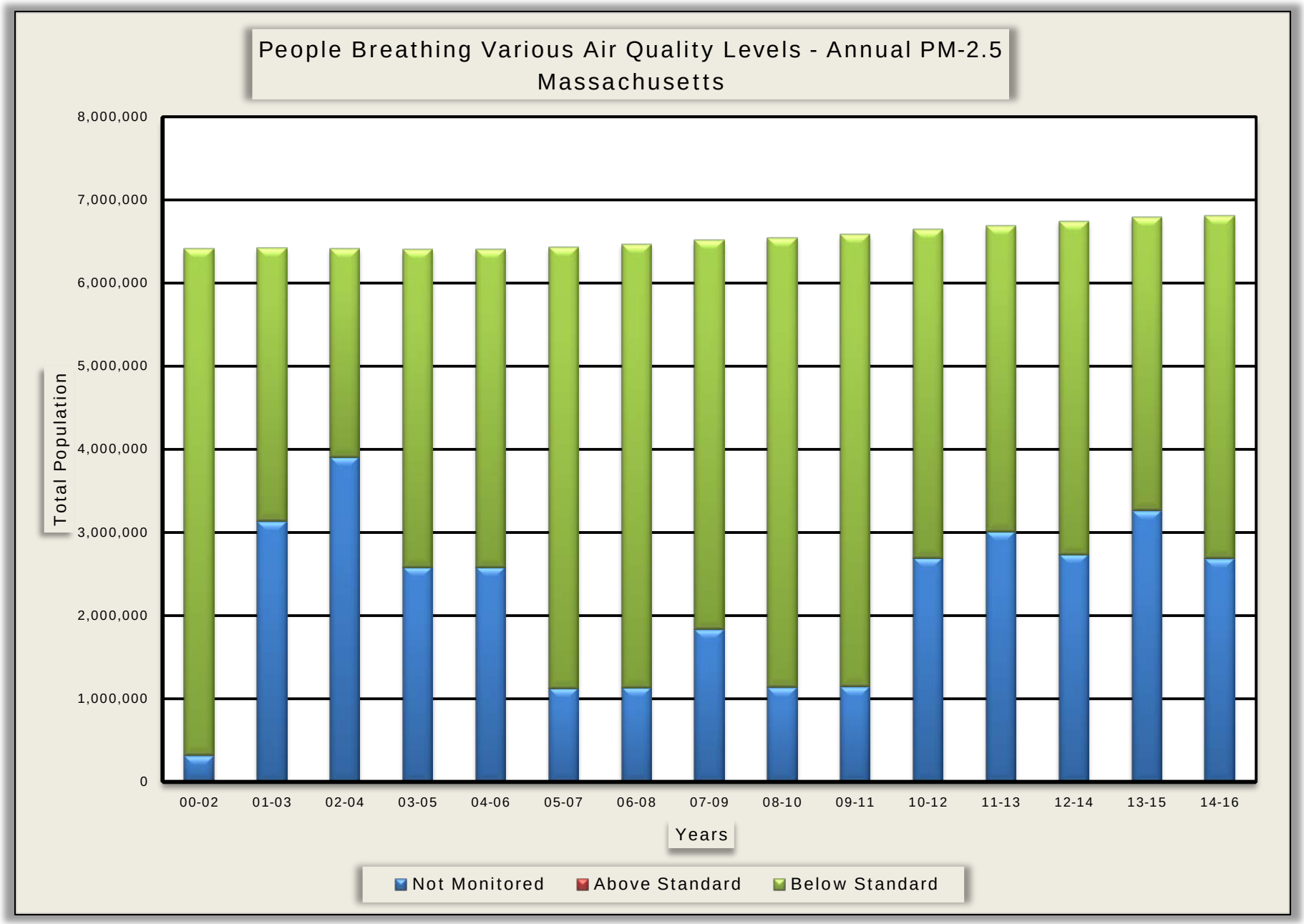
6,000,000
5,000,000
4,000,000
3,000,000
2,000,000
1,000,000
0
00-02
01-03
02-04
03-05
04-06
05-07
06-08
07-09
08-10
09-11
10-12
11-13
12-14
13-15
14-16
Years
Not Monitored
Above Standard
Below Standard

Figure MA-3


People Breathing Various Air Quality Levels - Annual PM-2.5
Massachusetts
Total Population
8,000,000
7,000,000
6,000,000
5,000,000
4,000,000
3,000,000
2,000,000
1,000,000
0
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04-06
05-07
06-08
07-09
08-10
09-11
10-12
11-13
12-14
13-15
14-16
Years
Not Monitored
Above Standard
Below Standard

MICHIGAN

Ozone

In the 2000 – 2002 time period, 5.9 million people (59.2%) lived in counties that met the ozone standard. By 2014 – 2016 this had increased to approximately 5.3 million people (53.1%). The ozone standard was lowered from 0.085 ppm to 0.070 ppm. Figure MI-1 shows the distribution of people by year. The population weighted ozone design value in 2000 – 2002 was 0.084 ppm. By 2014 – 2016 this had lowered to a value of 0.069 ppm, a reduction of 17.9 percent.

24-Hour PM-2.5

In the 2000 – 2002 time period, approximately 5.9 million people (59.2%) lived in counties where 24-hour PM-2.5 levels met the standard. By 2014 - 2016 this was approximately 6.7 million people (67.3%). The remainder of the population lived in counties where PM-2.5 was not measured. The standard was lowered from 65 µg/m3 to 35 µg/m3. Figure MI-2 shows the distribution of people by year. The population weighted 24-hour PM-2.5 design value I 2000 – 2002 was 37 µg/m3. By 2014 – 2016 this had lowered to a value of 24 µg/m3, a reduction of 35.1 percent

Annual PM-2.5

In the 2000 – 2002 time period, approximately 3.8 million people (38.4%) lived in counties where annual PM-2.5 levels met the standard. By 2014 – 2016 this had increased to approximately 6.7 million people (67.3%). The remainder of the population lived in counties where PM-2.5 was not measured. The standard was lowered from 15 µg/m3 to 12 µg/m3. Figure MI-3 shows the distribution of people by year. The population weighted annual PM-2.5 design value in 2000 – 2002 was 14.6 µg/m3. By 2014 – 2016 this had lowered to a value of 8.9 µg/m3, a reduction of 39.0 percent.

MICHIGAN

Table MI-1
2014 – 2016

		Ozone			Particle Pollution (PM-2.5)				
County	Population	Avg. DV	Grade	MM	Avg. 24-Hr DV	Grade	Avg. Ann DV	Grade	MM
Allegan	**115,548**	**0.075**	**D**	N	20	A	7.9	A	N
Bay	104,747	ND	ND	ND	21	A	7.6	A	N
Benzie	17,572	0.069	C	N	ND	ND	ND	ND	ND
Berrien	**154,010**	**0.074**	**D**	N	19	A	8.0	A	N
Cass	51,599	0.070	C	N	ND	ND	ND	ND	ND
Chippewa	37,724	0.059	B	N	13	A	5.6	A	N
Clinton	77,882	0.067	C	N	ND	ND	ND	ND	ND
Genesee	408,615	0.068	C	Y	22	A	8.1	A	N
Huron	31,481	0.068	C	N	ND	ND	ND	ND	ND
Ingham	288,051	0.067	C	N	22	A	8.4	A	N
Kalamazoo	261,654	0.069	C	N	22	A	8.9	A	N
Kent	642,173	0.068	C	Y	24	A	9.2	A	Y
Lenawee	98,504	0.067	C	N	21	A	8.3	A	N
Macomb	867,730	0.069	C	Y	26	A	8.8	A	N
Manistee	24,373	0.067	C	N	16	A	6.0	A	N
Mason	28,876	0.070	C	N	ND	ND	ND	ND	ND
Missaukee	15,102	0.067	C	N	15	A	5.4	A	N
Monroe	149,208	ND	ND	ND	23	A	8.7	A	N
Muskegon	**173,408**	**0.075**	**D**	**N**	ND	ND	ND	ND	ND
Oakland	1,243,970	0.069	C	N	24	A	8.9	A	N
Ottawa	282,250	0.070	C	N	ND	ND	ND	ND	ND
St Clair	**159,587**	**0.073**	**D**	**N**	24	a	8.9	a	N
Schoolcraft	8,001	0.071	C	N	ND	ND	ND	ND	ND
Tuscola	53,338	0.066	C	N	ND	ND	ND	ND	ND
Washtenaw	384,709	0.067	C	Y	23	A	9.1	A	N
Wayne	1,749,366	0.069	C	Y	24	A	9.6	B	Y
Wexford	33,163	0.067	C	N	ND	ND	ND	ND	ND

DV = Design Value ND = No Data MM = Multiple Monitors

MICHIGAN

Table MI-2
Population Weighted Design Values

Period	Ozone (ppm)	24-Hour PM-2.5 (µg/m3)	Annual PM-2.5 (µg/m3)
2000 – 2002	0.084	37	14.6
2001 – 2003	0.089	40	16.4
2002 – 2004	0.084	34	13.4
2003 – 2005	0.081	37	13.7
2004 – 2006	0.075	37	13.8
2005 – 2007	0.080	36	13.9
2006 – 2008	0.077	31	12.5
2007 – 2009	0.075	30	11.2
2008 – 2010	0.070	27	10.1
2009 – 2011	0.073	26	9.4
2010 – 2012	0.077	25	9.3
2011 – 2013	0.075	22	9.0
2012 – 2014	0.072	22	9.1
2013 - 2015	0.067	23	9.1
2014 – 2016	0.069	24	8.9

MICHIGAN

Table MI-3

People Breathing Ozone

Grade	2000-2002	2002-2004	2004-2006	2006-2008	2008-2010	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016
A	0	0	0	0	0	0	0	0	0	0
B	0	15,127	4,471,448	0	1,712,961	38,917	38,696	38,321	38,033	37,724
C	4,038,978	4,396,538	2,514,604	2,354,399	5,277,624	2,809,753	3,280,313	3,374,152	5,106,520	5,231,866
D	3,043,570	2,638,425	111,156	4,587,490	0	4,080,648	3,624,917	3,635,859	1,034,346	1,919,102
F	0	0	0	111,589	0	112,039	112,531	113,847	0	0
Subtotal	7,082,548	7,050,090	7,097,208	7,053,478	6,990,585	7,041,356	7,056,456	7,162,179	6,178,899	7,188,692
NM	2,933,162	3,005,225	2,938,873	2,893,211	2,893,055	2,842,004	2,839,166	2,747,698	3,743,677	2,739,608
Total	10,015,710	10,055,315	10,036,081	9,946,689	9,883,640	9,883,360	9,895,622	9,909,877	9,922,576	9,928,300

People Breathing Short-term Particle Pollution (24-Hour PM-2.5)

Grade	2000-2002	2002-2004	2004-2006	2006-2008	2008-2010	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016
A	5,926,299	6,076,954	15,043	729,425	3,768,148	6,646,925	6,777,127	6,517,352	6,529,690	6,685,071
B	0	0	685,342	1,474,538	2,503,267	398,303	0	0	0	0
C	0	0	393,260	1,243,372	227,573	0	0	0	0	0
D	0	0	1,712,205	0	0	0	0	0	0	0
F	0	0	1,312,954	0	0	0	0	0	0	0
Subtotal	5,926,299	6,076,954	4,118,804	3,447,335	6,498,988	7,045,228	6,777,127	6,517,352	6,529,690	6,685,071
NM	4,089,411	3,978,361	5,917,277	6,099,554	3,384,652	2,838,132	3,118,495	3,392,525	3,380,187	3,243,229
Total	10,015,710	10,055,315	10,036,081	9,946,889	9,883,640	9,883,360	9,895,622	9,909,877	9,909,877	9,928,300

People Breathing Year Round Particle Pollution (Annual PM-2.5)

Grade	2000-2002	2002-2004	2004-2006	2006-2008	2008-2010	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016
A	209,323	1,131,792	126,199	841,014	6,271,415	7,045,228	5,667,581	5,634,950	5,650,023	4,935,705
B	1,855,271	2,640,504	1,562,637	1,984,635	227,573	0	887,637	661,802	659,751	1,749,366
C	1,783,597	1,171,041	1,656,972	310,843	0	0	221,909	220,601	219,917	0
D	1,065,542	850,213	386,498	310,843	0	0	0	0	0	0
F	1,012,567	283,404	386,478	0	0	0	0	0	0	0
Subtotal	5,926,299	6,076,954	4,118,804	3,447,335	6,498,988	7,045,228	6,777,127	6,517,352	6,529,690	6,685,071
NM	4,089,411	3,978,361	5,917,277	6,499,554	3,384,652	2,838,132	3,118,495	3,392,525	3,380,187	3,243,229
Total	10,015,710	10,055,315	10,036,081	9,946,889	9,883,640	9,883,360	9,895,622	9,909,877	9,909,877	9,928,300

NM = Not Monitored

Figure MI-1

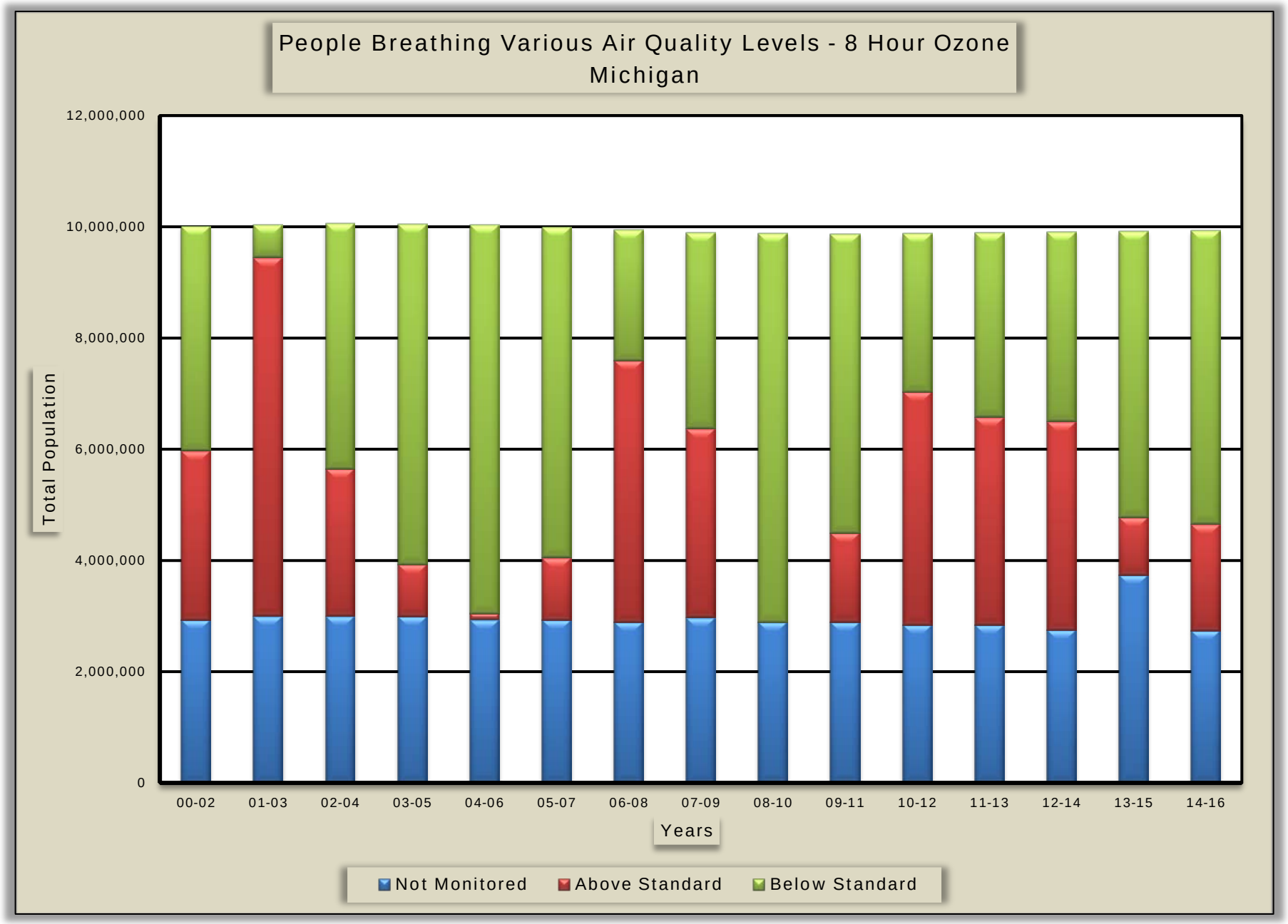

People Breathing Various Air Quality Levels - 8 Hour Ozone
Michigan
12,000,000
10,000,000
8,000,000
6,000,000
4,000,000
2,000,000
0
Total Population
00-02
01-03
02-04
03-05
04-06
05-07
06-08
07-09
08-10
09-11
10-12
11-13
12-14
13-15
14-16
Years
Not Monitored
Above Standard
Below Standard

Figure MI-2

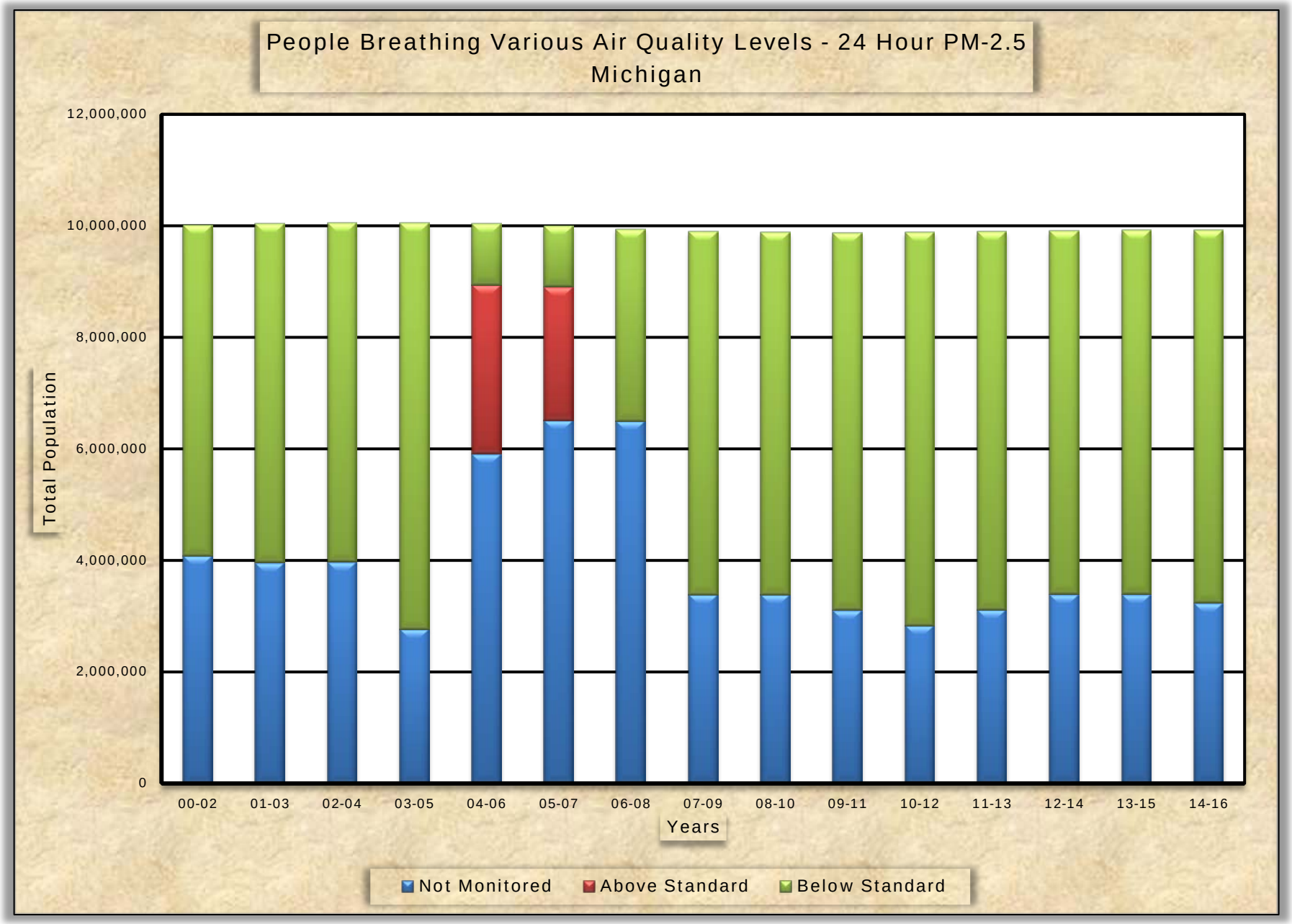
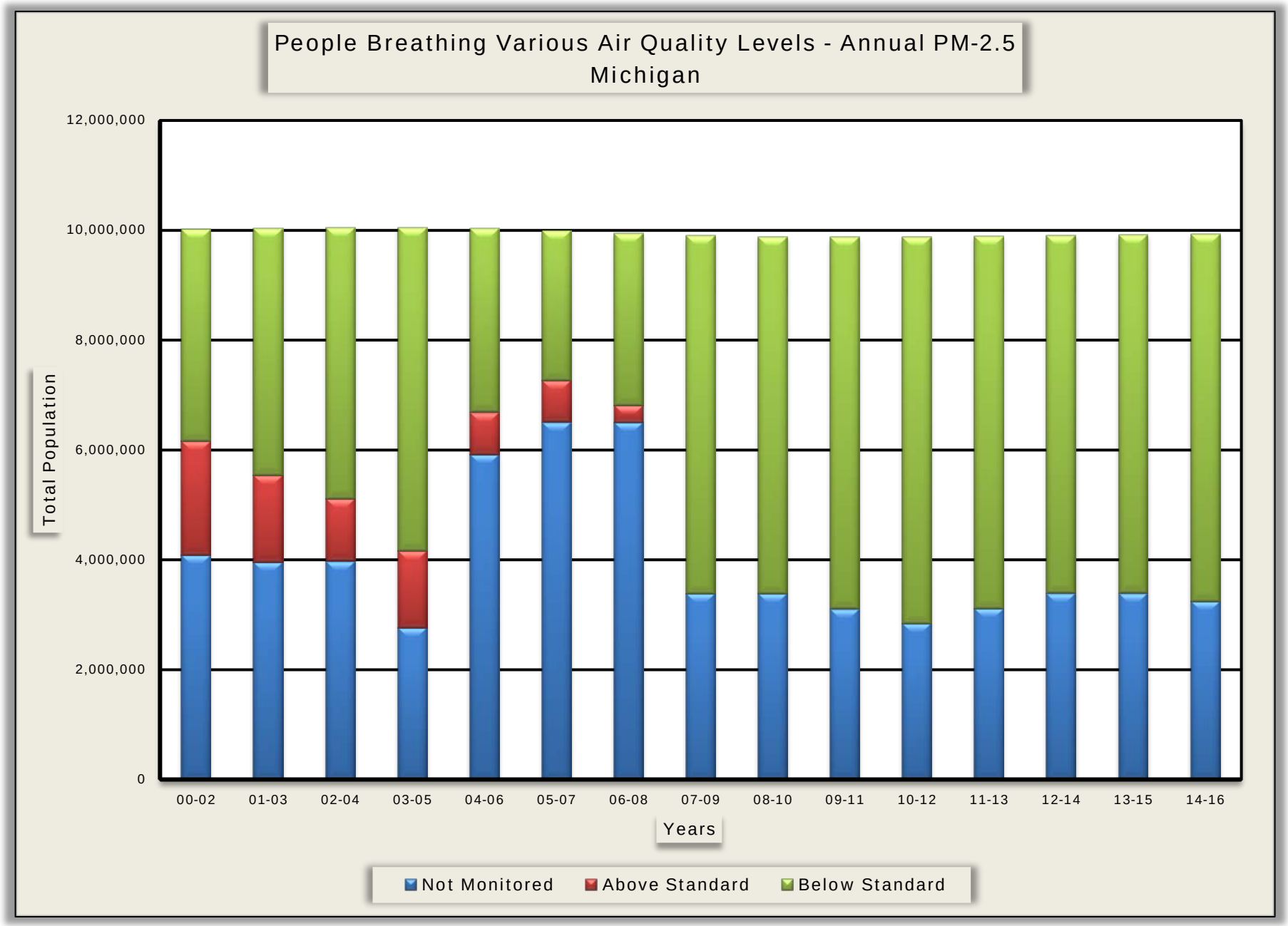

People Breathing Various Air Quality Levels - 24 Hour PM-2.5
Michigan
12,000,000
10,000,000
8,000,000
6,000,000
4,000,000
2,000,000
0
Total Population
00-02
01-03
02-04
03-05
04-06
05-07
06-08
07-09
08-10
09-11
10-12
11-13
12-14
13-15
14-16
Years
Not Monitored
Above Standard
Below Standard

Figure MI-3


People Breathing Various Air Quality Levels - Annual PM-2.5
Michigan
12,000,000
10,000,000
8,000,000
6,000,000
4,000,000
2,000,000
0
Total Population
00-02
01-03
02-04
03-05
04-06
05-07
06-08
07-09
08-10
09-11
10-12
11-13
12-14
13-15
14-16
Years
Not Monitored
Above Standard
Below Standard

MINNESOTA

Ozone

In the 2000 – 2002 time period, approximately 1.1 million people (21.9%) lived in counties that met the ozone standard. By 2014 – 2016 this had increased to approximately 2.9 million people (51.8%). The remainder of the population lived in counties where ozone was not measured. The ozone standard was lowered from 0.085 ppm to 0.070 ppm. Figure MN-1 shows the distribution of people by year. The population weighted ozone design value in 2000 – 2002 was 0.068 ppm. By 2014 – 2016 this had lowered to a value of 0.058 µg/m3, a reduction of 14.7 percent.

24-Hour PM-2.5

In the 2000 – 2002 time period, approximately 2.4 million people (46.9%) lived in counties where 24-hour PM-2.5 levels met the standard. By 2014 - 2016 this was approximately 3.8 million people (68.0%). The remainder of the population lived in counties where PM-2.5 was not measured. The standard was lowered from 65 µg/m3 to 35 µg/m3. Figure MN-2 shows the distribution of people by year. The population weighted 24-hour PM-2.5 design value in 2000 – 2002 was 29 µg/m3. By 2014 – 2016 this had lowered to a value of 18 µg/m3, a reduction of 37.9 percent.

Annual PM-2.5

In the 2000 – 2002 time period, approximately 2.4 million people (46.9%) lived in counties where annual PM-2.5 levels met the standard. By 2014 – 2016 this had increased to approximately 3.8 million people (68.0%). The remainder of the population lived in counties where PM-2.5 was not measured. The standard was lowered from 15 µg/m3 to 12 µg/m3. Figure MN-3 shows the distribution of people by year. The population weighted annual PM-2.5 design value in 2000 -2002 was 10.8 µg/m3. By 2014 – 2016 this had lowered to a value of 7.0 µg/m3, a reduction of 35.2 percent.

MINNESOTA

Table MN-1
2014 – 2016

		Ozone			Particle Pollution (PM-2.5)				
County	Population	Avg. DV	Grade	MM	Avg. 24-Hr DV	Grade	Avg. Ann DV	Grade	MM
Anoka	345,957	0.061	B	Y	18	A	6.3	A	N
Becker	33,734	0.060	B	N	17	A	5.4	A	N
Beltrami	46,106	ND	ND	ND	15	A	5.0	A	N
Carlton	35,738	0.058	B	N	ND	ND	ND	ND	ND
Crow Wing	63,940	0.059	B	N	16	A	5.7	A	N
Dakota	417,486	ND	ND	ND	17	A	6.5	A	N
Goodhue	46,676	0.061	B	N	ND	ND	ND	ND	ND
Hennepin	1,232,483	0.056	B	N	19	A	7.8	A	Y
Lake	10,625	0.056	B	N	13	A	4.3	A	N
Lyon	25,699	0.062	B	N	17	A	5.3	A	N
Mille Lacs	25,866	0.060	B	N	ND	ND	ND	ND	ND
Olmsted	153,102	0.061	B	N	17	A	6.5	A	N
Ramsey	540,649	ND	ND	ND	21	A	7.5	A	Y
Saint Louis	199,980	0.054	A	N	16	A	5.5	A	Y
Scott	143,880	0.060	B	N	17	A	7.0	A	N
Stearns	155,652	0.060	B	N	17	A	5.9	A	N
Washington	253,117	0.059	B	N	20	A	7.2	A	Y
Wright	132,550	0.061	B	N	18	A	6.2	A	N

DV – Design Value ND - No Data MM – Multiple Monitors

Table MN-2
Population Weighted Design Values

Period	Ozone (ppm)	24-Hour PM-2.5 (µg/m3)	Annual PM-2.5 (µg/m3)
2000 – 2002	0.068	29	10.8
2001 – 2003	0.069	26	10.2
2002 – 2004	0.066	25	9.5
2003 – 2005	0.067	26	9.5
2004 – 2006	0.065	25	9.2
2005 – 2007	0.068	25	9.4
2006 – 2008	0.064	24	9.4
2007 – 2009	0.062	29	9.7
2008 – 2010	0.059	30	9.5
2009 – 2011	0.060	29	9.0
2010 – 2012	0.062	25	8.7
2011 – 2013	0.062	22	8.5
2012 – 2014	0.062	21	8.0
2013 – 2015	0.059	19	7.6
2014 – 2016	0.058	18	7.0

MINNESOTA

Table MN-3
People Breathing Ozone

Grade	2000-2002	2002-2004	2004-2006	2006-2008	2008-2010	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016
A	579,899	612,263	1,104,785	199,745	420,335	356,672	246,777	336,349	100,216	199,980
B	518,883	532,580	276,987	770,045	1,076,539	980,889	1,100,777	1,269,283	2,541,389	2,485,840
C	0	0	0	354,859	0	0	0	0	197,749	0172,979
D	0	0	0	0	0	0	0	0	0	0
F	0	0	0	0	0	0	0	0	0	0
Subtotal	1,098,782	1,144,843	1,381,772	1,324,649	1,496,874	1,337,560	1,347,554	1,605,632	2,839,353	2,858,799
NM	3,920,153	3,942,870	3,781,783	3,922,369	3,807,051	4,041,579	4,072,826	3,851,541	2,650,241	2,661,153
Total	5,018,935	5,087,713	5,163,555	5,247,018	5,303,925	5,379,139	5,420,380	5,457,173	5,489,594	5,519,952

People Breathing Short-term Particle Pollution (24-Hour PM-2.5)

Grade	2000-2002	2002-2004	2004-2006	2006-2008	2008-2010	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016
A	2,352,794	2,676,611	2,168,851	2,561,072	350,868	2,560,221	3,138,112	3,417,880	3,658,707	3,754,760
B	0	0	352,304	0	1,825,153	520,152	0	0	0	0
C	0	0	0	0	0	0	0	0	0	0
D	0	0	0	0	508,640	0	0	0	0	0
F	0	0	0	0	0	0	0	0	0	0
Subtotal	2,352,794	2,676,611	2,521,155	2,561,072	2,684,661	3,080,373	3,138,112	3,417,880	3,658,707	3,754,760
NM	2,666,141	2,411,102	2,642,400	2,685,946	2,619,264	2,298,766	2,282,268	2,039,293	1,830,887	1,765,192
Total	5,018,935	5,087,713	5,163,555	5,247,018	5,303,925	5,379,139	5,420,380	5,457,173	5,489,594	5,519,952

People Breathing Year Round Particle Pollution (Annual PM-2.5)

Grade	2000-2002	2002-2004	2004-2006	2006-2008	2008-2010	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016
A	2,097,503	2,676,611	2,521,155	2,561,072	2,684,661	3,080,373	2,874,755	3,241,328	3,658,707	3,754,760
B	255,291	0	0	0	0	0	263,357	177,552	0	0
C	0	0	0	0	0	0	0	0	0	0
D	0	0	0	0	0	0	0	0	0	0
F	0	0	0	0	0	0	0	0	0	0
Subtotal	2,352,794	2,676,611	2,521,155	2,561,072	2,684,661	3,080,373	3,138,112	3,417,880	3,658,707	3,754,760
NM	2,666,141	2,411,102	2,642,400	2,685,946	2,619,264	2,298,766	2,282,268	2,039,283	1,830,887	1,765,192
Total	5,018,935	5,087,713	5,163,555	5,247,018	5,303,925	5,379,139	5,420,380	5,457,173	5,489,594	5,519,952

NM = Not Monitored

Figure MN-1

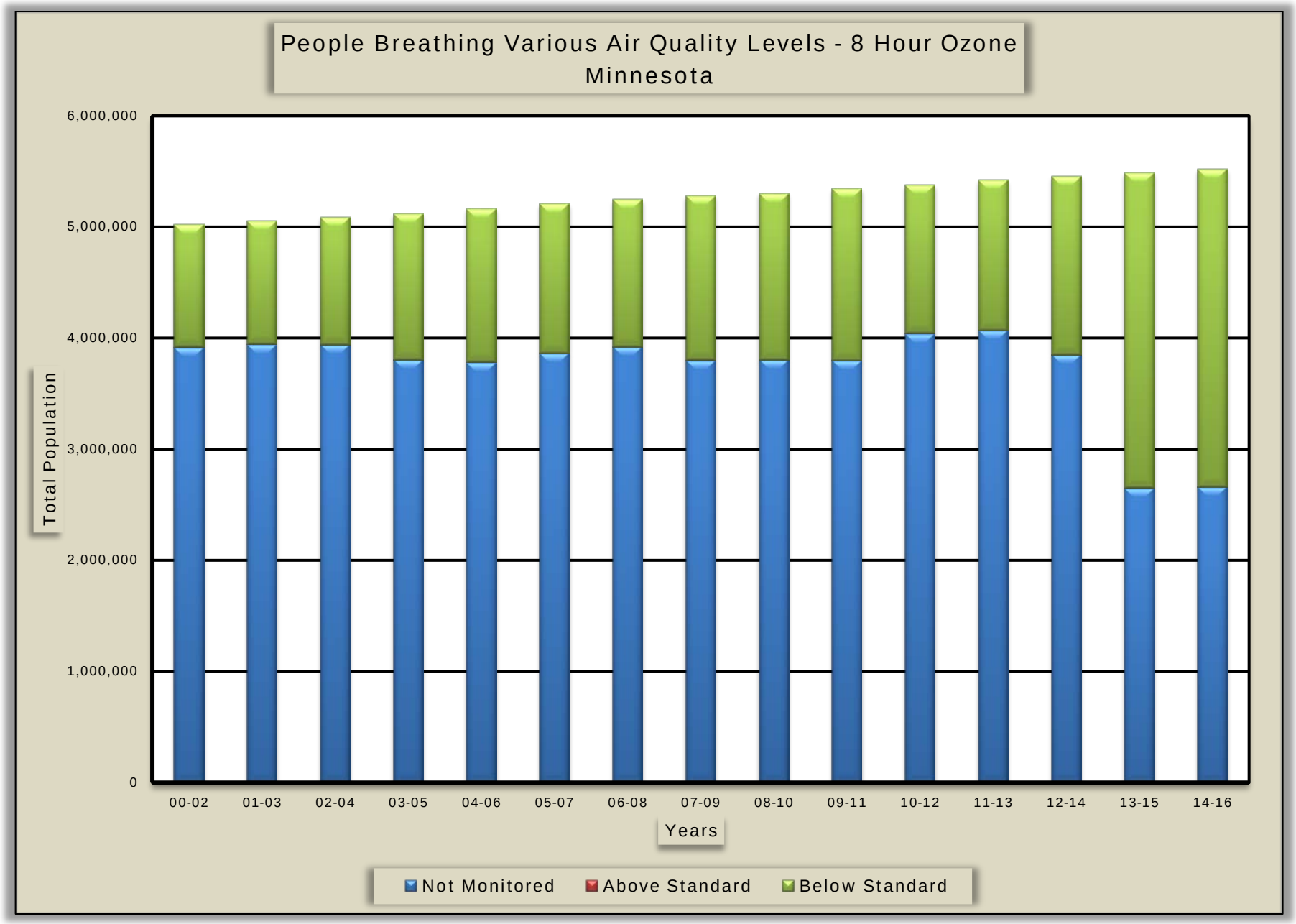

People Breathing Various Air Quality Levels - 8 Hour Ozone
Minnesota
6,000,000
5,000,000
4,000,000
3,000,000
2,000,000
1,000,000
0
Total Population
00-02
01-03
02-04
03-05
04-06
05-07
06-08
07-09
08-10
09-11
10-12
11-13
12-14
13-15
14-16
Years
Not Monitored
Above Standard
Below Standard

Figure MN-2

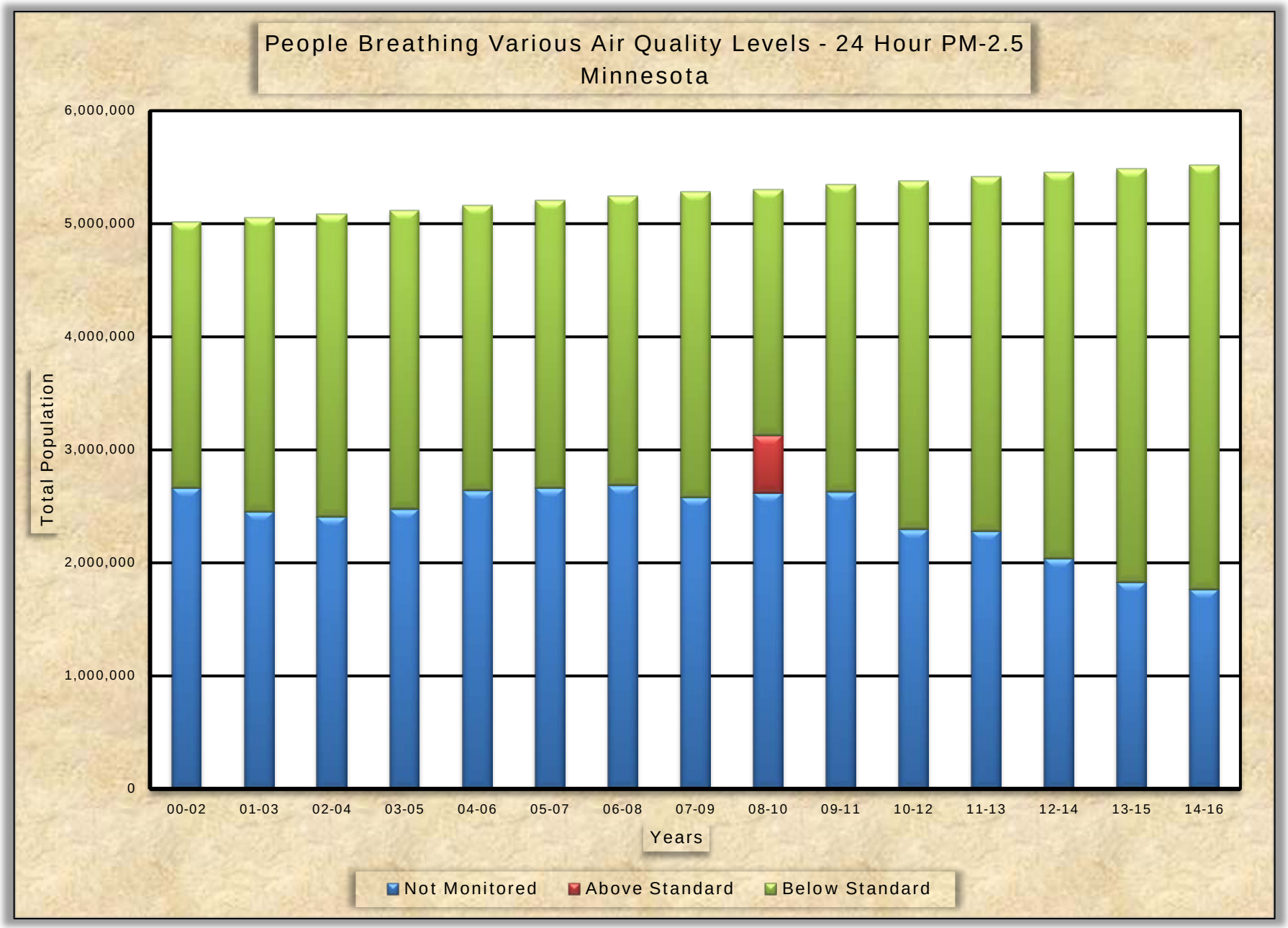
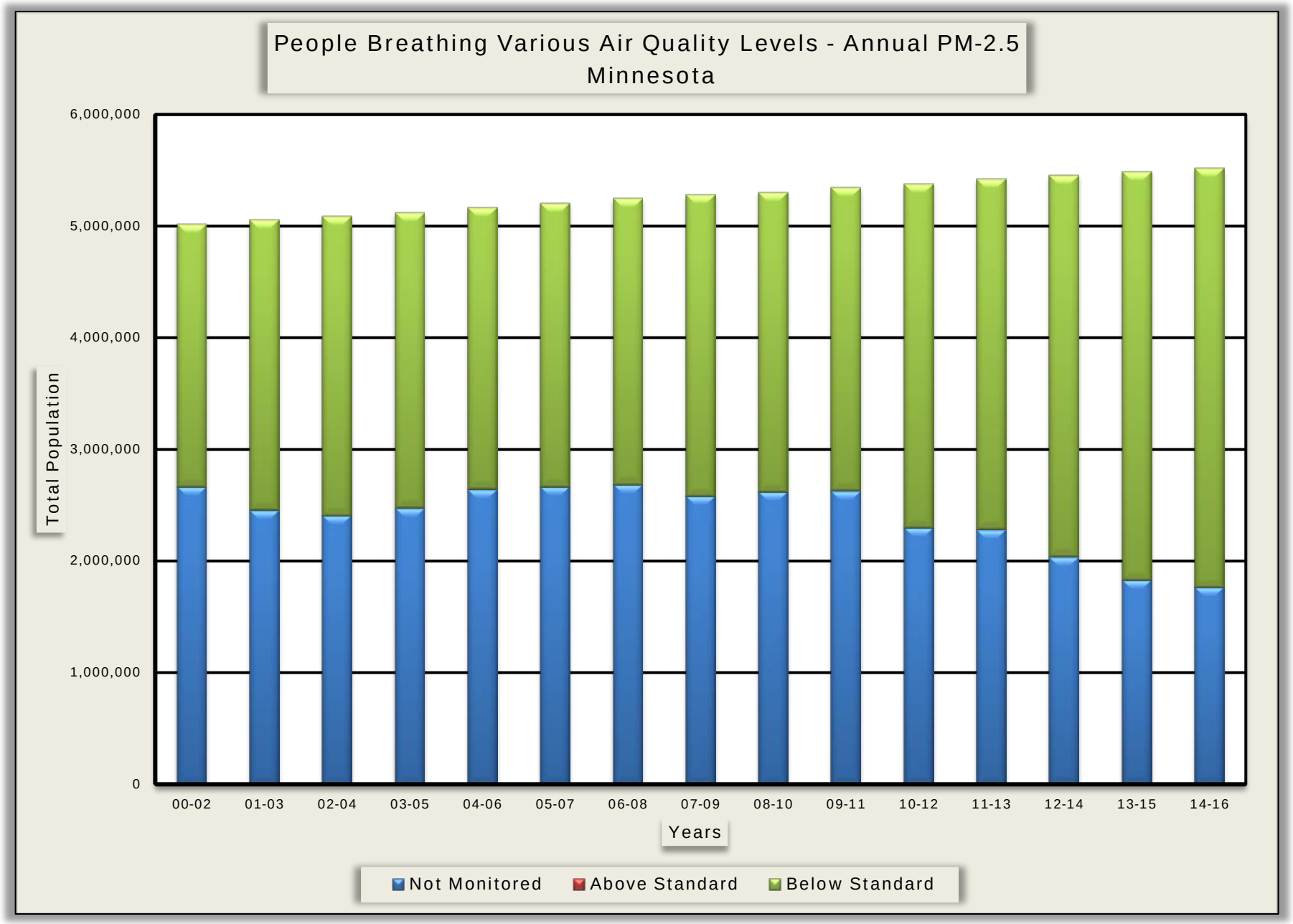

People Breathing Various Air Quality Levels - 24 Hour PM-2.5
Minnesota
6,000,000
5,000,000
4,000,000
3,000,000
2,000,000
1,000,000
0
Total Population
00-02
01-03
02-04
03-05
04-06
05-07
06-08
07-09
08-10
09-11
10-12
11-13
12-14
13-15
14-16
Years
Not Monitored
Above Standard
Below Standard

Figure MN-3


People Breathing Various Air Quality Levels - Annual PM-2.5
Minnesota
6,000,000
5,000,000
4,000,000
3,000,000
2,000,000
1,000,000
0
Total Population
00-02
01-03
02-04
03-05
04-06
05-07
06-08
07-09
08-10
09-11
10-12
11-13
12-14
13-15
14-16
Years
Not Monitored
Above Standard
Below Standard

MISSISSIPPI

Ozone

In the 2000 – 2002 time period, approximately 1.0 million people (34.0%) lived in counties that met the ozone standard. By 2013 – 2015 this was approximately 1.0 million people (33.9%). The remainder of the population lived in counties where ozone was not measured. The ozone standard was lowered from 0.085 ppm to 0.070 ppm. Figure MS-1 shows the distribution of people by year. The population weighted ozone design value in 2000 – 2002 was 0.080 ppm. By 2013 – 2015 this had lowered to a value of 0.064 ppm, a reduction of 20.0 percent.

24-Hour PM-2.5

In the 2000 – 2002 time period, approximately 1.4 million people (47.6%) lived in counties where 24-hour PM-2.5 levels met the standard. By 2013 - 2015 this was approximately 0.9 million people (30.2%). The remainder of the population lived in counties where PM-2.5 was not measured. The standard was lowered from 65 µg/m3 to 35 µg/m3. Figure MS-2 shows the distribution of people by year. The population weighted 24-hour PM-2.5 design value in 2000 – 2002 was 30 µg/m3. By 2013 – 2015 this had lowered to a value of 20 µg/m3, a reduction of 33.3 percent.

Annual PM-2.5

In the 2000 – 2002 time period, approximately 1.4 million people (47.6%) lived in counties where annual PM-2.5 levels met the standard. By 2013 – 2015 this had decreased to approximately 0.9 million people (30.2%). The remainder of the population lived in counties where PM-2.5 was not measured. The standard was lowered from 15 µg/m3 to 12 µg/m3. Figure MS-3 shows the distribution of people by year. The population weighted annual PM-2.5 design value in 2000 – 2002 was 13.0 µg/m3. By 2013 – 2015 this had lowered to a value of 9.4 µg/m3, a reduction of 27.7percent.

Table MS-1
2014 – 2016

		Ozone			Particle Pollution (PM-2.5)				
County	Population	Avg. DV	Grade	MM	Avg.24-Hr DV	Grade	Avg. Ann DV	Grade	MM
Bolivar	32,737	0.062	B	N	ND	ND	ND	ND	ND
Desoto	175,611	0.064	C	N	19	A	8.8	A	N
Forrest	75,979	ND	ND	ND	18	A	9.6	B	N
Grenada	21,275	ND	ND	ND	17	A	7.5	A	N
Hancock	46,791	0.063	C	N	18	A	8.6	A	N
Harrison	203,234	0.067	C	N	17	A	8.6	A	N
Hinds	241,229	0.061	B	N	19	A	9.2	A	N
Jackson	141,241	0.067	C	N	18	A	8.8	A	N
Lauderdale	77,755	0.057	B	N	ND	ND	ND	ND	ND
Lee	85,381	0.059	B	N	ND	ND	ND	ND	ND
Yalobusha	12,471	0.058	B	N	ND	ND	ND	ND	ND

DV = Design Value ND = No Data MM = Multiple Monitors

MISSISSIPPI

Table MS-2
Population Weighted Design Values

Period	Ozone (ppm)	24-Hour PM-2.5 (µg/m3)	Annual PM-2.5 (µg/m3)
2000 – 2002	0.080	30	13.0
2001 – 2003	0.077	28	12.4
2002 – 2004	0.075	28	12.2
2003 – 2005	0.075	30	12.7
2004 – 2006	0.077	30	12.5
2005 – 2007	0.078	29	12.6
2006 – 2008	0.076	26	12.0
2007 – 2009	0.072	24	11.3
2008 – 2010	0.070	22	10.7
2009 – 2011	0.070	21	10.4
2010 – 2012	0.070	20	10.4
2011 – 2013	0.068	20	9.9
2012 – 2014	0.066	20	9.6
2013 – 2015	0.064	20	9.4
2014 – 2016	0.063	18	8.9

MISSISSIPPI

Table MS-3
People Breathing Ozone

Grade	2000-2002	2002-2004	2004-2006	2006-2008	2008-2010	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016
A	0	0	0	0	0	0	0	0	0	0
B	403,928	746,045	476,058	0	440,753	210,517	468,432	500,707	452,484	449,573
C	569,153	320,394	452,386	473,522	335,065	783,118	539,239	511,108	562,578	566,877
D	118,603	0	0	476,740	187,105	0	0	0	0	0
F	118,603	0	0	476,740	187,105	0	0	0	0	0
Subtotal	1,091,684	1,066,438	928,444	950,262	962,923	993,635	1,007,671	1,011,815	1,015,062	1,016,450
NM	1,766,997	1,822,572	1,976,534	1,997,544	2,004,374	1,991,291	1,983,536	1,982,264	1,977,271	1,972,276
Total	2,858,681	2,889,010	2,904,978	2,947,806	2,967,297	2,984,926	2,991,207	2,994,079	2,992,333	2,988,726

People Breathing Short-term Particle Pollution (24-Hour PM-2.5)

Grade	2000-2002	2002-2004	2004-2006	2006-2008	2008-2010	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016
A	1,359,485	1,435,927	988,309	927,921	1,127,524	1,126,938	963,287	898,782	903,171	905,360
B	0	0	139,080	223,015	0	0	0	0	0	0
C	0	0	0	0	0	0	0	0	0	0
D	0	0	0	0	0	0	0	0	0	0
F	0	0	0	0	0	0	0	0	0	0
Subtotal	1,359,485	1,435,927	1,127,389	1,150,936	1,127,524	1,126,938	963,287	898,782	903,171	905,360
NM	1,499,196	1,453,083	1,777,589	1,796,870	1,839,773	1,857,988	2,027,920	2,095,297	2,089,162	2,083,366
Total	2,858,681	2,889,010	2,904,978	2,947,806	2,967,297	2,984,926	2,991,207	2,994,079	2,992,333	2,988,726

People Breathing Year Round Particle Pollution (Annual PM-2.5)

Grade	2000-2002	2002-2004	2004-2006	2006-2008	2008-2010	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016
A	270,933	539,851	33,220	544,401	1,127,524	1,126,938	207,628	578,723	584,336	829,381
B	444,771	830,780	954,620	465,021	0	0	609,639	320,059	318,835	75,979
C	643,781	65,296	139,549	141,514	0	0	146,020	0	0	0
D	0	0	0	0	0	0	0	0	0	0
F	0	0	0	0	0	0	0	0	0	0
Subtotal	1,359,485	1,435,927	1,127,389	1,150,936	1,127,524	1,126,938	963,287	898,782	903,171	905,360
NM	1,499,196	1,453,083	1,777,589	1,795,870	1,839,773	1,857,988	2,027,920	2,095,297	2,089,162	2,083,366
Total	2,858,681	2,889,010	2,904,978	2,947,806	2,967,297	2,984,926	2,991,207	2,994,079	2,992,333	2,988,726

NM = Not Monitored

Figure MS-1

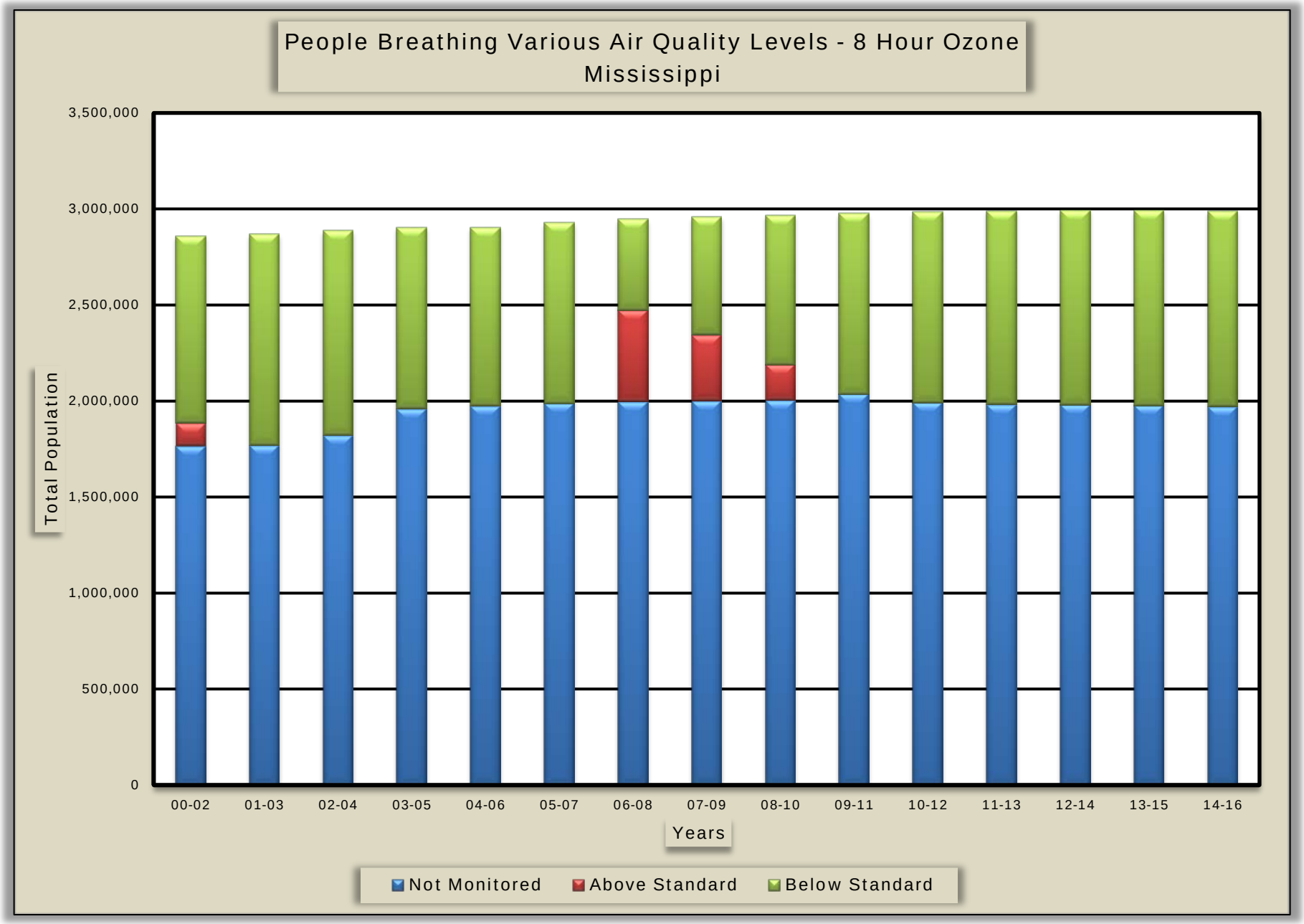
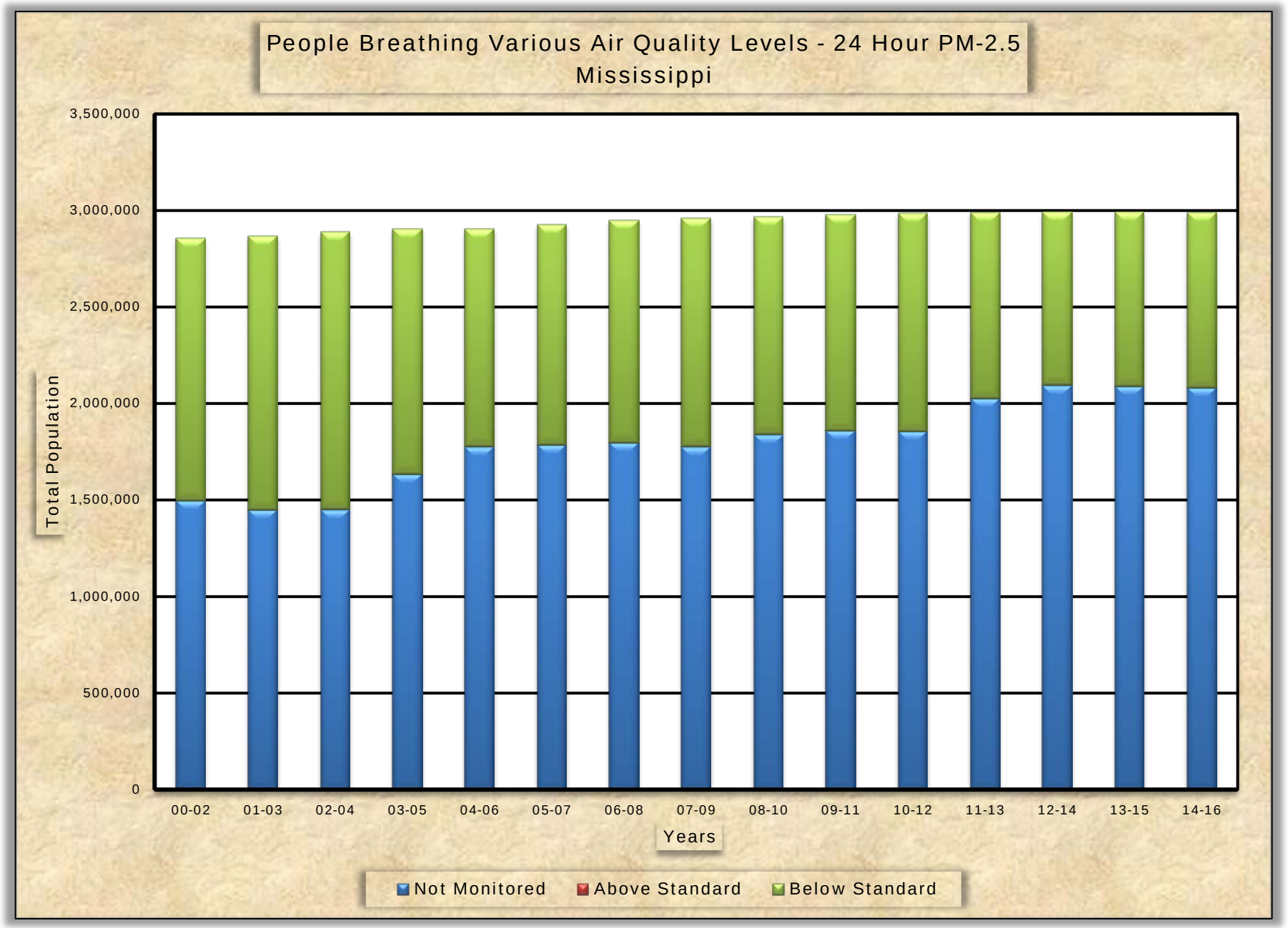

People Breathing Various Air Quality Levels - 8 Hour Ozone
Mississippi
Total Population
3,500,000
3,000,000
2,500,000
2,000,000
1,500,000
1,000,000
500,000
0
00-02
01-03
02-04
03-05
04-06
05-07
06-08
07-09
08-10
09-11
10-12
11-13
12-14
13-15
14-16
Years
Not Monitored
Above Standard
Below Standard

Figure MS-2


People Breathing Various Air Quality Levels - 24 Hour PM-2.5
Mississippi
Total Population
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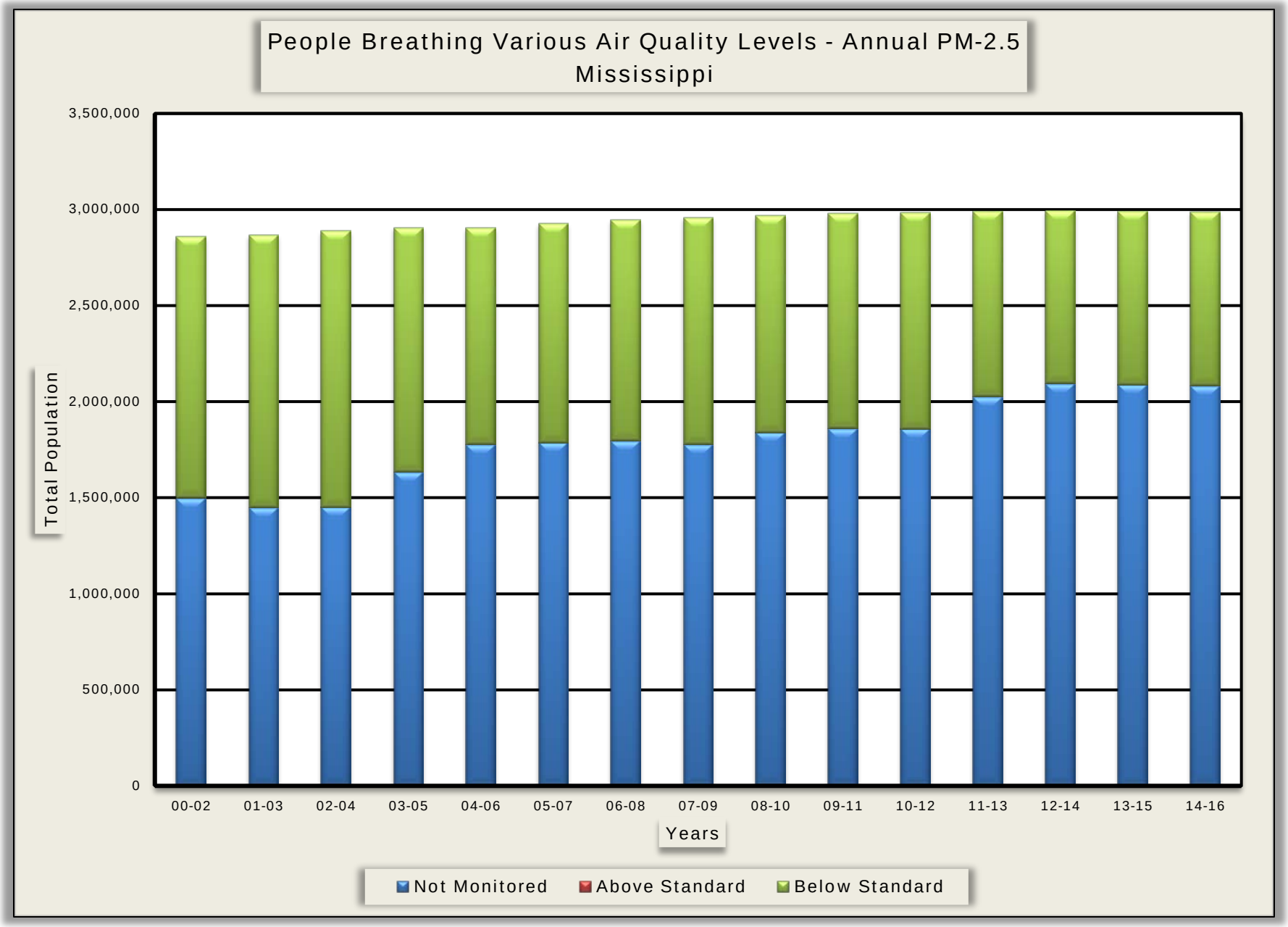
3,000,000
2,500,000
2,000,000
1,500,000
1,000,000
500,000
0
00-02
01-03
02-04
03-05
04-06
05-07
06-08
07-09
08-10
09-11
10-12
11-13
12-14
13-15
14-16
Years
Not Monitored
Above Standard
Below Standard

Figure MS-3


People Breathing Various Air Quality Levels - Annual PM-2.5
Mississippi
Total Population
3,500,000
3,000,000
2,500,000
2,000,000
1,500,000
1,000,000
500,000
0
00-02
01-03
02-04
03-05
04-06
05-07
06-08
07-09
08-10
09-11
10-12
11-13
12-14
13-15
14-16
Years
Not Monitored
Above Standard
Below Standard

MISSOURI

Ozone

In the 2000 – 2002 time period, approximately 1.2 million people (21.5%) lived in counties that met the ozone standard. By 2014 – 2016 this had increased to approximately 2.2 million people (36.3%). The ozone standard was lowered from 0.085 ppm to 0.070 ppm. Figure MO-1 shows the distribution of people by year. The population weighted ozone design value in 2000 – 2002 was 0.084 ppm. By 2014 – 2016 this had lowered to a value of 0.066 ppm, a reduction of 21.4 percent.

24-Hour PM-2.5

In the 2000 – 2002 time period, approximately 3.1 million people (54.1%) lived in counties where 24-hour PM-2.5 levels met the standard. By 2014 - 2016 this was approximately 2.7 million people (43.8%). The remainder of the population lived in counties where PM-2.5 was not measured. The standard was lowered from 65 µg/m3 to 35 µg/m3. Figure MO-2 shows the distribution of people by year. The population weighted 24-hour PM-2.5 design value in 2000 – 2002 was 32 µg/m3. By 2014 – 2016 this had lowered to a value of 21 µg/m3, a reduction of 34.4 percent.

Annual PM-2.5

In the 2000 – 2002 time period, approximately 2.8 million people (50.2%) lived in counties where annual PM-2.5 levels met the standard. By 2014 – 2016 this was approximately 2.7 million people (43.8%). The remainder of the population lived in counties where PM-2.5 was not measured. The standard was lowered from 15 µg/m3 to 12 µg/m3. Figure MO-3 shows the distribution of people by year. The population weighted annual PM-2.5 design value in 2000 – 2002 was 13.6 µg/m3. By 2014 – 2016 this had lowered to a value of 9.1 µg/m3, a reduction of 33.1 percent.

MISSOURI

Table MO-1
2014 – 2016

		Ozone			Particle Pollution (PM-2.5)				
County	Population	Avg. DV	Grade	MM	Avg. 24-Hr DV	Grade	Avg. Ann DV	Grade	MM
Andrew	17,350	0.063	C	N	ND	ND	ND	ND	ND
Boone	176,594	0.064	C	N	ND	ND	ND	ND	ND
Buchanan	88,938	ND	ND	ND	22	A	9.6	B	N
Callaway	45,078	0.064	C	N	ND	ND	ND	ND	ND
Cass	102,845	0.063	C	N	20	A	8.5	A	N
Cedar	14,016	0.061	B	N	18	A	7.2	A	N
Clay	239,085	0.065	C	Y	18	A	7.8	A	N
Clinton	20,610	0.067	C	N	ND	ND	ND	ND	ND
Greene	288,690	0.059	B	N	ND	ND	ND	ND	ND
Jackson	691,801	ND	ND	ND	18	A	7.9	A	Y
Jasper	119,111	0.061	B	N	ND	ND	ND	ND	ND
Jefferson	224,226	0.070	C	N	23	A	10.1	B	N
Lincoln	55,267	0.065	C	N	ND	ND	ND	ND	ND
Monroe	8,558	0.059	B	N	ND	ND	ND	ND	ND
Perry	19,285	0.067	C	N	ND	ND	ND	ND	ND
St Charles	390,918	0.071	D	Y	ND	ND	ND	ND	ND
St Genevieve	18,030	C	N	ND	ND	ND	ND	ND	ND
St Louis	998,581	0.068	C	Y	23	A	9.8	B	N
Taney	54,735	0.057	B	N	ND	ND	ND	ND	ND
St Louis (City)	311,404	0.065	C	N	25	A	10.1	B	Y

DV = Design Value ND = No Data MM = Multiple Monitors

Table MO-2
Population Weighted Design Values

Period	Ozone (ppm)	24-Hour PM-2.5 (µg/m3)	Annual PM-2.5 (µg/m3)
2000 – 2002	0.084	32	13.6
2001 – 2003	0.084	31	13.0
2002 – 2004	0.080	31	12.8
2003 – 2005	0.080	32	13.0
2004 – 2006	0.079	30	12.4
2005 – 2007	0.084	31	13.0
2006 – 2008	0.078	27	12.1
2007 – 2009	0.074	25	11.3
2008 – 2010	0.070	24	11.3
2009 – 2011	0.072	27	11.4
2010 – 2012	0.078	25	10.7
2011 – 2013	0.076	23	10.4
2012 – 2014	0.072	22	10.0
2013 – 2015	0.066	23	10.1
2014 – 2016	0.066	21	9.1

MISSOURI

Table MO-3
People Breathing Ozone

Grade	2000-2002	2002-2004	2004-2006	2006-2008	2008-2010	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016
A	0	0	0	0	0	0	0	0	0	0
B	245,822	518,637	399,660	270,901	759,364	0	0	250,620	351,247	485,110
C	971,769	1,525,757	2,049,241	121,372	1,805,102	1,104,676	1,230,922	1,951,832	2,554,947	1,729,064
D	1,285,545	485,223	268,976	1,816,808	180,243	1,658,648	1,835,131	880,431	192,795	890,209
F	0	0	0	175,590	0	184,333	0	0	0	0
Subtotal	2,501,136	2,529,617	2,717,877	2,384,670	2,744,708	2,947,657	3,066,253	3,082,882	1,098,989	3,104,383
NM	3,173,689	3,218,124	3,124,827	3,539,246	3,244,219	3,074,331	2,977,918	2,980,707	2,984,683	2,988,617
Total	5,674,825	5,747,741	5,842,704	5,923,916	5,988,927	6,021,988	6,044,171	6,063,589	6,083,672	6,093,000

People Breathing Short-term Particle Pollution (24-Hour PM-2.5)

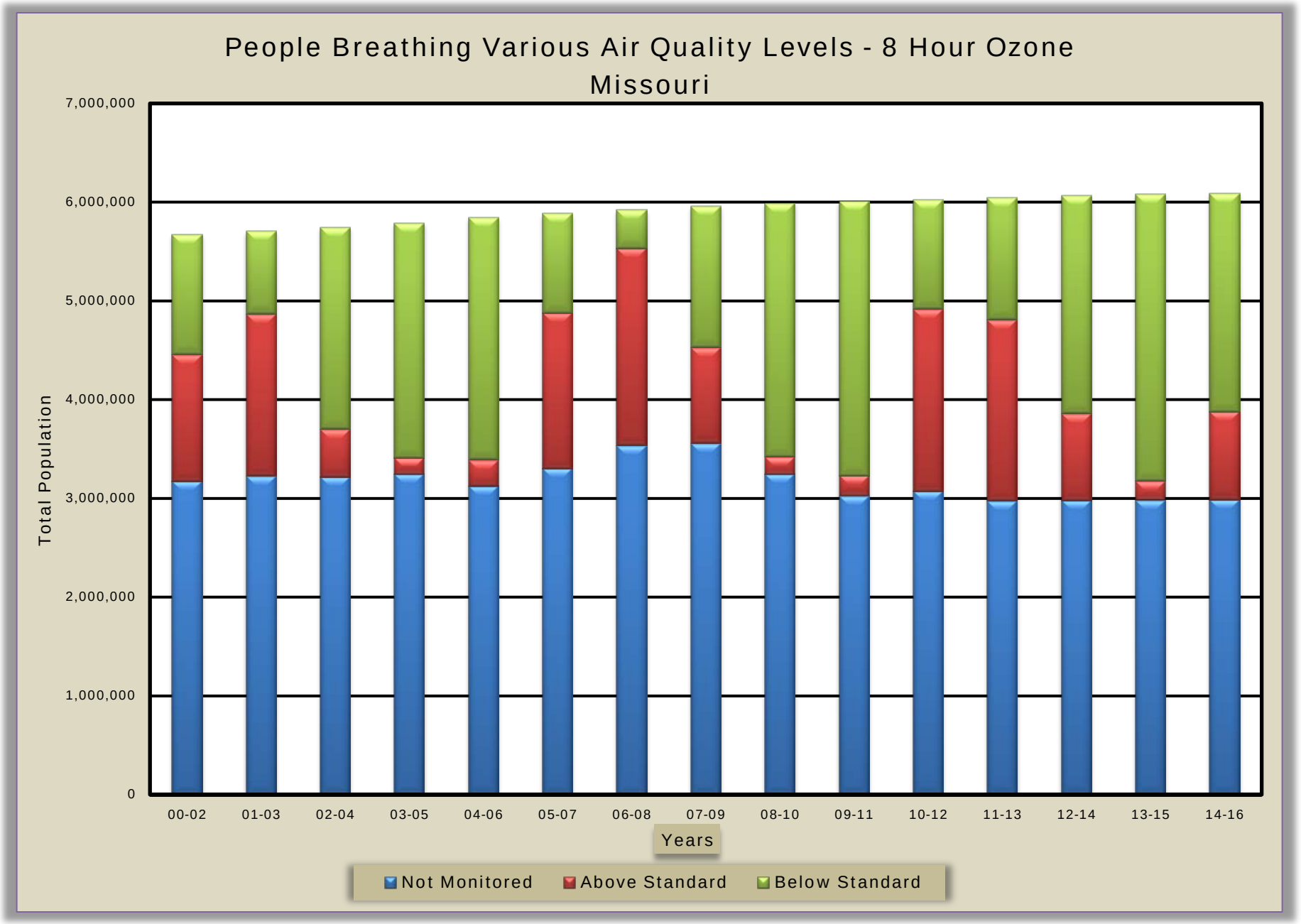
Grade	2000-2002	2002-2004	2004-2006	2006-2008	2008-2010	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016
A	3,072,149	465,575	533,772	1,337,882	434,821	2,557,748	1,219,808	1,847,203	2,671,068	2,608,615
B	0	810,640	1,887,221	1,902,063	159,647	0	0	0	0	0
C	0	850,507	871,188	0	0	0	0	0	0	62,281
D	0	0	0	0	0	0	0	0	0	0
F	0	0	0	0	0	0	0	0	0	0
Subtotal	3,072,149	2,126,721	3,292,181	3,239,945	594,468	2,557,748	1,219,808	1,947,203	2,671,068	2,670,896
NM	2,602,676	3,621,020	2,550,523	2,683,971	5,394,459	3,452,940	4,802,180	4,116,386	3,412,604	3,422,104
Total	5,674,825	5,747,741	5,842,704	5,923,916	5,988,927	6,021,988	6,044,171	6,063,589	6,083,672	6,093,000

People Breathing Year Round Particle Pollution (Annual PM-2.5)

Grade	2000-2002	2002-2004	2004-2006	2006-2008	2008-2010	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016
A	205,293	2,126,721	1,070,411	1,249,565	275,174	2,457,572	0	533,502	694,986	1,047,747
B	756,711	0	1,688,535	1,884,395	319,294	100,176	901,392	1,112,602	1,870,854	1,560,868
C	1,884,508	0	533,236	105,985	0	0	318,416	301,099	105,228	062,281
D	225,638	0	0	0	0	0	0	0	0	0
F	0	0	0	0	0	0	0	0	0	0
Subtotal	3,072,149	2,126,721	3,292,181	3,239,945	594,468	2,557,748	1,219,808	1,947,203	2,671,068	2,670,896
NM	2,602,676	3,621,020	2,550,523	2,683,971	5,394,459	3,452,940	4,802,180	4,116,386	3,412,604	3,422,104
Total	5,674,825	5,747,741	5,842,704	5,923,916	5,988,927	6,021,988	6,044,171	6,063,589	6,083,672	6,093,000

NM = Not Monitored

Figure MO-1


People Breathing Various Air Quality Levels - 8 Hour Ozone
Missouri
Total Population
7,000,000
6,000,000
5,000,000
4,000,000
3,000,000
2,000,000
1,000,000
0
00-02
01-03
02-04
03-05
04-06
05-07
06-08
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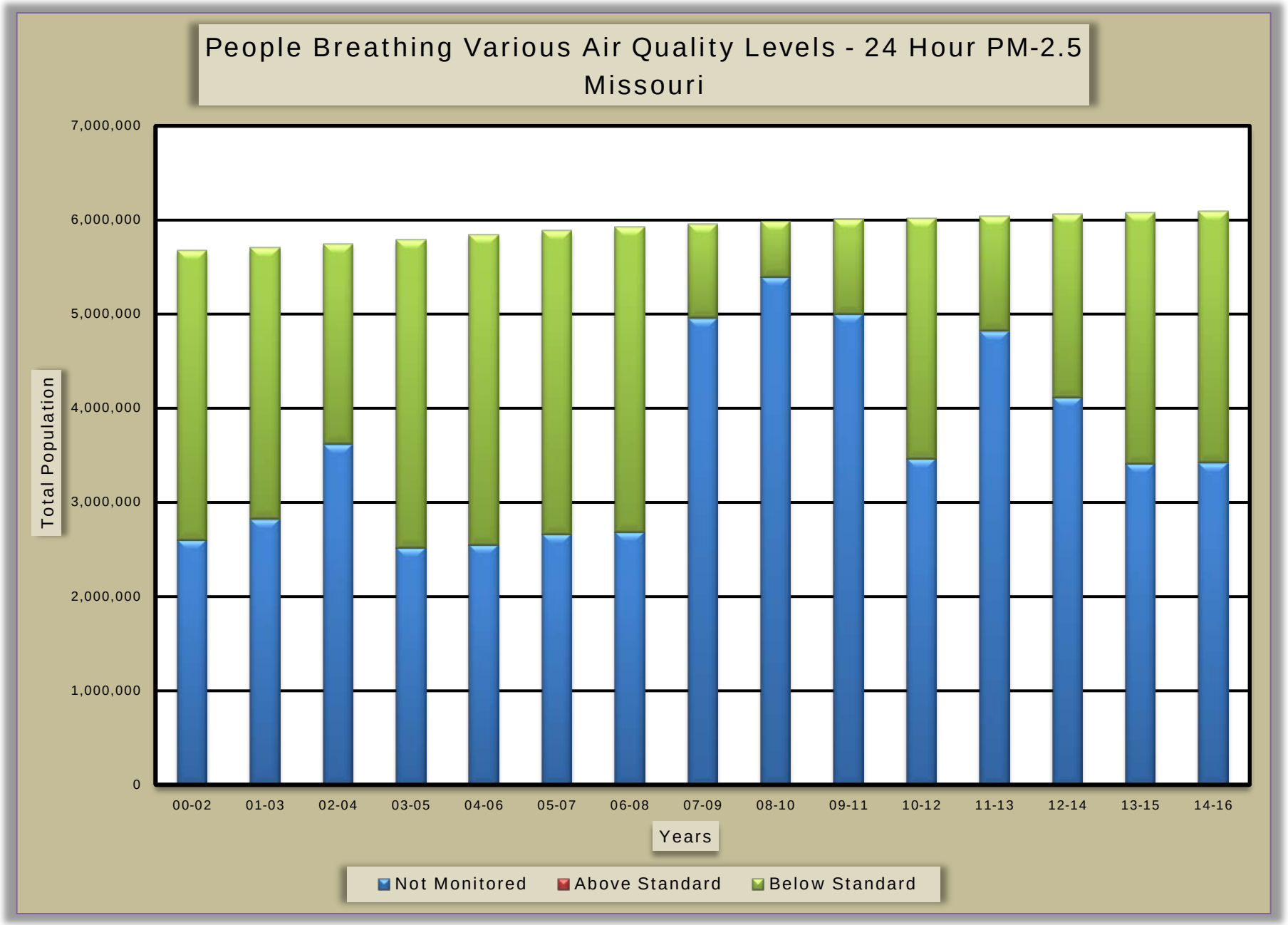
09-11
10-12
11-13
12-14
13-15
14-16
Years
Not Monitored
Above Standard
Below Standard

Figure MO-2


People Breathing Various Air Quality Levels - 24 Hour PM-2.5
Missouri
Total Population
7,000,000
6,000,000
5,000,000
4,000,000
3,000,000
2,000,000
1,000,000
0
00-02
01-03
02-04
03-05
04-06
05-07
06-08
07-09
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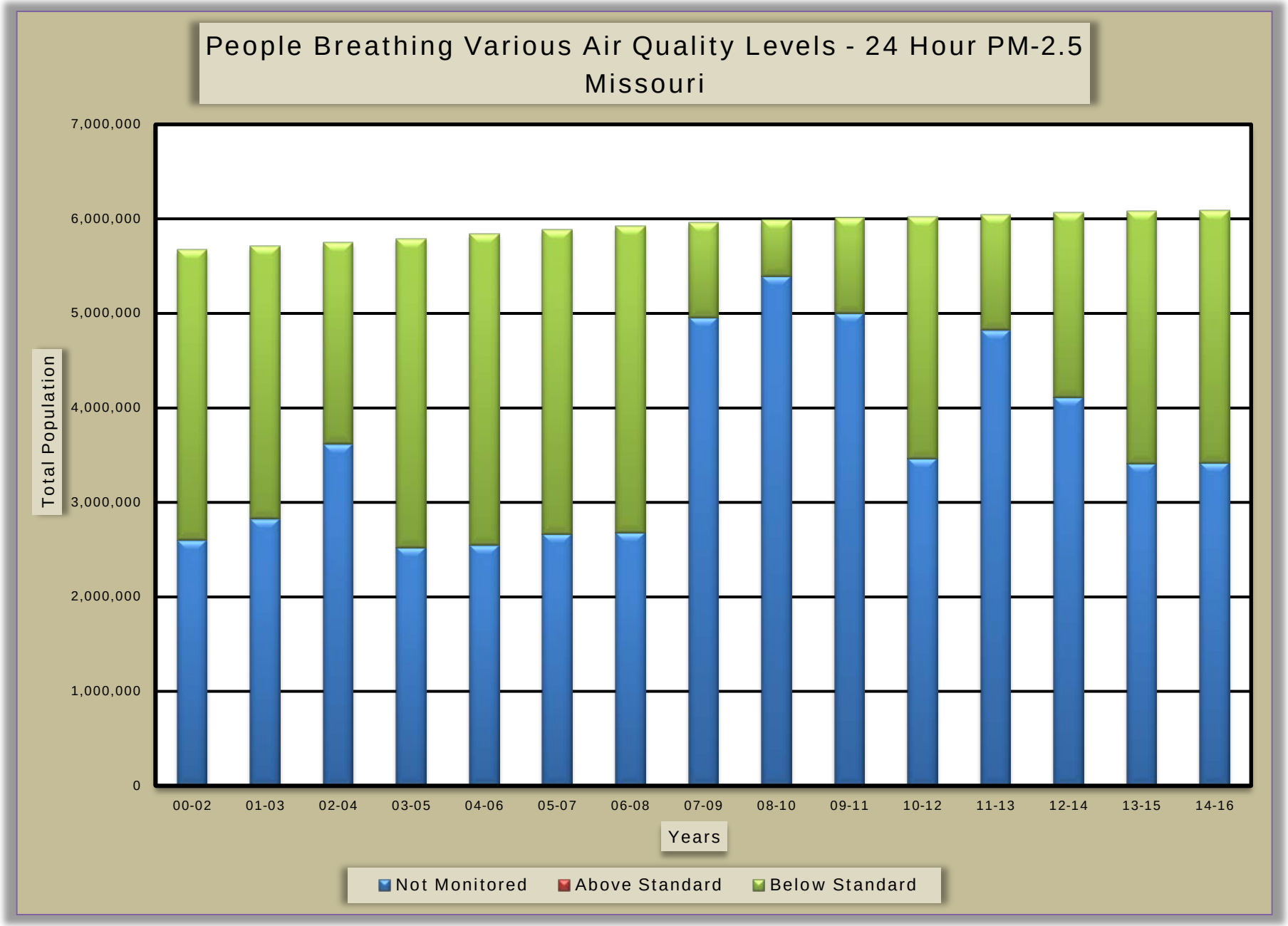
09-11
10-12
11-13
12-14
13-15
14-16
Years
Not Monitored
Above Standard
Below Standard

Figure MO-3


People Breathing Various Air Quality Levels - 24 Hour PM-2.5
Missouri
Total Population
7,000,000
6,000,000
5,000,000
4,000,000
3,000,000
2,000,000
1,000,000
0
00-02
01-03
02-04
03-05
04-06
05-07
06-08
07-09
08-10
09-11
10-12
11-13
12-14
13-15
14-16
Years
Not Monitored
Above Standard
Below Standard

MONTANA

Ozone

In the 2000 – 2002 time period, approximately 78 thousand people (8.5%) lived in counties that met the ozone standard. By 2014 – 2016 this had increased to approximately 318 thousand people (30.5%). The remainder of the population lived in counties where ozone was not measured. The ozone standard was lowered from 0.085 ppm to 0.070 ppm. Figure MT-1 shows the distribution of people by year. The population weighted ozone design value in 2000 – 2002 was 0.052 ppm. By 2014 – 2016 this had increased to 0.054 ppm, an increase of 3.8 percent.

24-Hour PM-2.5

In the 2000 – 2002 time period, approximately 0.54 million people (59.2%) lived in counties where 24-hour PM-2.5 levels met the standard. By 2014 - 2016 this was approximately 0.37 million people (35.1%). The remainder of the population lived in counties where PM-2.5 was not measured. The standard was lowered from 65 µg/m3 to 35 µg/m3. Figure MT-2 shows the distribution of people by year. The population weighted 24-hour PM-2.5 design value in 2000 - 2002 was 27 µg/m3. By 2014 – 2016 this had lowered to a value of 22 µg/m3, a reduction of 18.5 percent.

Annual PM-2.5

In the 2000 – 2002 time period, approximately 0.52 million people (57.1.6%) lived in counties where annual PM-2.5 levels met the standard. By 2014 – 2016 this was approximately 0.37 million people (35.1%). The remainder of the population lived in counties where PM-2.5 was not measured. The standard was lowered from 15 µg/m3 to 12 µg/m3. Figure MT-3 shows the distribution of people by year. The population weighted annual PM-2.5 design value in 2000 – 2002 was 8.4 µg/m3. By 2014 – 2016 this had lowered to a value of 6.9 µg/m3, a reduction of 17.9 percent.

Table MT-1

2014 – 2016

		Ozone			Particle Pollution (PM-2.5)				
County	Population	Avg. DV	Grade	MM	Avg. 24-Hr DV	Grade	Avg. Ann DV	Grade	MM
Fergus	11,413	0.055	A	N	10	A	3.8	A	N
Flathead	98,082	0.053	A	N	21	A	7.1	A	N
Lewis & Clark	67,282	0.057	B	N	20	A	4.9	A	Y
Lincoln	19,259	ND	ND	ND	26	A	9.8	B	N
Missoula	116,130	0.053	A	N	23	A	7.9	A	Y
Phillips	4,133	0.055	A	N	11	A	4.4	A	N
Powder River	1,746	ND	ND	ND	13	A	5.6	A	N
Ravalli	42,089	ND	ND	ND	27	A	7.0	A	N
Richland	11,482	0.055	A	N	12	A	5.6	A	N
Rosebud	9,287	0.056	B	N	13	A	5.0	A	N
Silver Bow	34,553	ND	ND	ND	27	A	7.9	A	N

DV = Design Value ND = No Data MM = Multiple Monitors

MONTANA

Table MT-2
Population Weighted Design Values

Period	Ozone (ppm)	24-Hour PM-2.5 (µg/m3)	Annual PM-2.5 (µg/m3)
2000 – 2002	0.052	27	8.4
2001 – 2003	0.054	23	7.1
2002 – 2004	0.055	21	6.7
2003 – 2005	0.057	24	7.3
2004 – 2006	0.056	25	8.1
2005 – 2007	0.058	23	7.8
2006 – 2008	0.056	21	7.7
2007 – 2009	0.055	20	7.4
2008 – 2010	0.055	25	8.1
2009 – 2011	0.055	24	7.0
2010 – 2012	0.055	27	8.0
2011 – 2013	0.054	24	7.7
2012 – 2014	0.054	23	7.5
2013 – 2015	0.055	23	7.4
2014 – 2016	0.054	22	6.9

MONTANA

Table MT-3
People Breathing Ozone

Grade	2000-2002	2002-2004	2004-2006	2006-2008	2008-2010	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016
A	77,583	81,247	85,759	90,260	90,928	102,792	169,483	273,464	247,300	241,240
B	0	0	0	0	0	0	0	9,326	66,418	76,569
C	0	0	0	0	0	0	0	0	0	0
D	0	0	0	0	0	0	0	0	0	0
F	0	0	0	0	0	0	0	0	0	0
Subtotal	77,583	81,247	85,759	90,260	90,928	102,792	169,483	282,790	313,718	317,809
NM	834,084	848,762	866,933	886,155	898,487	902,349	845,682	740,789	719,231	724,711
Total	911,667	930,009	952,692	976,415	989,415	1,005,141	1,015,165	1,023,579	1,032,949	1,042,520

People Breathing Short-term Particle Pollution (24-Hour PM-2.5)

Grade	2000-2002	2002-2004	2004-2006	2006-2008	2008-2010	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016
A	539,264	263,028	358,495	584,903	120,712	131,183	320,365	354,521	334,543	359,880
B	0	0	101,521	0	109,200	40,617	34,523	34,680	75,995	05,707
C	0	0	33,441	53,353	0	99,279	0	0	0	0
D	0	0	0	0	0	0	0	0	0	0
F	0	0	123,600	0	0	0	0	0	0	0
Subtotal	539,264	263,028	617,057	638,256	229,912	271,079	354,888	389,201	410,538	365,587
NM	372,403	666,981	335,635	338,159	759,503	734,062	660,277	634,378	622,411	676,933
Total	911,667	930,009	952,692	976,415	989,415	1,005,141	1,015,165	1,023,579	1,032,949	1,042,520

People Breathing Year Round Particle Pollution (Annual PM-2.5)

Grade	2000-2002	2002-2004	2004-2006	2006-2008	2008-2010	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016
A	520,595	263,028	597,829	618,715	229,912	271,079	354,888	370,076	391,486	354,174
B	0	0	0	19,541	0	0	0	19,125	19,052	11,413
C	0	0	19,228	0	0	0	0	0	0	0
D	18,669	0	0	0	0	0	0	0	0	0
F	0	0	0	0	0	0	0	0	0	0
Subtotal	539,264	263,028	617,057	638,256	229,912	271,079	354,888	389,201	410,538	365,587
NM	372,403	666,981	335,635	338,159	759,503	734,062	660,277	634,378	622,411	676,933
Total	911,667	930,009	952,692	976,415	989,415	1,005,141	1,015,165	1,023,579	1,032,949	1,042,520

NM – Not Monitored

Figure MT-1

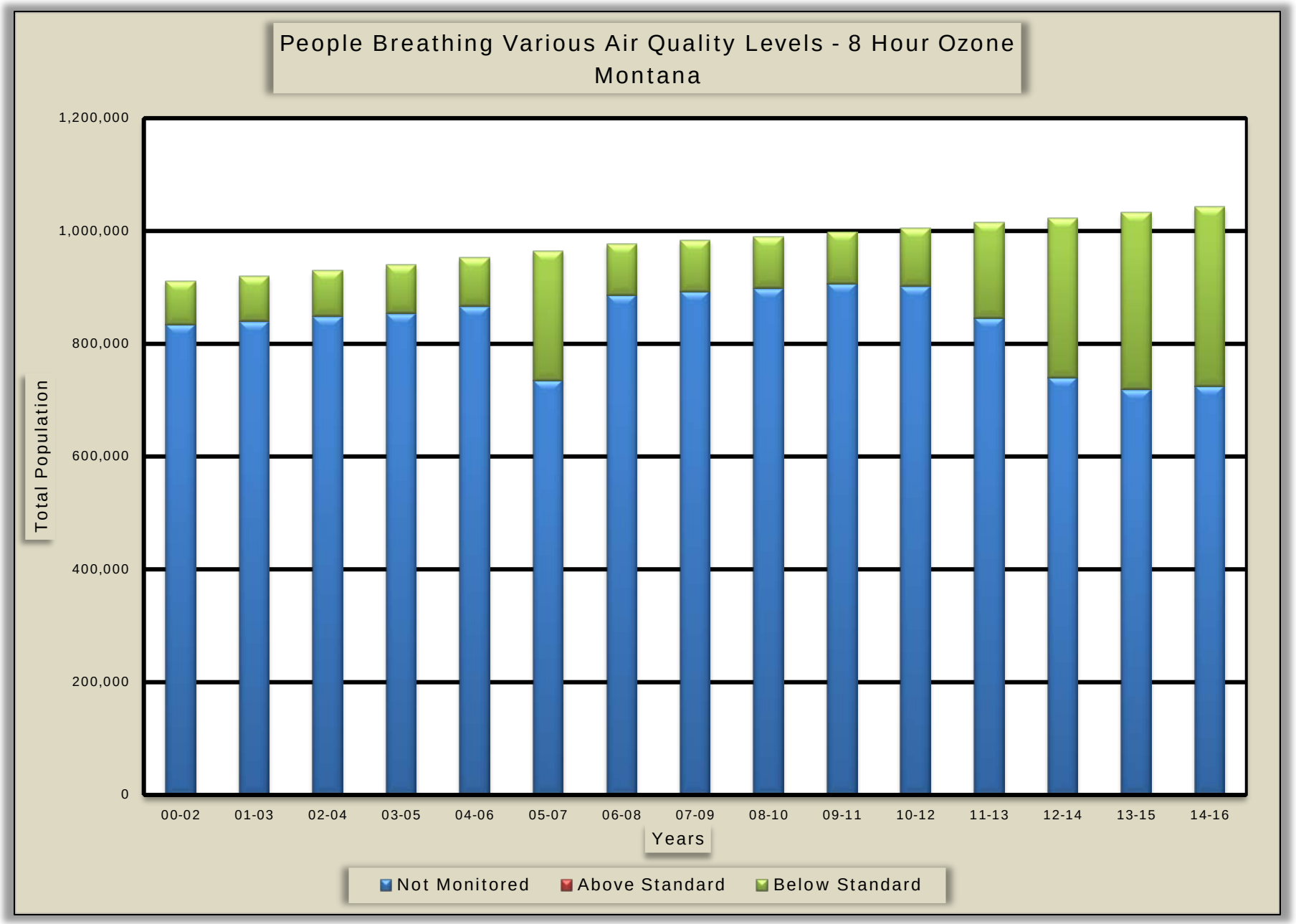

People Breathing Various Air Quality Levels - 8 Hour Ozone
Montana
1,200,000
1,000,000
800,000
600,000
400,000
200,000
0
Total Population
00-02
01-03
02-04
03-05
04-06
05-07
06-08
07-09
08-10
09-11
10-12
11-13
12-14
13-15
14-16
Years
Not Monitored
Above Standard
Below Standard

Figure MT-2

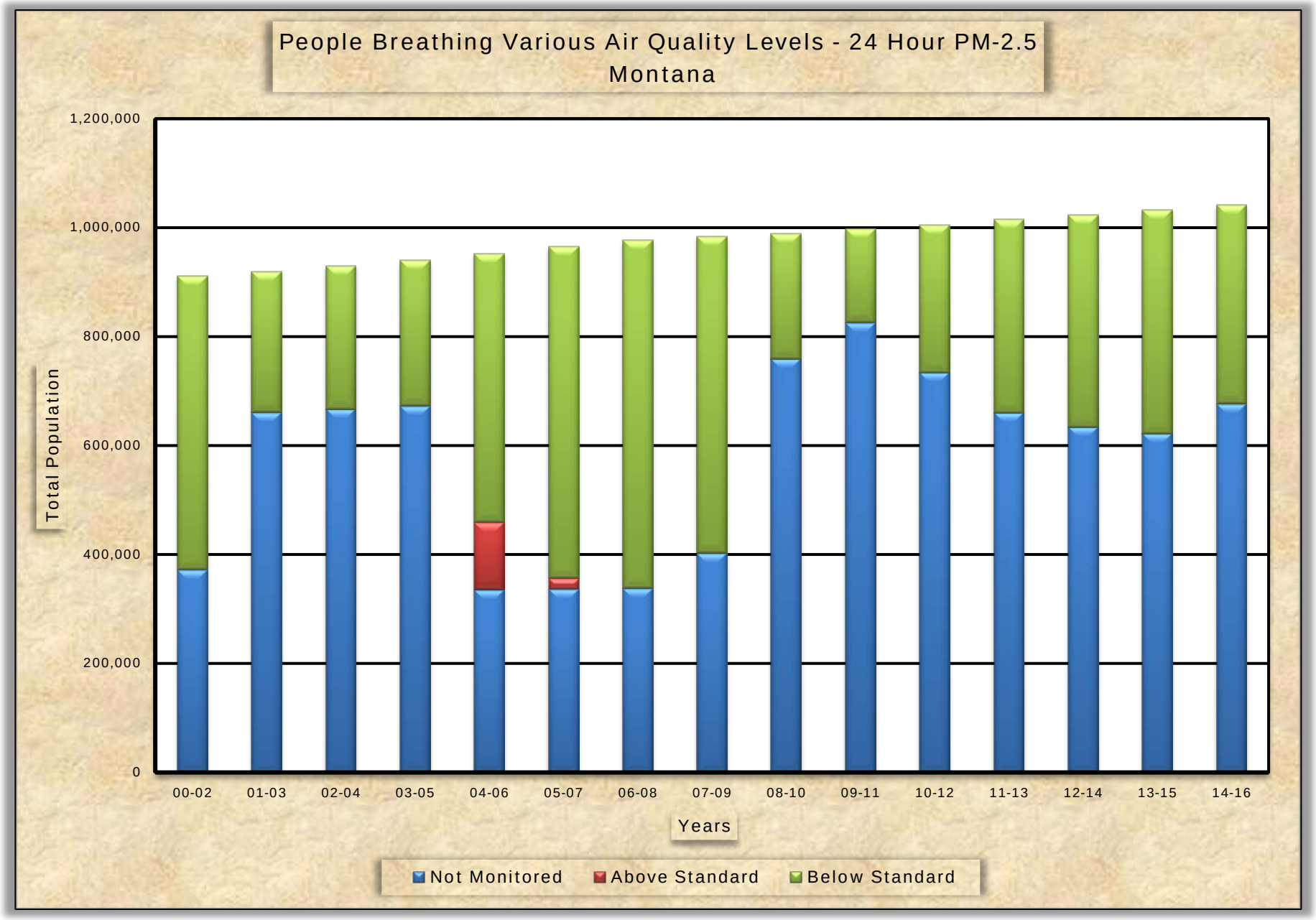
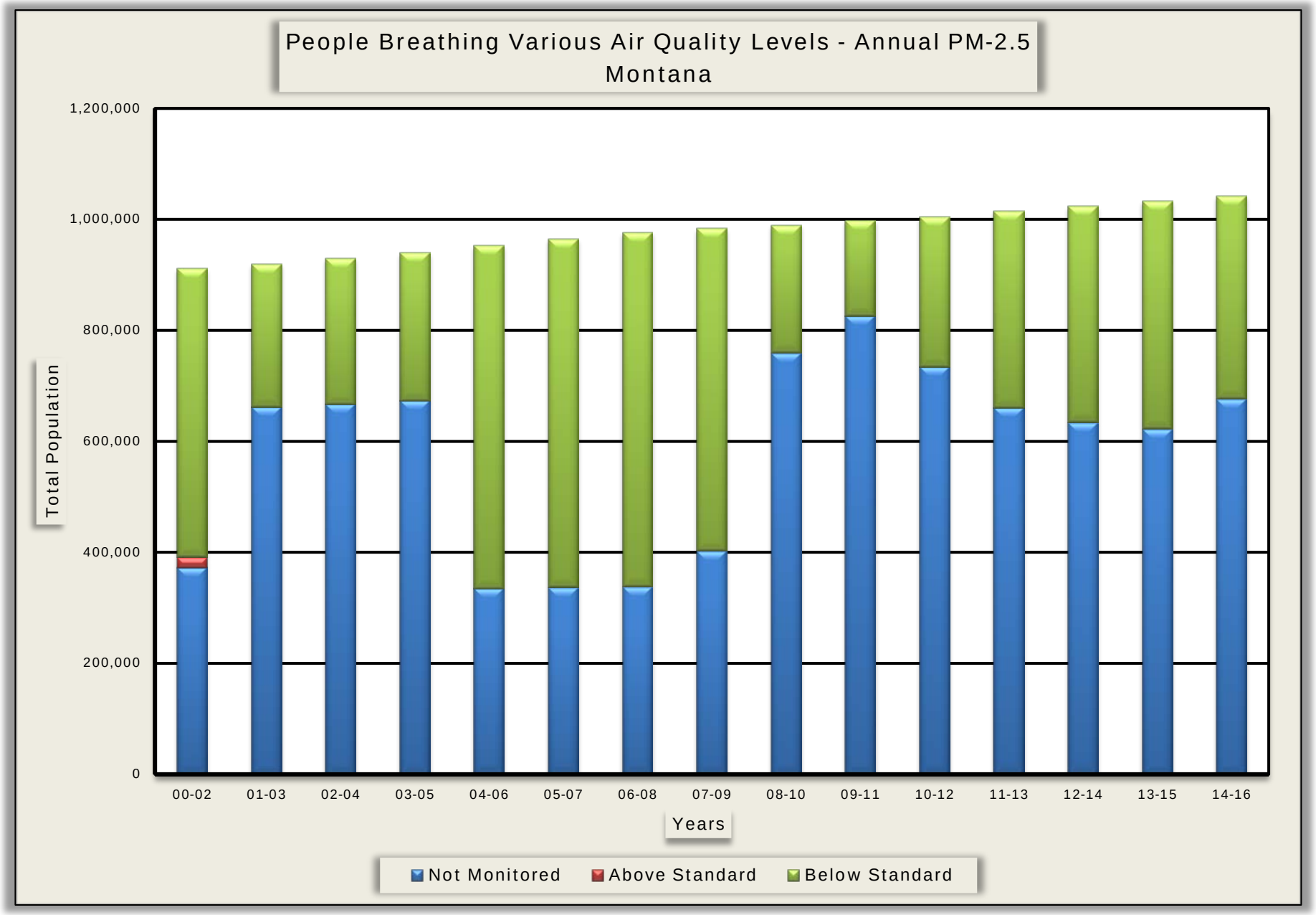

People Breathing Various Air Quality Levels - 24 Hour PM-2.5
Montana
Total Population
1,200,000
1,000,000
800,000
600,000
400,000
200,000
0
00-02
01-03
02-04
03-05
04-06
05-07
06-08
07-09
08-10
09-11
10-12
11-13
12-14
13-15
14-16
Years
Not Monitored
Above Standard
Below Standard

Figure MT-3


People Breathing Various Air Quality Levels - Annual PM-2.5
Montana
1,200,000
1,000,000
800,000
600,000
400,000
200,000
0
Total Population
00-02
01-03
02-04
03-05
04-06
05-07
06-08
07-09
08-10
09-11
10-12
11-13
12-14
13-15
14-16
Years
Not Monitored
Above Standard
Below Standard

NEBRASKA

Ozone

In the 2000 – 2002 time period, approximately 0.7 million people (42.3%) lived in counties that met the ozone standard. By 2014 – 2016 this had increased to approximately 0.9 million people (45.8%). The remainder of the population lived in counties where ozone was not measured. The ozone standard was lowered from 0.085 ppm to 0.070 ppm. Figure NE-1 shows the distribution of people by year. The population weighted ozone design value in 2000 – 2002 was 0.059 ppm. By 2014 – 2016 this value was 0.060 ppm an increase of 1.7 percent.

24-Hour PM-2.5

In the 2000 – 2002 time period, approximately 0.9 million people (49.7%) lived in counties where 24-hour PM-2.5 levels met the standard. By 2014 - 2016 this was approximately 1.1 million people (59.0%). The remainder of the population lived in counties where PM-2.5 was not measured. The standard was lowered from 65 to 35 µg/m3. Figure NE-2 shows the distribution of people by year. The population weighted 24-hour PM-2.5 design value in 2000 -2002 was 25 µg/m3. By 2014 – 2016 this had lowered to a value of 17 µg/m3, a reduction of 32.0 percent.

Annual PM-2.5

In the 2000 – 2002 time period, approximately 0.9 million people (49.7%) lived in counties where annual PM-2.5 levels met the standard. By 2014 – 2016 this had increased to approximately 1.1 million people (59.0%). The remainder of the population lived in counties where PM-2.5 was not measured. The standard was lowered from 15 to 12 µg/m3. Figure NE-3 shows the distribution of people by year. The population weighted annual PM-2.5 design value in 2000 – 2002 was 10.3 µg/m3. By 2014 – 2016 this had lowered to a value of 7.4 µg/m3, a reduction of 28.2 percent.

Table NE-1

2014 – 2016

		Ozone			Particle Pollution (PM-2.5)				
County	Population	Avg. DV	Grade	MM	Avg. 24-Hr DV	Grade	Avg. Ann DV	Grade	MM
Douglas	554,995	0.061	B	Y	18	A	7.8	A	Y
Hall	61,705	ND	ND	ND	14	A	6.0	A	N
Knox	8,571	0.063	C	N	ND	ND	ND	ND	ND
Lancaster	309,637	0.059	B	N	16	A	6.7	A	N
Sarpy	179,023	ND	ND	ND	19	A	8.2	A	N
Washington	20,603	ND	ND	ND	16	A	6.8	A	N

DV = Design Value ND = No Data MM = Multiple Monitors

NEBRASKA

Table NE-2
Population Weighted Design Values

Period	Ozone (ppm)	24-Hour PM-2.5 (µg/m3)	Annual PM-2.5 (µg/m3)
2000 – 2002	0.059	25	10.3
2001 – 2003	0.059	26	10.1
2002 – 2004	0.061	26	9.7
2003 – 2005	0.063	28	9.9
2004 – 2006	0.063	26	9.4
2005 – 2007	0.062	24	9.3
2006 – 2008	0.058	21	8.7
2007 – 2009	0.055	20	8.6
2008 – 2010	0.054	20	8.8
2009 – 2011	0.056	22	9.2
2010 – 2012	0.059	23	9.4
2011 – 2013	0.061	22	9.4
2012 – 2014	0.062	21	8.8
2013 – 2015	0.059	20	8.1
2014 – 2016	0.060	17	7.4

NEBRASKA

Table NE-3
People Breathing Ozone

Grade	2000-2002	2002-2004	2004-2006	2006-2008	2008-2010	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016
A	730,264	747,162	766,043	279,605	802,517	293,407	297,036	301,795	0	0
B	0	0	0	504,547	0	531,265	537,252	543,244	856,532	864,632
C	0	0	0	0	0	0	8,565	8,482	8,543	8,571
D	0	0	0	0	0	0	0	0	0	0
F	0	0	0	0	0	0	0	0	0	0
Subtotal	730,264	747,162	766,043	784,152	802,517	824,672	742,857	853,521	865,075	873,203
NM	998,028	1,002,208	1,006,650	1,012,226	1,023,824	1,030,853	1,025,659	1,037,982	1,031,115	1,033,913
Total	1,728,292	1,749,370	1,772,693	1,796,378	1,826,341	1,855,525	1,868,516	1,881,503	1,896,190	1,907,116

People Breathing Short-term Particle Pollution (24-Hour PM-2.5)

Grade	2000-2002	2002-2004	2004-2006	2006-2008	2008-2010	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016
A	858,558	772,236	930,169	1,050,346	881,358	905,269	1,084,566	1,098,982	1,114,152	1,125,963
B	0	0	0	0	0	0	0	0	0	0
C	0	0	0	0	0	0	0	0	0	0
D	0	0	0	0	0	0	0	0	0	0
F	0	0	0	0	0	0	0	0	0	0
Subtotal	858,558	772,236	930,169	1,050,346	881,358	905,269	1,084,566	1,098,982	1,114,152	1,125,963
NM	869,734	977,134	842,524	746,032	944,983	950,256	783,950	782,521	782,038	781,153
Total	1,728,292	1,749,370	1,772,693	1,796,378	1,826,341	1,855,525	1,868,516	1,881,503	1,896,190	1,907,116

People Breathing Year Round Particle Pollution (Annual PM-2.5)

Grade	2000-2002	2002-2004	2004-2006	2006-2008	2008-2010	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016
A	858,558	772,236	930,169	1,050,346	881,158	905,269	1,084,566	926,789	1,114,152	1,125,963
B	0	0	0	0	0	0	0	172,193	0	0
C	0	0	0	0	0	0	0	0	0	0
D	0	0	0	0	0	0	0	0	0	0
F	0	0	0	0	0	0	0	0	0	0
Subtotal	858,558	772,236	930,169	1,050,346	881,358	905,269	1,084,566	1,098,982	1,114,152	1,125,963
NM	869,734	977,134	842,524	746,032	944,983	950,256	783,950	782,521	782,038	781,153
Total	1,728,292	1,749,370	1,772,693	1,796,378	1,826,341	1,855,525	1,868,516	1,881,503	1,896,190	1,907,116

NM = Not Monitored

Figure NE-1

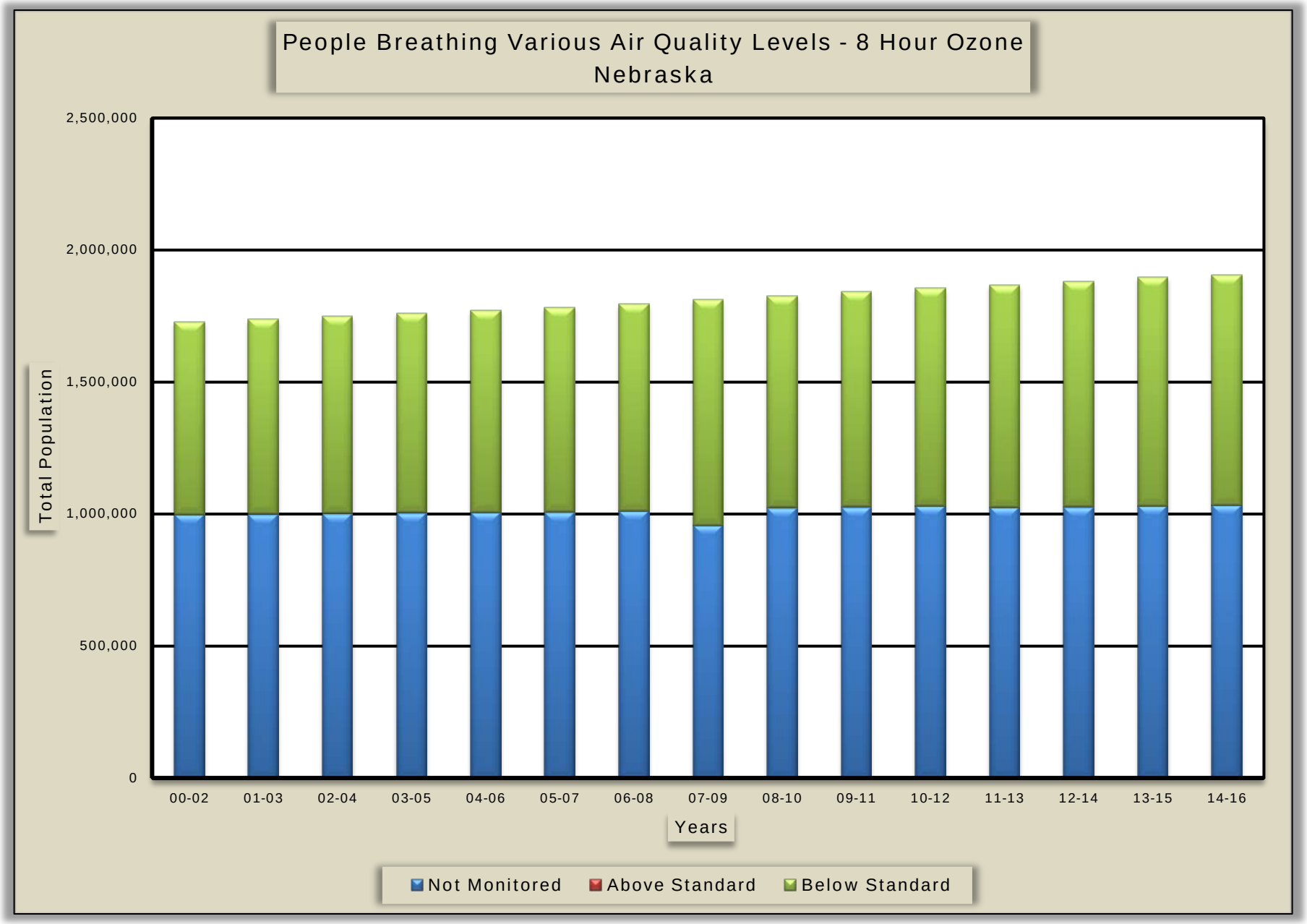

People Breathing Various Air Quality Levels - 8 Hour Ozone
Nebraska
2,500,000
2,000,000
1,500,000
1,000,000
500,000
0
Total Population
00-02
01-03
02-04
03-05
04-06
05-07
06-08
07-09
08-10
09-11
10-12
11-13
12-14
13-15
14-16
Years
Not Monitored
Above Standard
Below Standard

Figure NE-2

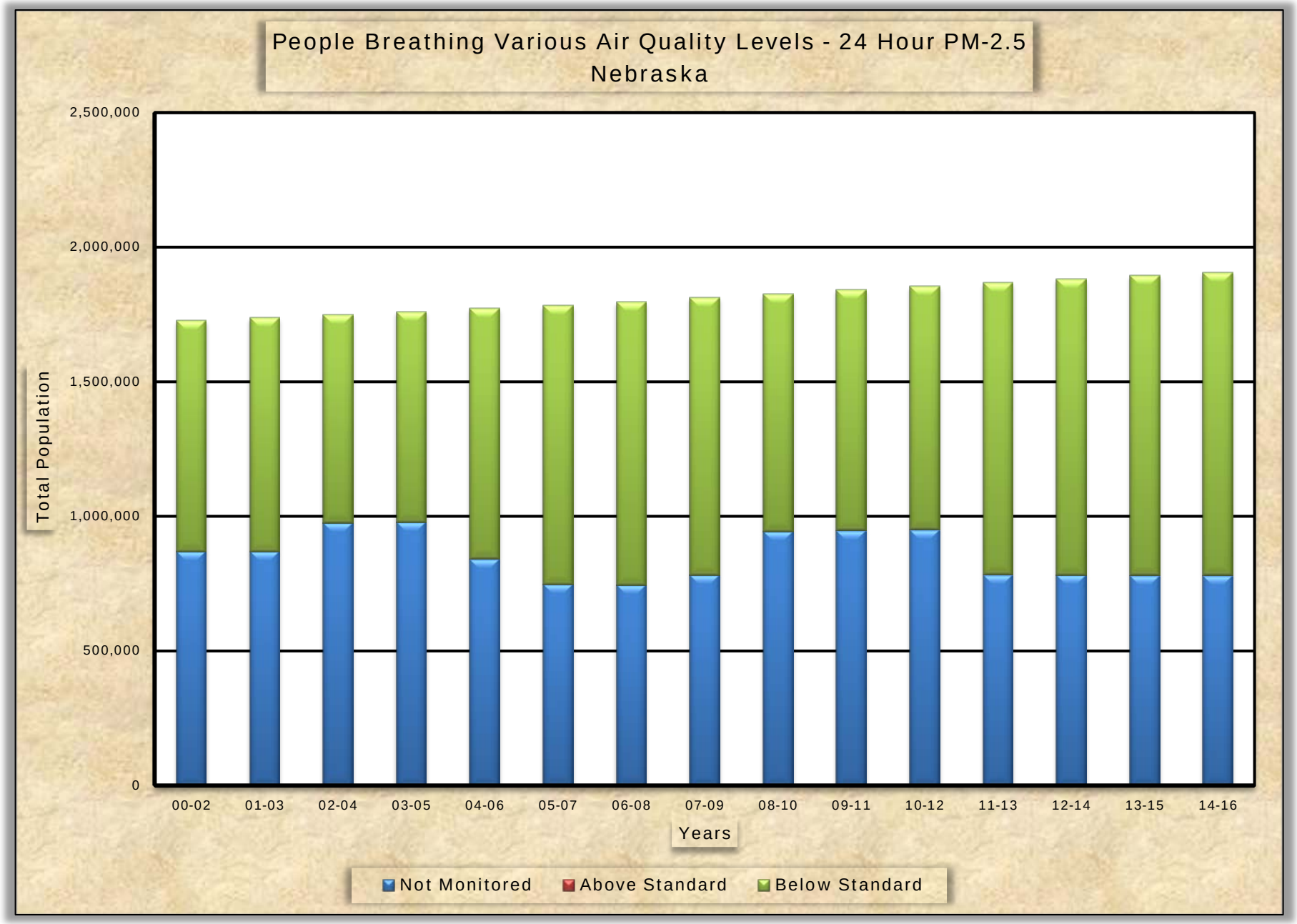
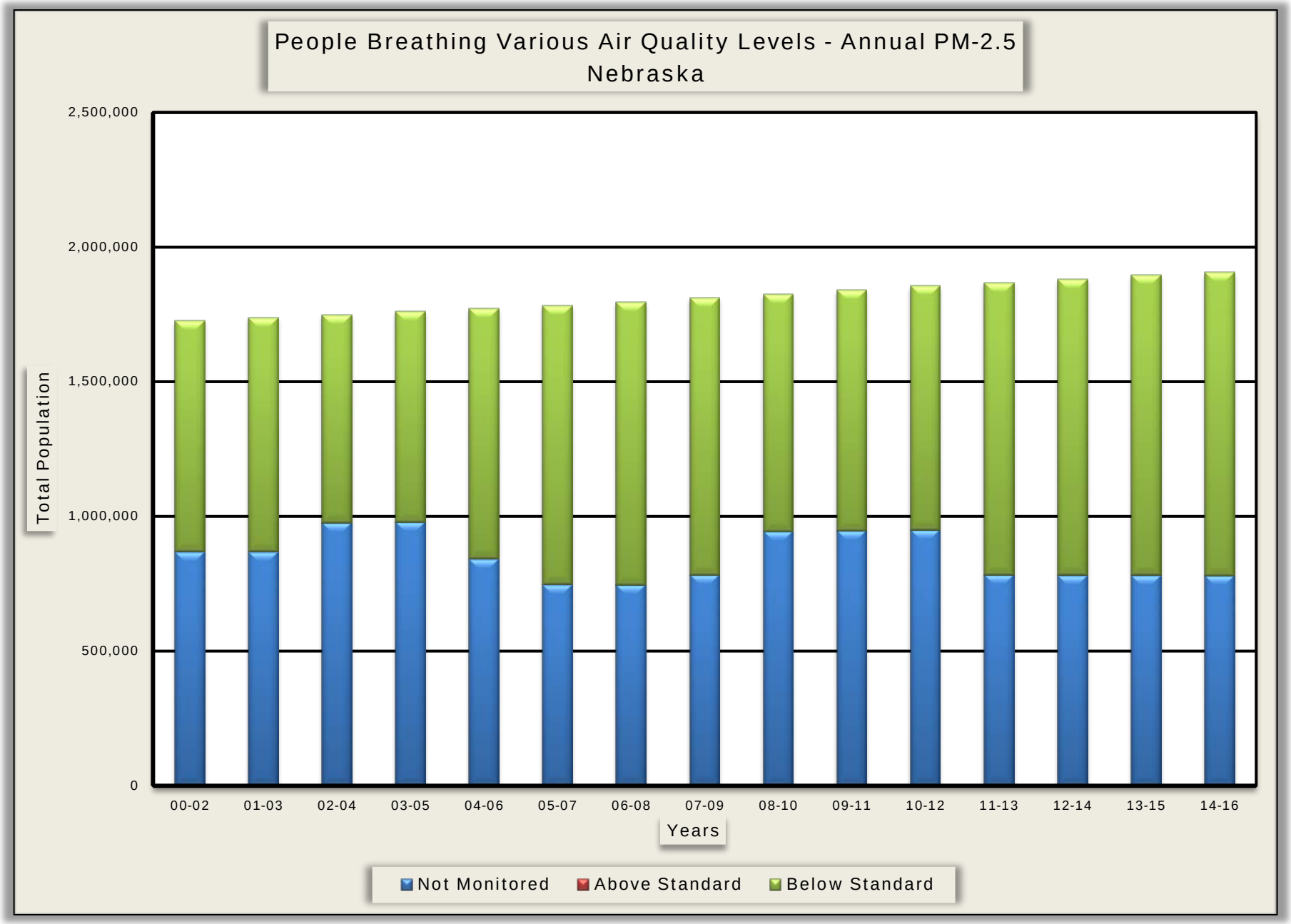

People Breathing Various Air Quality Levels - 24 Hour PM-2.5
Nebraska
2,500,000
2,000,000
1,500,000
1,000,000
500,000
0
Total Population
00-02
01-03
02-04
03-05
04-06
05-07
06-08
07-09
08-10
09-11
10-12
11-13
12-14
13-15
14-16
Years
Not Monitored
Above Standard
Below Standard

Figure NE-3


People Breathing Various Air Quality Levels - Annual PM-2.5
Nebraska
Total Population
2,500,000
2,000,000
1,500,000
1,000,000
500,000
0
00-02
01-03
02-04
03-05
04-06
05-07
06-08
07-09
08-10
09-11
10-12
11-13
12-14
13-15
14-16
Years
Not Monitored
Above Standard
Below Standard

NEVADA

Ozone

In the 2000 – 2002 time period, approximately 1.2 million people (56.6%) lived in counties that met the ozone standard. By 2014 – 2016 this had increased to approximately 2.2 million people (75.2%). The remainder of the population lived in counties where ozone was not measured. The ozone standard was lowered from 0.085 ppm to 0.070 ppm. Figure NV-1 shows the distribution of people by year. The population weighted ozone design value in 2000 – 2002 was 0.074 ppm. By 2014 – 2016 this had lowered to a value of 0.069 ppm, a reduction of 6.8 percent.

24-Hour PM-2.5

In the 2000 – 2002 time period, approximately 1.9 million people (86.7%) lived in counties where 24-hour PM-2.5 levels met the standard. By 2014 - 2016 this was approximately 2.7 million people (92.2%). The remainder of the population lived in counties where PM-2.5 was not measured. The standard was lowered from 65 to 34 µg/m3. Figure NV-2 shows the distribution of people by year. The population weighted 24-hour PM-2.5 design value in 2000 – 2002 was 21 µg/m3. By 2014 -2016 this had decreased to 19 µg/m3, a decrease of 9.5 percent.

Annual PM-2.5

In the 2000 – 2002 time period, approximately 1.9 million people (86.7%) lived in counties where annual PM-2.5 levels met the standard. By 2014 – 2016 this had increased to approximately 2.7 million people (92.2%). The remainder of the population lived in counties where PM-2.5 was not measured. The standard was lowered from 15 to 12 µg/m3. Figure NV-3 shows the distribution of people by year. The population weighted annual PM-2.5 design value in 2000 – 2002 was 8.1 µg/m3. By 2014 – 2016 this had decreased to a value of 6.4 µg/m3, a decrease of 21.0 percent.

Table NV-1
2014 – 2016

		Ozone			Particle Pollution (PM-2.5)				
County	Population	Avg. DV	Grade	MM	Avg. 24-Hr DV	Grade	Avg. Ann DV	Grade	MM
Churchill	24,198	0.065	C	N	ND	ND	ND	ND	ND
Clark	2,155,664	0.069	C	Y	19	A	6.2	A	Y
Douglas	48,020	ND	ND	ND	24	A	7.9	A	N
Lyon	53,179	0.068	C	N	ND	ND	ND	ND	ND
Washoe	453,616	0.067	C	Y	21	A	7.2	A	Y
White Pine	9,682	0.064	C	N	ND	ND	ND	ND	ND
Carson City	54,742	0.067	C	N	14	A	4.6	A	N

DV – Design Value ND - No Data MM – Multiple Monitors

NEVADA

Table NV-2
Population Weighted Design Values

Period	Ozone (ppm)	24-Hour PM-2.5 (µg/m3)	Annual PM-2.5 (µg/m3)
2000 – 2002	0.074	21	8.1
2001 – 2003	0.075	19	7.4
2002 – 2004	0.076	18	7.0
2003 – 2005	0.075	16	6.1
2004 – 2006	0.075	16	5.9
2005 – 2007	0.075	20	7.5
2006 – 2008	0.075	20	7.5
2007 – 2009	0.072	20	7.4
2008 – 2010	0.069	18	6.4
2009 – 2011	0.070	17	5.9
2010 – 2012	0.071	15	5.9
2011 – 2013	0.071	19	7.1
2012 – 2014	0.071	18	7.2
2013 – 2015	0.070	22	8.7
2014 – 2016	0.069	19	6.4

NEVADA

Table NV-3
People Breathing Ozone

Grade	2000-2002	2002-2004	2004-2006	2006-2008	2008-2010	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016
A	72,475	183,587	55,410	244,604	0	24,375	24,063	0	0	0
B	1,158,012	620,201	826,220	751,355	193,440	269,792	394,791	295,817	74,484	75,603
C	761,481	1,306,465	1,387,518	1,365,964	2,214,143	2,277,082	2,182,502	2,354,276	1,570,937	2,136,562
D	0	0	0	0	0	0	0	0	1,057,401	538,916
F	0	0	0	0	0	0	0	0	0	0
Subtotal	1,991,968	2,110,253	2,269,148	2,361,923	2,407,583	2,571,249	2,601,356	2,650,093	2,702,821	2,751,081
NM	181,823	235,969	253,510	291,707	292,968	187,682	188,780	189,006	188,024	188,977
Total	2,173,791	2,346,222	2,522,658	2,653,630	2,700,551	2,758,931	2,790,136	2,839,099	2,890,845	2,940,058

People Breathing Short-term Particle Pollution (24-Hour PM-2.5)

Grade	2000-2002	2002-2004	2004-2006	2006-2008	2008-2010	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016
A	1,885,336	2,051,550	1,803,774	2,327,142	1,951,269	2,430,667	2,294,744	2,363,066	2,412,736	2,712,042
B	0	0	400,453	0	421,407	0	0	146,693	148,968	0
C	0	0	0	0	0	0	216,876	0	0	0
D	0	0	0	0	0	0	0	0	0	0
F	0	0	0	0	0	0	0	0	0	0
Subtotal	1,885,336	2,051,550	2,204,227	2,327,142	2,372,676	2,430,667	2,511,619	2,509,759	2,561,704	2,712,042
NM	288,455	294,672	318,431	326,488	327,875	328,264	278,517	329,340	329,141	228,016
Total	2,173,791	2,346,222	2,522,658	2,653,630	2,700,551	2,758,931	2,790,136	2,839,099	2,890,845	2,940,058

People Breathing Year Round Particle Pollution (Annual PM-2.5)

Grade	2000-2002	2002-2004	2004-2006	2006-2008	2008-2010	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016
A	1,885,336	2,051,550	2,204,227	2,327,142	2,372,676	2,430,667	2,294,744	2,509,759	2,561,704	1,849,776
B	0	0	0	0	0	0	216,876	0	0	862,266
C	0	0	0	0	0	0	0	0	0	0
D	0	0	0	0	0	0	0	0	0	0
F	0	0	0	0	0	0	0	0	0	0
Subtotal	1,885,336	2,051,550	2,204,227	2,327,142	2,372,676	2,430,667	2,511,619	2,509,759	2,561,704	2,712,042
NM	288,455	294,672	318,431	326,488	327,375	328,264	278,517	329,340	329,141	228,016
Total	2,173,791	2,346,222	2,522,658	2,653,630	2,700,551	2,758,931	2,790,136	2,839,099	2,890,845	2,940,058

NM – Not Monitored

Figure NV-1

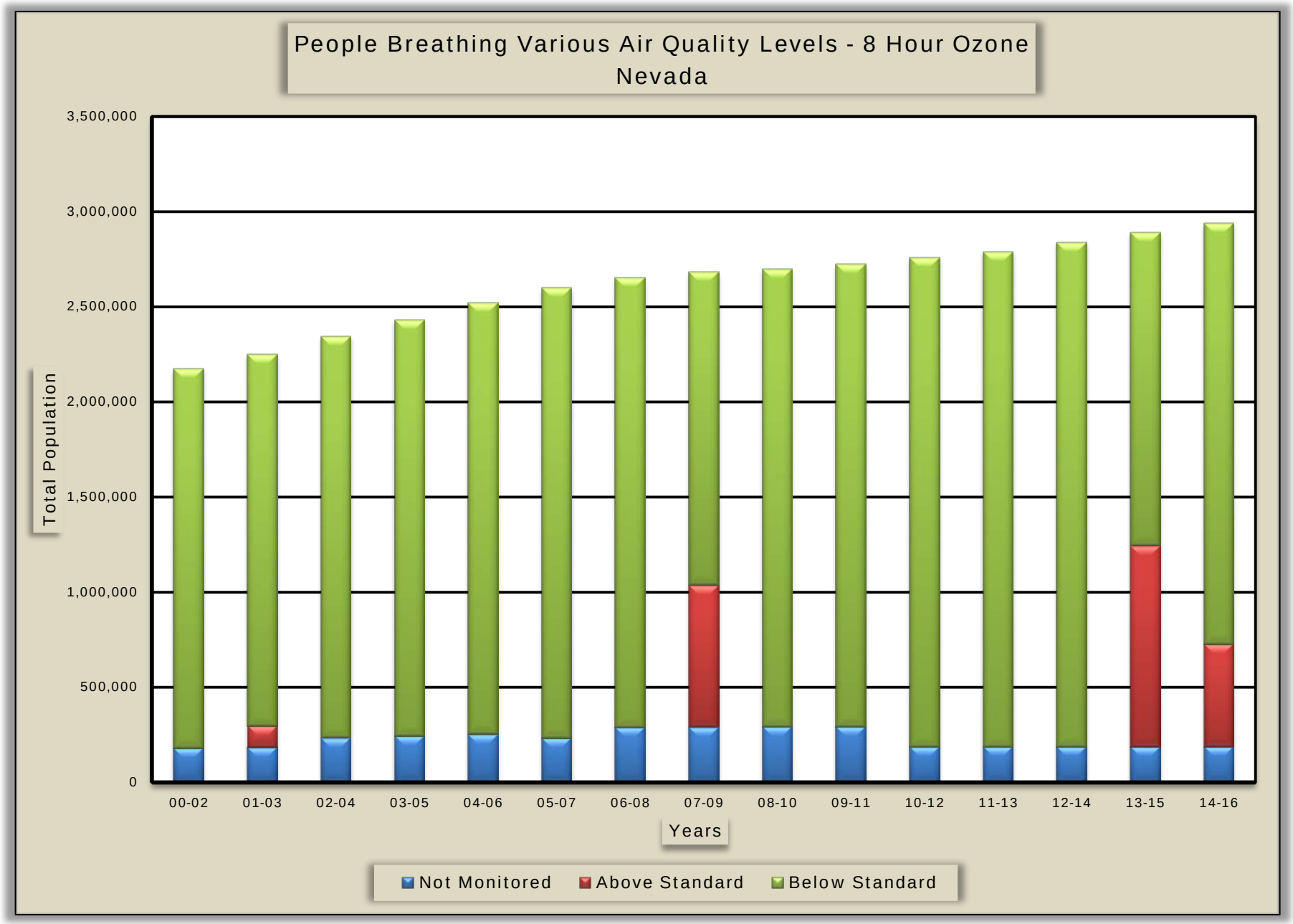

People Breathing Various Air Quality Levels - 8 Hour Ozone
Nevada
Total Population
3,500,000
3,000,000
2,500,000
2,000,000
1,500,000
1,000,000
500,000
0
00-02
01-03
02-04
03-05
04-06
05-07
06-08
07-09
08-10
09-11
10-12
11-13
12-14
13-15
14-16
Years
Not Monitored
Above Standard
Below Standard

Figure NV-2

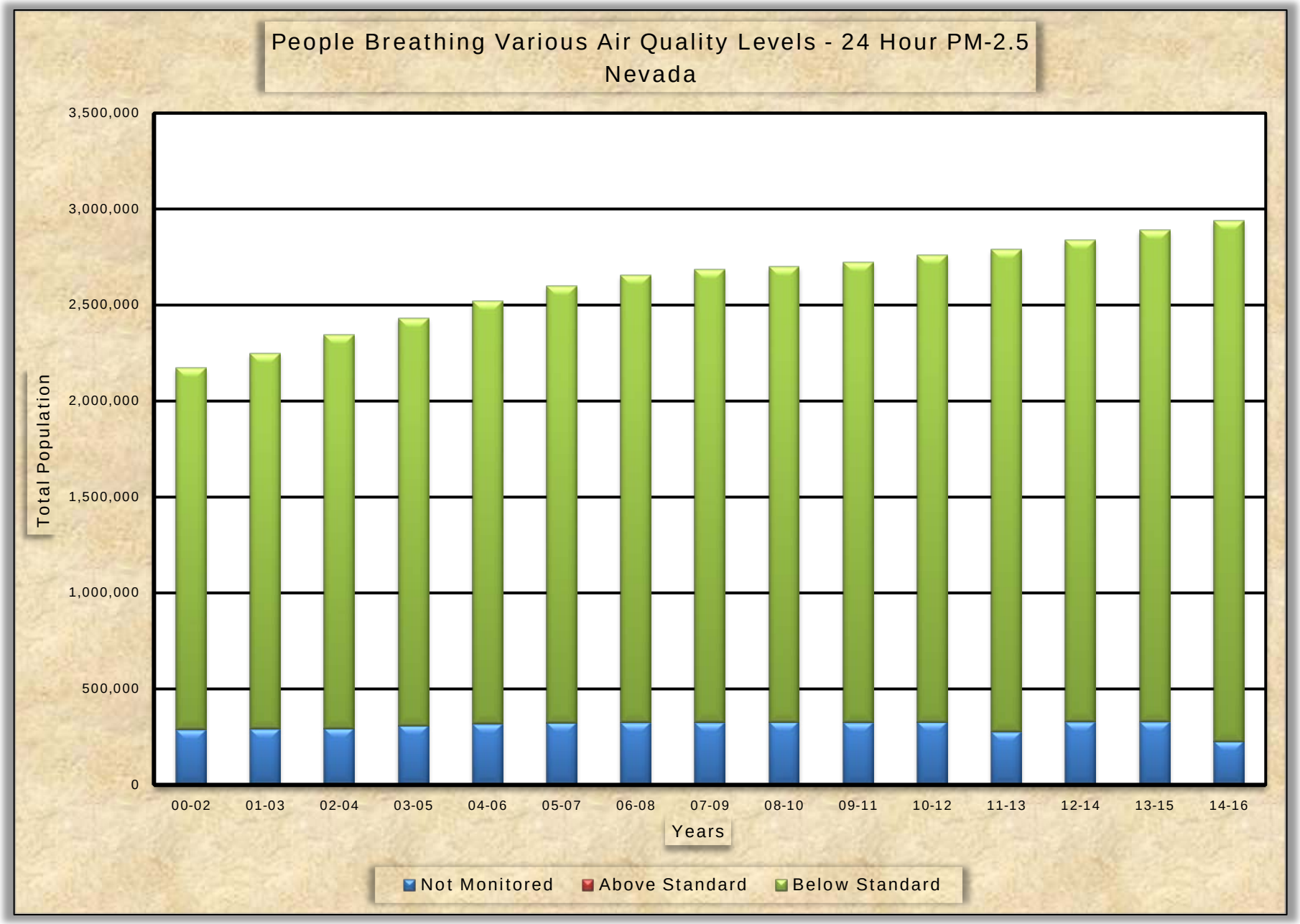
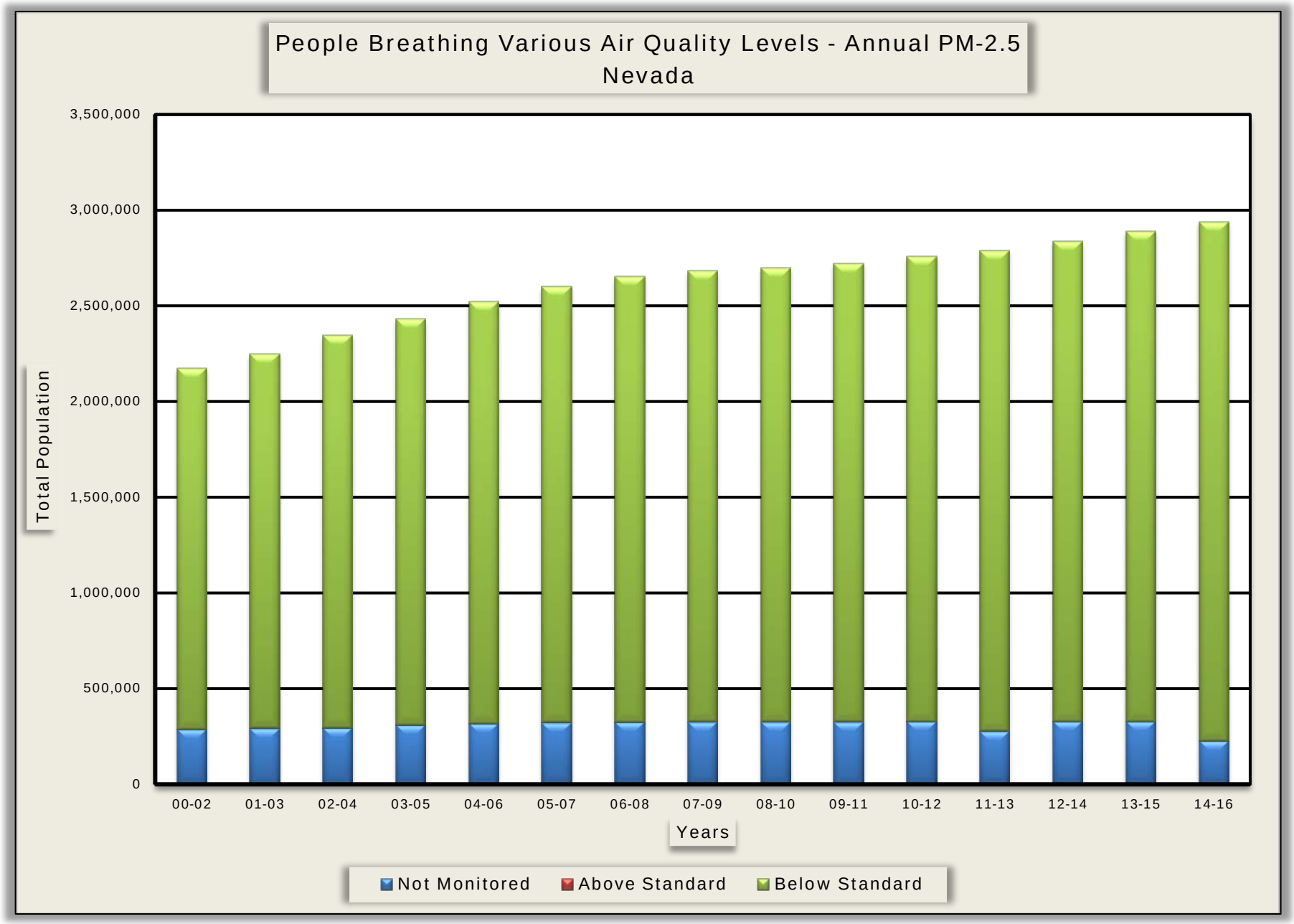

People Breathing Various Air Quality Levels - 24 Hour PM-2.5
Nevada
Total Population
3,500,000
3,000,000
2,500,000
2,000,000
1,500,000
1,000,000
500,000
0
00-02
01-03
02-04
03-05
04-06
05-07
06-08
07-09
08-10
09-11
10-12
11-13
12-14
13-15
14-16
Years
Not Monitored
Above Standard
Below Standard

Figure NV-3


People Breathing Various Air Quality Levels - Annual PM-2.5
Nevada
Total Population
3,500,000
3,000,000
2,500,000
2,000,000
1,500,000
1,000,000
500,000
0
00-02
01-03
02-04
03-05
04-06
05-07
06-08
07-09
08-10
09-11
10-12
11-13
12-14
13-15
14-16
Years
Not Monitored
Above Standard
Below Standard

NEW HAMPSHIRE

Ozone

In the 2000 – 2002 time period, approximately 1.2 million people (92.8%) lived in counties that met the ozone standard. By 2013 – 2015 this was approximately 0.97 million people (72.6%). The remainder of the population lived in counties where ozone was not measured. The ozone standard was lowered from 0.085 ppm to 0.070 ppm. Figure NH-1 shows the distribution of people by year. The population weighted ozone design value in 2000 – 2002 was 0.079 ppm. By 2013 – 2015 this had lowered to a value of 0.064 ppm, a reduction of 19.0 percent.

24-Hour PM-2.5

In the 2000 – 2002 time period, approximately 33 thousand people (2.6%) lived in counties where 24-hour PM-2.5 levels met the standard. By 2013 - 2015 this was approximately 0.9 million people (70.2%). The remainder of the population lived in counties where PM-2.5 was not measured. The standard was lowered from 65 to 35 µg/m3. Figure NH-2 shows the distribution of people by year. The population weighted 24-hour PM-2.5 design value in 2000 -2002 was 27 µg/m3. By 2013 – 2015 this had lowered to 16 µg/m3, a reduction of 40.7 percent.

Annual PM-2.5

In the 2000 – 2002 time period, approximately 33 thousand people (2.6%) lived in counties where annual PM-2.5 levels met the standard. By 2013 – 2015 this had increased to approximately 0.9 million people (70.2%). The remainder of the population lived in counties where PM-2.5 was not measured. The standard was lowered from 15 to 12 µg/m3. Figure NH-3 shows the distribution of people by year. The population weighted annual PM-2.5 design value in 2000 – 2002 was 9.7 µg/m3. By 2013 -2015 this had lowered to a value of 6.5 µg/m3, a reduction of 33.0 percent.

Table NH-1
2014 – 2016

		Ozone			Particle Pollution (PM-2.5)				
County	Population	Avg. DV	Grade	MM	Avg. 24-Hr DV	Grade	Avg. Ann DV	Grade	MM
Belknap	60,779	0.058	B	N	10	A	4.6	A	N
Cheshire	75,774	0.061	B	N	24	A	8.0	A	N
Coos	32,039	0.062	B	Y	ND	ND	ND	ND	ND
Grafton	88,888	0.056	B	Y	15	A	6.0	A	N
Hillsborough	407,761	0.065	C	Y	13	A	5.6	A	N
Rockingham	303,251	0.065	C	Y	13	A	5.9	A	N

DV – Design Value ND - No Data MM – Multiple Monitors

NEW HAMPSHIRE

Table NH-2
Population Weighted Design Values

Period	Ozone (ppm)	24-Hour PM-2.5 (µg/m3)	Annual PM-2.5 (µg/m3)
2000 – 2002	0.079	27	9.7
2001 – 2003	0.082	29	10.4
2002 – 2004	0.074	29	9.6
2003 – 2005	0.072	28	9.2
2004 – 2006	0.073	26	9.4
2005 – 2007	0.074	26	9.5
2006 – 2008	0.072	25	9.1
2007 – 2009	0.070	24	8.7
2008 – 2010	0.066	23	8.1
2009 – 2011	0.065	22	7.9
2010 – 2012	0.066	22	7.8
2011 – 2013	0.065	19	6.9
2012 – 2014	0.066	17	6.8
2013 – 2015	0.064	16	6.5
2014 – 2016	0.063	14	5.9

NEW HAMPSHIRE

Table NH-3
People Breathing Ozone

Grade	2000-2002	2002-2004	2004-2006	2006-2008	2008-2010	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016
A	45,074	33,589	33,814	0	0	0	44,815	60,656	0	44,444
B	340,478	759,860	841,345	122,233	656,433	888,449	947,859	631,162	389,470	476,710
C	791,694	42,547	265,446	742,517	445,324	217,509	115,710	418,833	724,061	447,338
D	0	0	0	280,683	0	0	0	0	0	0
F	0	0	0	0	0	0	0	0	0	0
Subtotal	1,177,246	835,996	1,140,605	1,145,433	1,101,757	1,105,958	1,108,383	1,110,650	1,113,531	968,492
NM	91,843	454,125	167,784	170,473	214,713	214,760	215,076	216,163	217,077	366,303
Total	1,269,089	1,290,121	1,308,389	1,315,906	1,316,470	1,320,718	1,323,459	1,326,813	1,330,608	1,334,795

People Breathing Short-term Particle Pollution (24-Hour PM-2.5)

Grade	2000-2002	2002-2004	2004-2006	2006-2008	2008-2010	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016
A	33,234	1,040,387	872,942	1,034,473	979,594	776,042	700,642	1,079,054	934,325	936,453
B	0	0	121,054	77,472	0	0	76,610	0	0	0
C	0	0	0	0	0	0	0	0	0	0
D	0	0	0	0	0	0	0	0	0	0
F	0	0	0	0	0	0	0	0	0	0
Subtotal	33,234	1,040,387	993,996	1,111,945	979,594	776,042	777,252	1,079,054	934,235	936,453
NM	1,235,855	249,734	314,393	203,961	336,876	544,676	546,207	247,759	396,283	398,342
Total	1,269,089	1,290,121	1,308,389	1,315,906	1,316,470	1,320,718	1,323,459	1,326,813	1,330,608	1,334,795

People Breathing Year Round Particle Pollution (Annual PM-2.5)

Grade	2000-2002	2002-2004	2004-2006	2006-2008	2008-2010	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016
A	33,234	1,040,387	993,996	1,111,945	979,594	776,042	777,252	1,079,054	934,325	936,453
B	0	0	0	0	0	0	0	0	0	0
C	0	0	0	0	0	0	0	0	0	0
D	0	0	0	0	0	0	0	0	0	0
F	0	0	0	0	0	0	0	0	0	0
Subtotal	33,234	1,040,387	993,996	1,111,945	979,594	776,042	777,252	1,079,054	934,325	936,453
NM	1,235,855	249,734	314,393	203,961	336,876	544,676	546,207	247,759	396,283	398,342
Total	1,269,089	1,290,121	1,308,389	1,315,906	1,316,470	1,320,718	1,323,459	1,326,813	1,330,608	1,334,795

NM – Not Monitored

Figure NH-1

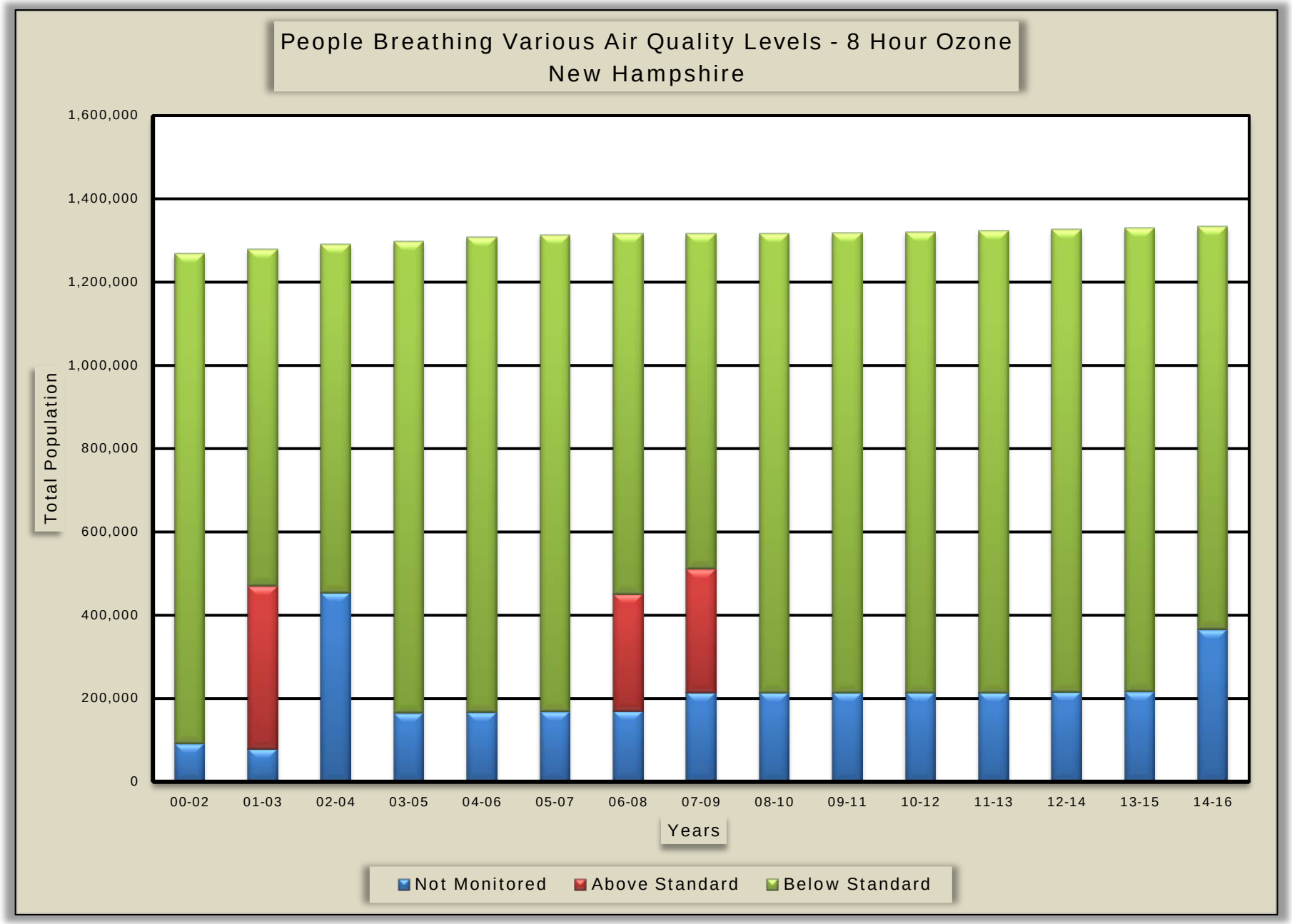

People Breathing Various Air Quality Levels - 8 Hour Ozone
New Hampshire
Total Population
1,600,000
1,400,000
1,200,000
1,000,000
800,000
600,000
400,000
200,000
0
00-02
01-03
02-04
03-05
04-06
05-07
06-08
07-09
08-10
09-11
10-12
11-13
12-14
13-15
14-16
Years
Not Monitored
Above Standard
Below Standard

Figure NH-2

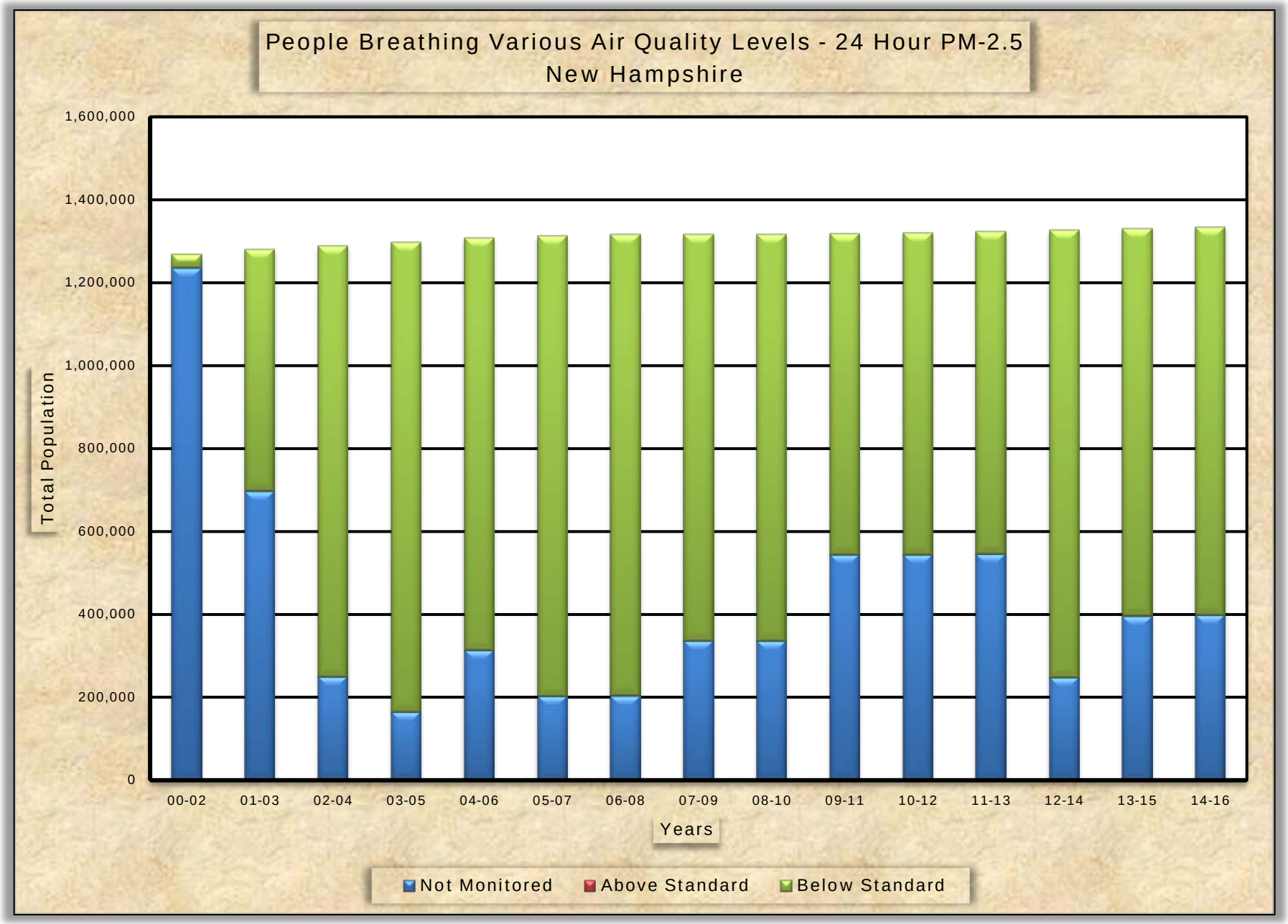
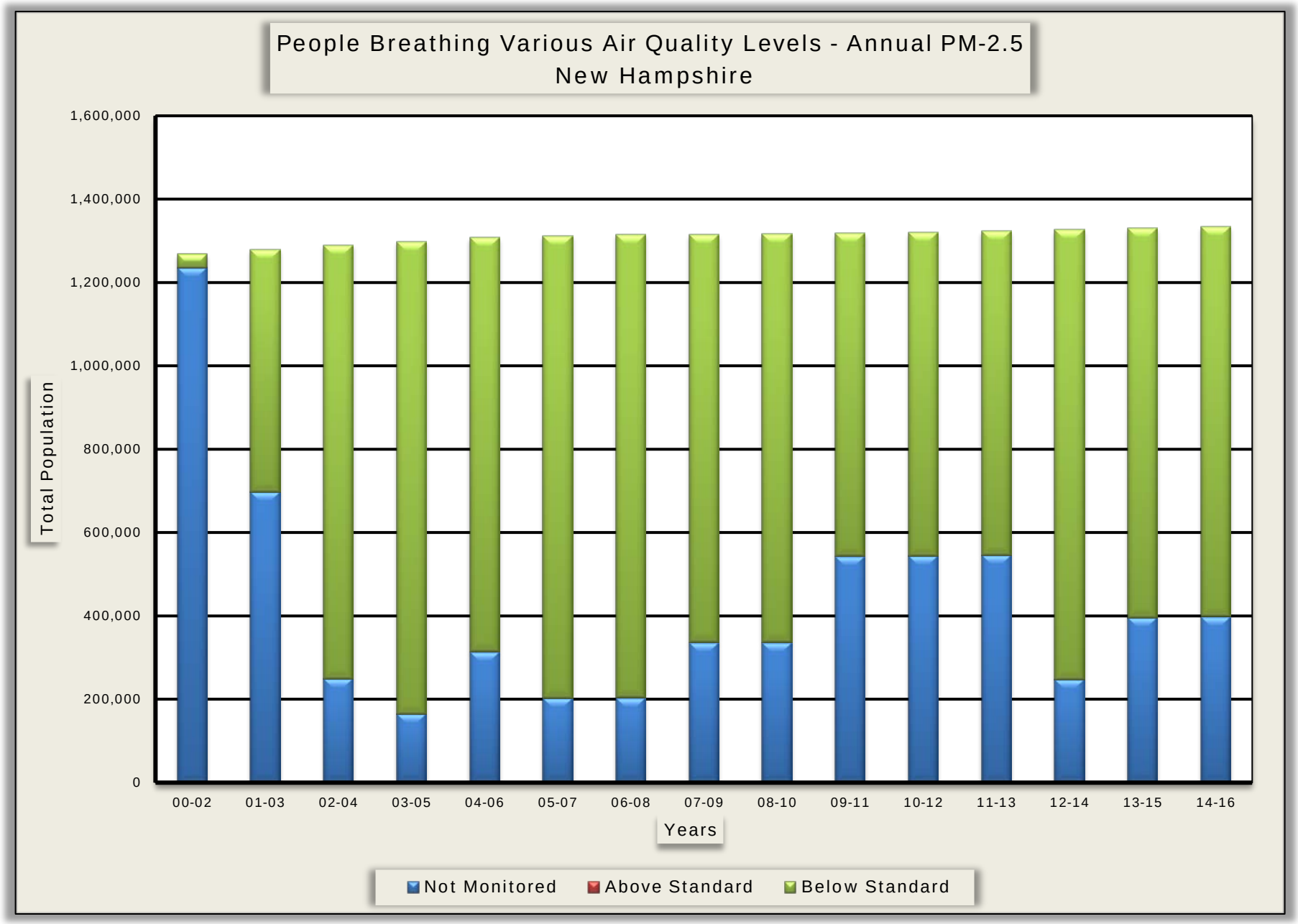

People Breathing Various Air Quality Levels - 24 Hour PM-2.5
New Hampshire
Total Population
1,600,000
1,400,000
1,200,000
1,000,000
800,000
600,000
400,000
200,000
0
00-02
01-03
02-04
03-05
04-06
05-07
06-08
07-09
08-10
09-11
10-12
11-13
12-14
13-15
14-16
Years
Not Monitored
Above Standard
Below Standard

Figure NH-3


People Breathing Various Air Quality Levels - Annual PM-2.5
New Hampshire
Total Population
1,600,000
1,400,000
1,200,000
1,000,000
800,000
600,000
400,000
200,000
0
00-02
01-03
02-04
03-05
04-06
05-07
06-08
07-09
08-10
09-11
10-12
11-13
12-14
13-15
14-16
Years
Not Monitored
Above Standard
Below Standard

NEW JERSEY

Ozone

In the 2000 – 2002 time period, no people lived in counties that met the ozone standard. By 2014 – 2016 this had increased to approximately 3.3 million people (37.3%). The ozone standard was lowered from 0.085 ppm to 0.070 ppm. Figure NJ-1 shows the distribution of people by year. The population weighted ozone design value in 2000 – 2002 was 0.098 ppm. By 2014 – 2016 this had lowered to a value of 0.070 ppm, a reduction of 28.6 percent.

24-Hour PM-2.5

In the 2000 – 2002 time period, approximately 4.8 million people (56.5%) lived in counties where 24-hour PM-2.5 levels met the standard. By 2014 - 2016 this was approximately 7.0 million people (77.8%). The remainder of the population lived in counties where PM-2.5 was not measured. The standard was lowered from 65 to 35 µg/m3. Figure NJ-2 shows the distribution of people by year. The 24-hour population weighted PM-2.5 design value in 2000 – 2002 was 35 µg/m3. By 2014 – 2016 this had lowered to a value of 21 µg/m3, a reduction of 40.0 percent.

Annual PM-2.5

In the 2000 – 2002 time period, approximately 4.0 million people (46.2%) lived in counties where annual PM-2.5 levels met the standard. By 2014 – 2016 this had increased to approximately 7.0 million people (77.8%). The remainder of the population lived in counties where PM-2.5 was not measured. The standard was lowered from 15 to 12 µg/m3. Figure NJ-3 shows the distribution of people by year. The population weighted annual PM-2.5 design value in 2000 – 2002 was 14.1 µg/m3. By 2014 – 2016 this had lowered to a value of 8.4 µg/m3, a reduction of 40.4 percent.

NEW JERSEY

Table NJ-1
2014 – 2016

		Ozone			Particle Pollution (PM-2.5)				
County	Population	Avg. DV	Grade	MM	Avg. 24-Hr DV	Grade	Avg. Ann DV	Grade	MM
Atlantic	270,991	0.062	B	N	17	A	7.3	A	Y
Bergen	**939,151**	**0.072**	**D**	**N**	24	A	8.9	A	N
Camden	**510,150**	**0.071**	**D**	**Y**	23	A	9.5	A	Y
Cumberland	153,797	0.067	C	N	ND	ND	ND	ND	ND
Essex	796,914	0.069	C	N	24	A	8.8	A	N
Gloucester	**292,330**	**0.073**	**D**	N	21	A	8.3	A	N
Hudson	**677,983**	**0.072**	**D**	**N**	22	A	8.8	A	N
Hunterdon	124,676	0.069	C	Y	ND	ND	ND	ND	ND
Mercer	**371,023**	**0.072**	**D**	**Y**	22	A	8.5	A	N
Middlesex	**837,073**	**0.074**	**D**	**N**	19	A	7.8	A	N
Monmouth	625,846	0.068	C	N	ND	ND	ND	ND	ND
Morris	498,423	0.068	C	N	17	A	6.8	A	N
Ocean	**596,497**	**0.072**	**D**	**N**	18	A	7.2	A	N
Passaic	507,945	0.068	C	N	22	A	8.4	A	N
Union	555,630	ND	ND	ND	22	A	8.1	A	Y
Warren	106,617	0.063	C	N	22	A	8.1	A	N

DV – Design Value ND - No Data MM – Multiple Monitors

Table NJ-2
Population Weighted Design Values

Period	Ozone (ppm)	24-Hour PM-2.5 (µg/m3)	Annual PM-2.5 (µg/m3)
2000 – 2002	0.098	35	14.1
2001 – 2003	0.096	36	13.5
2002 – 2004	0.090	35	12.7
2003 – 2005	0.086	37	13.1
2004 – 2006	0.086	35	12.5
2005 – 2007	0.088	36	12.8
2006 – 2008	0.086	33	11.8
2007 – 2009	0.080	29	11.0
2008 – 2010	0.078	26	9.7
2009 – 2011	0.077	24	9.2
2010 – 2012	0.082	23	9.2
2011 – 2013	0.077	22	9.0
2012 – 2014	0.073	23	8.9
2013 – 2015	0.070	23	8.8
2014 – 2016	0.070	21	8.4

NEW JERSEY

Table NJ-3
People Breathing Ozone

Grade	2000-2002	2002-2004	2004-2006	2006-2008	2008-2010	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016
A	0	0	0	0	0	0	0	0	0	0
B	0	0	0	0	0	0	107,379	539,515	106,869	270,991
C	0	1,376,311	2,902,455	0	1,268,051	660,670	938,866	6,089,348	3,502,968	3,069,293
D	1,016,743	3,476,230	3,265,586	650,642	5,009,892	2,340,517	4,340,485	0	3,031,004	3,965,132
F	4,159,689	1,333,113	0	4,397,793	0	2,836,020	290,265	0	0	0
Subtotal	5,176,432	6,135,654	6,168,040	5,048,435	6,277,943	5,837,207	5,676,995	6,628,863	6,640,841	7,305,416
NM	3,376,211	2,498,907	2,493,639	3,662,655	2,513,951	3,027,383	3,222,344	2,309,312	2,317,172	1,639,053
Total	8,552,643	8,634,561	8,661,679	8,711,090	8,791,894	8,864,590	8,899,339	8,938,175	8,958,013	8,944,469

People Breathing Short-term Particle Pollution (24-Hour PM-2.5)

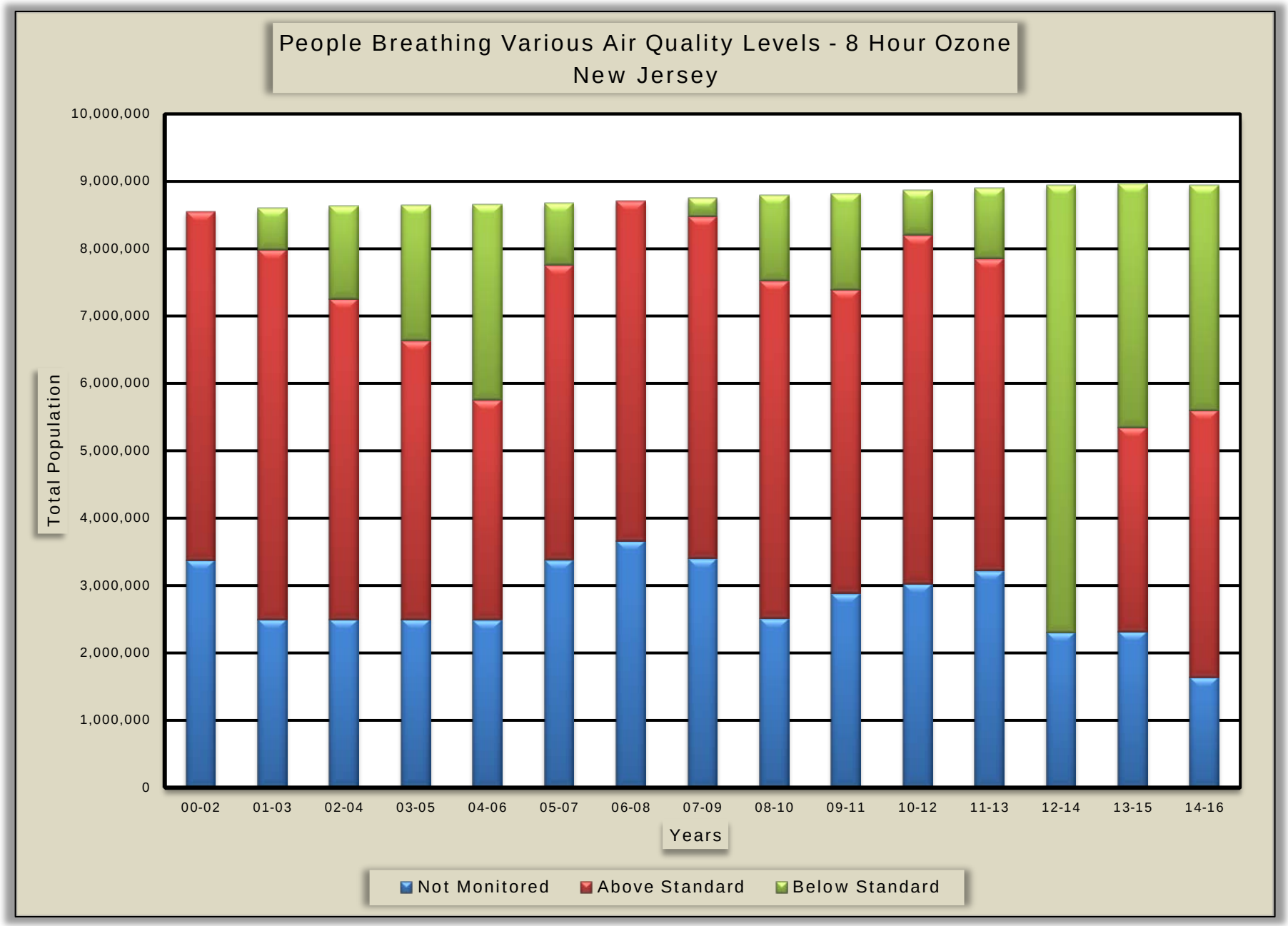
Grade	2000-2002	2002-2004	2004-2006	2006-2008	2008-2010	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016
A	4,832,248	5,788,618	0	0	4,289,292	6,680,483	6,180,823	6,799,947	6,683,603	6,956,727
B	0	0	1,230,208	2,313,493	1,718,215	181,325	182,752	138,235	277,893	0
C	0	0	1,570,099	2,459,173	0	0	0	0	0	0
D	0	0	2,533,730	883,297	0	0	0	0	0	0
F	0	0	788,628	0	0	0	0	0	0	0
Subtotal	4,832,248	5,788,618	6,122,665	5,655,962	6,007,507	6,861,808	6,636,575	6,938,182	6,961,496	6,956,727
NM	3,720,395	2,845,943	2,539,014	3,055,128	2,784,387	2,002,782	2,535,764	1,999,993	1,996,517	1,987,742
Total	8,552,643	8,634,561	8,661,679	8,711,090	8,791,894	8,864,590	8,899,339	8,938,175	8,958,013	8,944,469

People Breathing Year Round Particle Pollution (Annual PM-2.5)

Grade	2000-2002	2002-2004	2004-2006	2006-2008	2008-2010	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016
A	0	962,206	0	1,545,588	6,007,507	6,861,808	5,689,069	5,737,079	6,090,724	6,423,837
B	876,054	1,717,665	4,382,146	1,982,712	0	0	428,629	728,311	533,355	532,890
C	3,076,828	1,316,049	1,072,738	573,531	0	0	245,877	472,792	337,418	0
D	879,367	263,458	175,051	0	0	0	0	0	0	0
F	0	0	0	0	0	0	0	0	0	0
Subtotal	4,832,248	4,259,378	4,581,147	4,101,830	6,007,507	6,861,808	6,367,575	6,938,182	6,961,496	6,956,727
NM	3,720,395	4,375,183	4,080,532	4,609,260	2,784,387	2,002,782	2,535,764	1,999,993	1,996,517	1,987,742
Total	8,552,643	8,634,561	8,661,679	8,711,090	8,791,894	8,864,590	8,899,339	8,938,175	8,958,013	8,944,469

NM – Not Monitored

Figure NJ-1


People Breathing Various Air Quality Levels - 8 Hour Ozone
New Jersey
Total Population
10,000,000
9,000,000
8,000,000
7,000,000
6,000,000
5,000,000
4,000,000
3,000,000
2,000,000
1,000,000
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03-05
04-06
05-07
06-08
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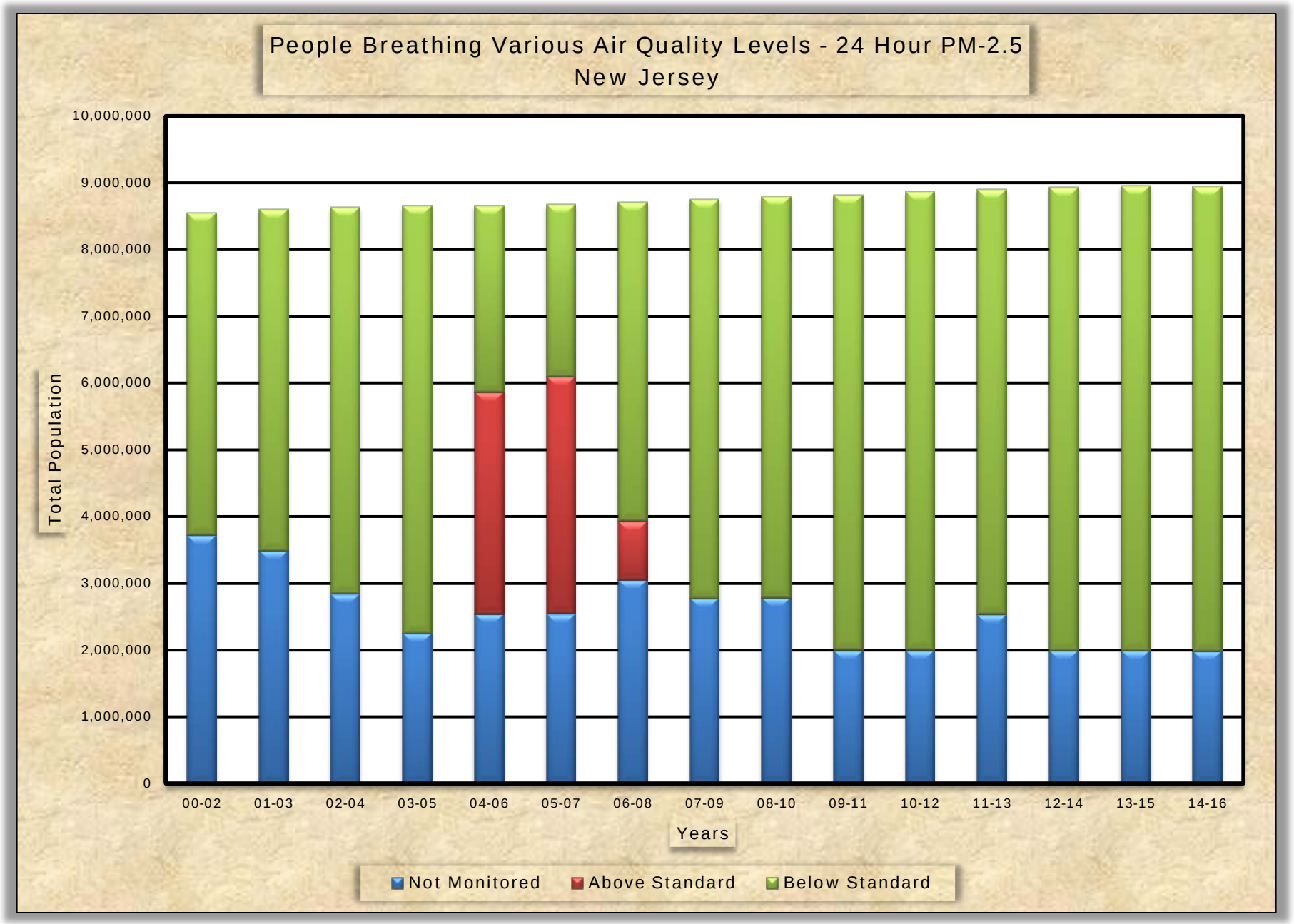
10-12
11-13
12-14
13-15
14-16
Years
Not Monitored
Above Standard
Below Standard

Figure NJ-2


People Breathing Various Air Quality Levels - 24 Hour PM-2.5
New Jersey
Total Population
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9,000,000
8,000,000
7,000,000
6,000,000
5,000,000
4,000,000
3,000,000
2,000,000
1,000,000
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01-03
02-04
03-05
04-06
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06-08
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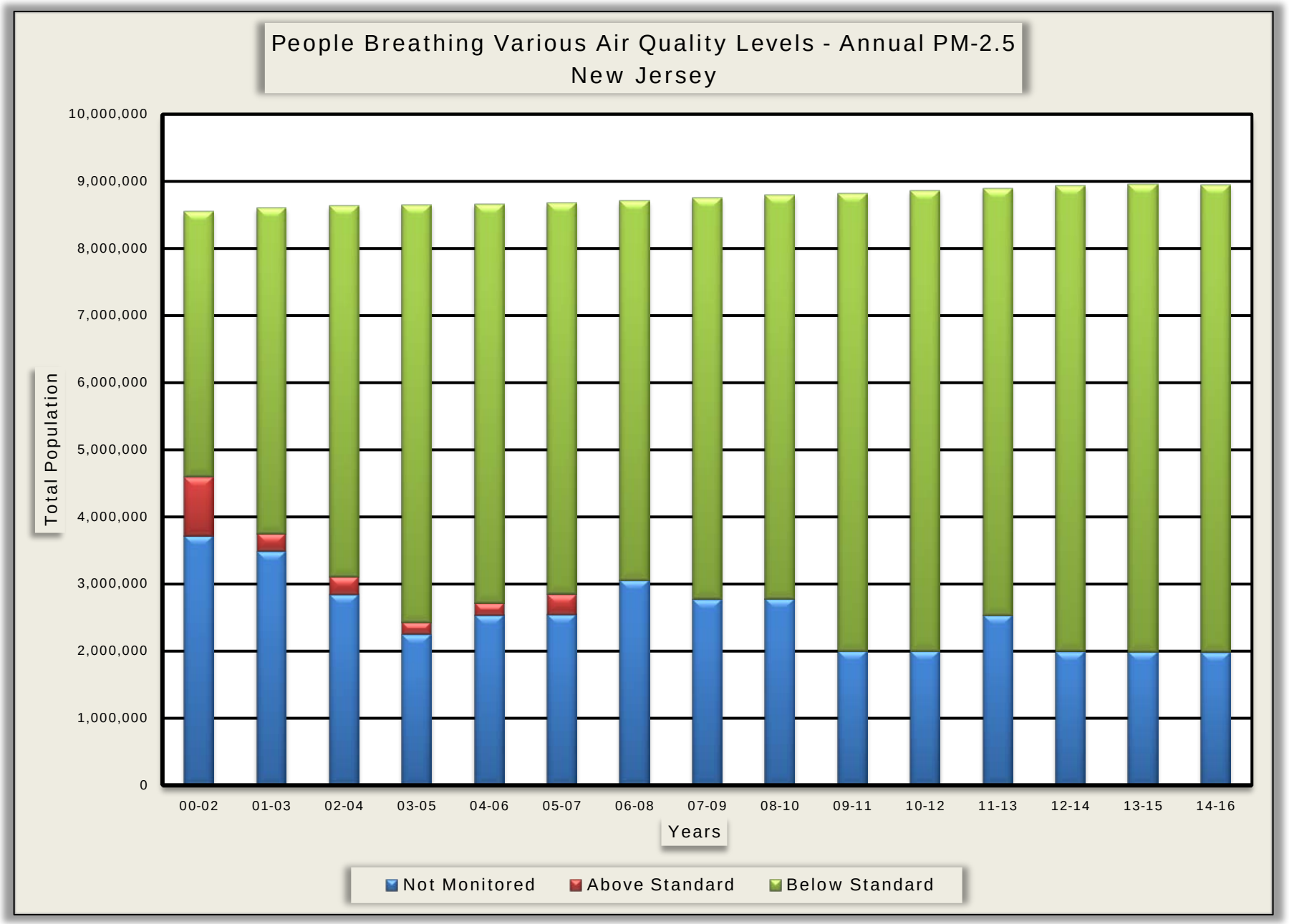
10-12
11-13
12-14
13-15
14-16
Years
Not Monitored
Above Standard
Below Standard

Figure NJ-3


People Breathing Various Air Quality Levels - Annual PM-2.5
New Jersey
Total Population
10,000,000
9,000,000
8,000,000
7,000,000
6,000,000
5,000,000
4,000,000
3,000,000
2,000,000
1,000,000
0
00-02
01-03
02-04
03-05
04-06
05-07
06-08
07-09
08-10
09-11
10-12
11-13
12-14
13-15
14-16
Years
Not Monitored
Above Standard
Below Standard

NEW MEXICO

Ozone

In the 2000 – 2002 time period, 1.1 million people (58.8%) lived in counties that met the ozone standard. By 2014 – 2016 this had increased to approximately 1.5 million people (74.0%). The ozone standard was lowered from 0.085 ppm to 0.070 ppm. Figure NM-1 shows the distribution of people by year. The population weighted ozone design value in 2000 – 2002 was 0.072 ppm. By 2014 -2016 this had lowered to a value of 0.065 ppm, a reduction of 9.7 percent.

24-Hour PM-2.5

In the 2000 – 2002 time period, approximately 1.1 million people (60.3%) lived in counties where 24-hour PM-2.5 levels met the standard. By 2014 - 2016 this was approximately 1.0 million people (46.2%). The remainder of the population lived in counties where PM-2.5 was not measured. The standard was lowered from 65 to 35 µg/m3. Figure NM-2 shows the distribution of people by year. The population weighted 24-hour PM-2.5 design value in 2000 – 2002 was 19 µg/m3. By 2014 -2016 this had lowered to a value of 16, a reduction of 15.8 percent.

Annual PM-2.5

In the 2000 – 2002 time period, approximately 1.1 million people (60.3%) lived in counties where annual PM-2.5 levels met the standard. By 2014 – 2016 this was approximately 1.0 million people (46.2%). The remainder of the population lived in counties where PM-2.5 was not measured. The standard was lowered from 15 to 12 µg/m3. Figure NM-3 shows the distribution of people by year. The population weighted annual PM-2.5 design value in 2000 – 2002 was 7.1 µg/m3. By 2014 – 2016 this had increased to a value of 7.7 µg/m3, an increase of 8.5 percent.

Table NM-1
2014 – 2016

		Ozone			Particle Pollution (PM-2.5)				
County	Population	Avg. DV	Grade	MM	Avg.24-Hr DV	Grade	Avg. Ann DV	Grade	MM
Bernalillo	676,953	0.065	C	Y	18	A	8.7	A	Y
Dona Ana	214,207	0.066	C	Y	11	A	5.0	A	N
Eddy	57,621	0.067	C	N	ND	ND	ND	ND	ND
Lea	69,749	0.066	C	N	16	A	6.9	A	N
Rio Arriba	40,040	0.064	C	N	ND	ND	ND	ND	ND
Sandoval	142,025	0.064	C	N	ND	ND	ND	ND	ND
San Juan	115,079	0.063	C	Y	ND	ND	ND	ND	ND
Santa Fe	148,651	0.063	C	N	ND	ND	ND	ND	ND
Valencia	75,626	0.064	C	N	ND	ND	ND	ND	ND

DV – Design Value ND - No Data MM – Multiple Monitors

NEW MEXICO

Table NM-2
Population Weighted Design Values

Period	Ozone (ppm)	24-Hour PM-2.5 (µg/m3)	Annual PM-2.5 (µg/m3)
2000 – 2002	0.072	19	7.1
2001 – 2003	0.073	18	6.7
2002 – 2004	0.073	17	6.7
2003 – 2005	0.072	17	6.8
2004 – 2006	0.071	17	6.7
2005 – 2007	0.071	16	6.6
2006 – 2008	0.069	15	6.4
2007 – 2009	0.066	15	6.2
2008 – 2010	0.064	15	5.7
2009 – 2011	0.065	15	5.8
2010 – 2012	0.068	16	6.4
2011 – 2013	0.068	16	6.3
2012 – 2014	0.067	15	6.1
2013 – 2015	0.066	16	6.4
2014 – 2016	0.065	16	7.7

NEW MEXICO

Table NM-3
People Breathing Ozone

Grade	2000-2002	2002-2004	2004-2006	2006-2008	2008-2010	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016
A	25,495	0	0	0	89,822	0	0	0	0	0
B	988,113	974,162	1,112,958	63,397	1,215,616	525,895	512,777	1,004,232	0	76,719
C	76,485	36,988	0	1,148,358	145,300	877,945	1,039,556	550,532	1,416,574	1,463,232
D	0	0	0	33,476	0	0	0	0	85,718	0
F	0	0	0	0	0	0	0	0	0	0
Subtotal	1,090,092	1,011,150	1,112,958	1,245,231	1,450,737	1,403,839	1,552,333	1,554,764	1,502,292	1,539,951
NM	765,217	892,658	849,179	765,431	608,442	681,699	532,954	530,808	582,817	541,064
Total	1,855,389	1,903,808	1,962,137	2,010,662	2,059,179	2,085,538	2,085,287	2,085,572	2,085,109	2,084,015

People Breathing Short-term Particle Pollution (24-Hour PM-2.5)

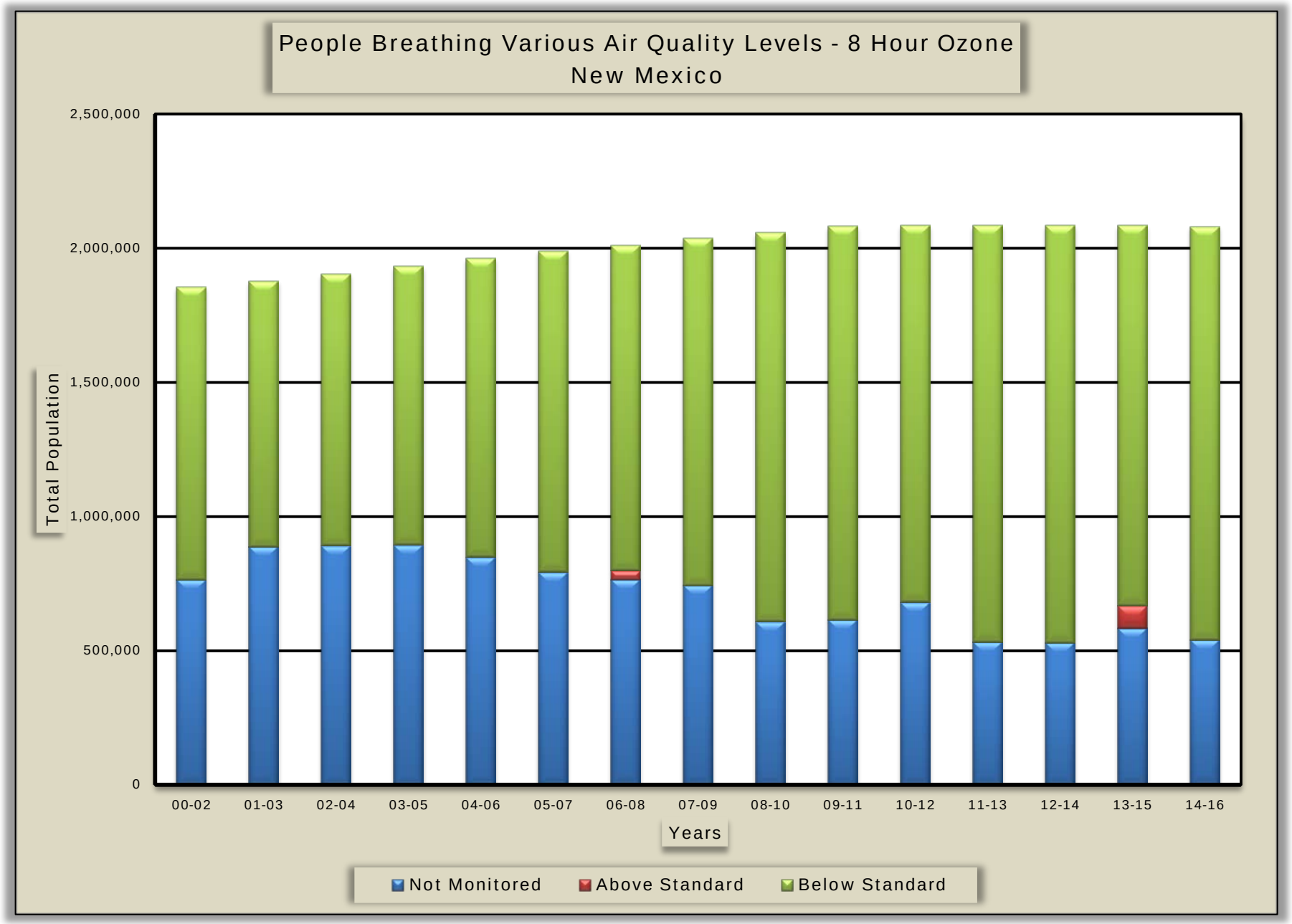
Grade	2000-2002	2002-2004	2004-2006	2006-2008	2008-2010	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016
A	1,117,962	1,295,528	1,166,014	1,077,116	1,005,592	1,121,925	1,229,669	1,231,175	1,080,897	960,909
B	0	0	96,851	100,428	0	107,223	0	0	0	0
C	0	0	0	0	104,617	0	0	0	0	0
D	0	0	0	0	0	0	0	0	0	0
F	0	0	0	0	0	0	0	0	0	0
Subtotal	1,117,962	1,295,528	1,262,864	1,177,543	1,110,208	1,229,147	1,229,669	1,231,175	1,080,897	960,909
NM	737,347	608,280	699,273	833,119	948,971	856,391	855,018	854,397	1,004,212	1,120,106
Total	1,855,389	1,903,808	1,962,137	2,010,662	2,089,179	2,085,538	2,085,287	2,085,572	2,085,109	2,081,015

People Breathing Year Round Particle Pollution (Annual PM-2.5)

Grade	2000-2002	2002-2004	2004-2006	2006-2008	2008-2010	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016
A	1,117,962	1,295,528	1,262,864	1,177,543	1,080,694	1,229,147	1,229,669	1,231,175	1,080,897	960,909
B	0	0	0	0	0	0	0	0	0	0
C	0	0	0	0	0	0	0	0	0	0
D	0	0	0	0	0	0	0	0	0	0
F	0	0	0	0	0	0	0	0	0	0
Subtotal	1,117,963	1,295,528	1,262,864	1,177,543	1,080,694	1,229,147	1,229,669	1,231,175	1,080,897	960,909
NM	737,347	608,280	699,273	833,119	978,485	856,391	855,618	854,397	1,004,212	1,120,106
Total	1,855,389	1,903,808	1,962,137	2,010,662	2,089,179	2,085,538	2,085,287	2,085,572	2,085,109	2,081,015

NM – Not Monitored

Figure NM-1


People Breathing Various Air Quality Levels - 8 Hour Ozone
New Mexico
Total Population
2,500,000
2,000,000
1,500,000
1,000,000
500,000
0
00-02
01-03
02-04
03-05
04-06
05-07
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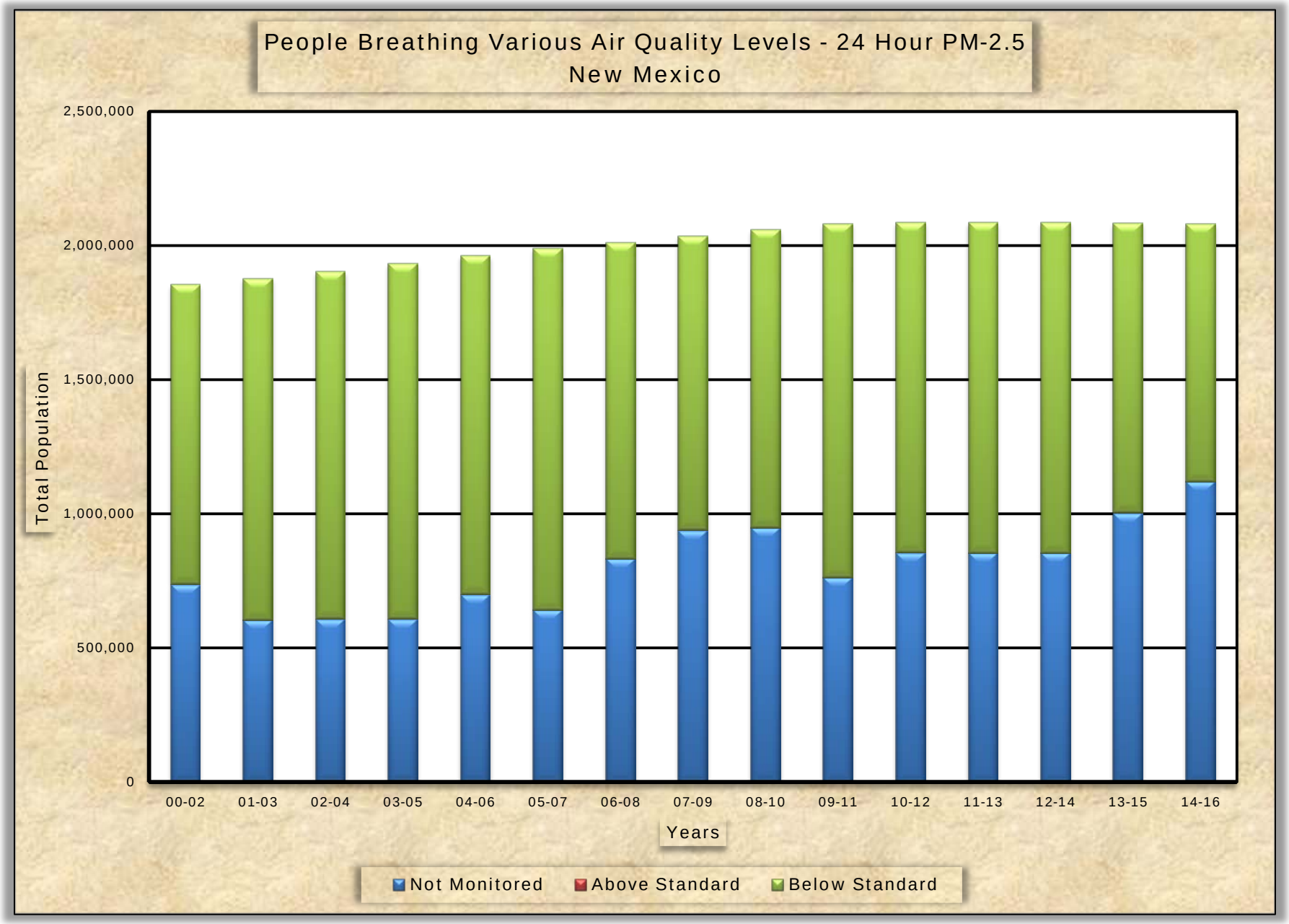
07-09
08-10
09-11
10-12
11-13
12-14
13-15
14-16
Years
Not Monitored
Above Standard
Below Standard

Figure NM-2


People Breathing Various Air Quality Levels - 24 Hour PM-2.5
New Mexico
Total Population
2,500,000
2,000,000
1,500,000
1,000,000
500,000
0
00-02
01-03
02-04
03-05
04-06
05-07
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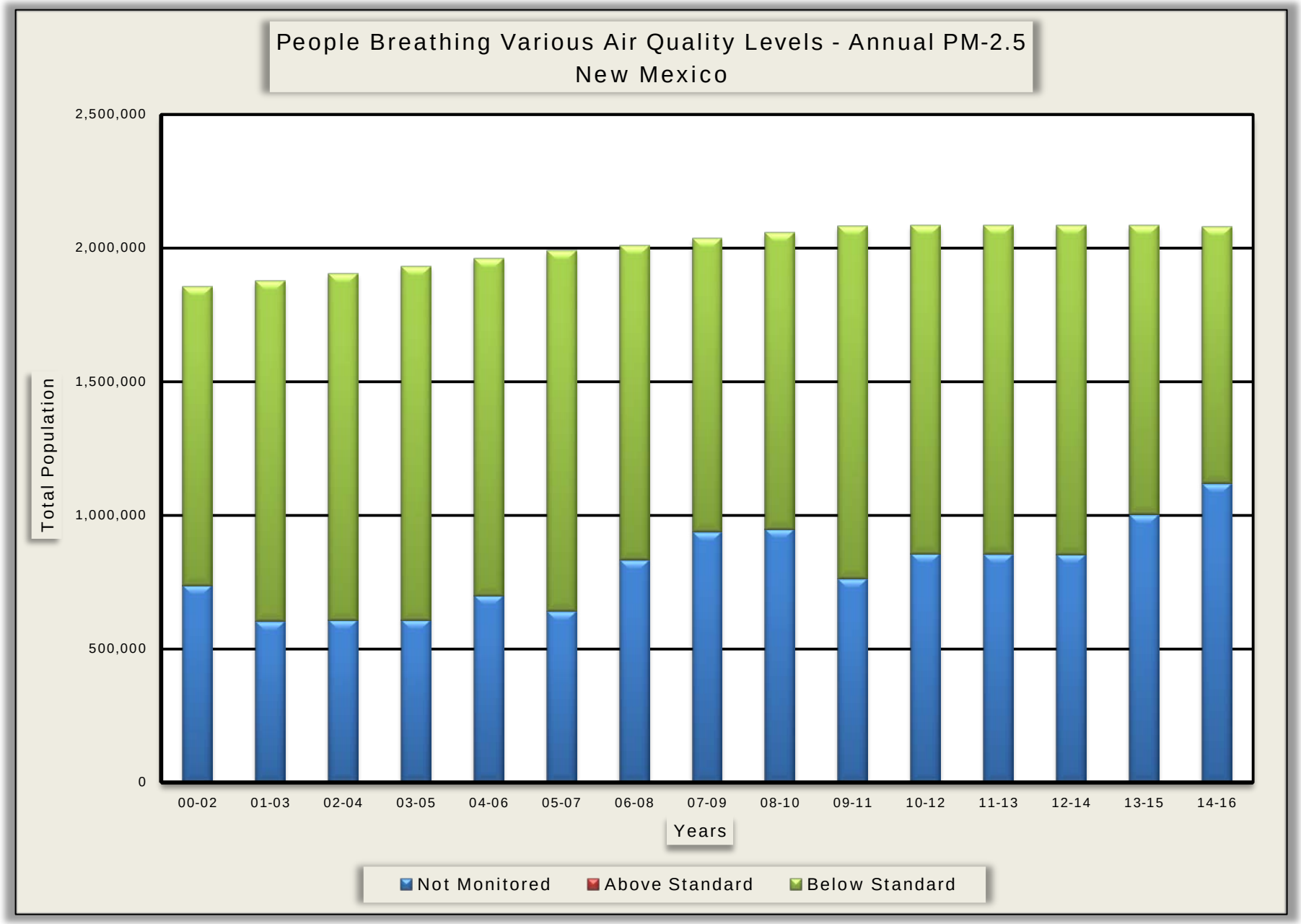
07-09
08-10
09-11
10-12
11-13
12-14
13-15
14-16
Years
Not Monitored
Above Standard
Below Standard

Figure NM-3


People Breathing Various Air Quality Levels - Annual PM-2.5
New Mexico
Total Population
2,500,000
2,000,000
1,500,000
1,000,000
500,000
0
00-02
01-03
02-04
03-05
04-06
05-07
06-08
07-09
08-10
09-11
10-12
11-13
12-14
13-15
14-16
Years
Not Monitored
Above Standard
Below Standard

NEW YORK

Ozone

In the 2000 – 2002 time period, 6.5 million people (34.2%) lived in counties that met the ozone standard. By 2014 – 2016 this had increased to approximately 10.4 million people (52.7%). The ozone standard was lowered from .085 ppm to 0.070 ppm. Figure NY-1 shows the distribution of people by year. The population weighted ozone design value in 2000 – 2002 was 0.085 ppm. By 2014 – 2016 this had lowered to a value of 0.068 ppm, a reduction of 20.0 percent.

24-Hour PM-2.5

In the 2000 – 2002 time period, approximately 13.7 million people (71.8%) lived in counties where 24-hour PM-2.5 levels met the standard. By 2014 - 2016 this was approximately 13.1 million people (66.4%). The remainder of the population lived in counties where PM-2.5 was not measured. The standard was lowered from 65 to 35 µg/m3. Figure NY-2 shows the distribution of people by year. The population weighted 24-hour PM-2.5 design value in 2000 – 2002 was 35 µg/m3. By 2014 – 2016 this had lowered to a value of 19 µg/m3, a reduction of 45.7 percent.

Annual PM-2.5

In the 2000 – 2002 time period, approximately 12.3 million people (64.0%) lived in counties where annual PM-2.5 levels met the standard. By 2014 – 2016 this had increased to approximately 13.1 million people (66.4%). The remainder of the population lived in counties where PM-2.5 was not measured. The standard was lowered from 15 to 12 µg/m3 Figure NY-3 shows the distribution of people by year. The population weighted annual PM-2.5 in 2000 – 2002 was 13.3 µg/m3. By 2014 – 2016 this had lowered to a value of 7.8 µg/m3, a reduction of 41.4 percent.

NEW YORK

Table NY-1
2014 – 2016

		Ozone			Particle Pollution (PM-2.5)				
County	Population	Avg. DV	Grade	MM	Avg. 24-Hr DV	Grade	Avg. Ann DV	Grade	MM
Albany	308,846	0.064	C	N	18	A	6.8	A	Y
Bronx	1,455,720	0.068	C	Y	21	A	7.9	A	Y
Chautauqua	129,504	0.068	C	N	16	A	7.2	A	N
Duchess	294,473	0.068	C	N	ND	ND	ND	ND	ND
Erie	921,046	0.069	C	N	18	A	7.8	A	Y
Essex	38,102	0.032	B	Y	11	A	3.8	A	N
Franklin	60,409	0.057	B	N	ND	ND	ND	ND	ND
Hamilton	4,542	0.060	B	N	ND	ND	ND	ND	ND
Herkimer	52,613	0.063	C	N	ND	ND	ND	ND	ND
Jefferson	114,006	0.063	C	N	ND	ND	ND	ND	ND
Kings	2,629,150	ND	ND	ND	20	A	8.7	A	N
Monroe	747,727	0.063	C	N	16	A	6.6	A	N
New York	1,643,734	0.069	C	N	23	A	9.4	A	Y
Niagara	211,758	0.066	C	N	ND	ND	ND	ND	ND
Onondaga	466,194	0.064	C	N	15	A	5.6	A	N
Orange	379,210	0.066	C	N	17	A	6.9	A	N
Oswego	118,987	0.060	B	N	ND	ND	ND	ND	ND
Putnam	98,900	0.068	C	N	ND	ND	ND	ND	ND
Queens	2,333,054	0.069	C	N	20	A	7.5	A	N
Richmond	**476,015**	**0.076**	**D**	N	20	A	8.2	A	N
Rockland	**326,780**	**0.072**	**D**	N	ND	ND	ND	ND	ND
Saratoga	227,053	0.063	C	N	ND	ND	ND	ND	ND
Steuben	96,940	0.059	B	N	12	A	5.0	A	N
Suffolk	1,492,583	0.070	C	Y	18	A	7.1	A	N
Thompkins	104,871	0.063	C	N	ND	ND	ND	ND	ND
Wayne	90,798	0.064	C	N	ND	ND	ND	ND	ND
Westchester	**974,542**	**0.074**	**D**	N	ND	ND	ND	ND	ND

DV – Design Value ND - No Data MM – Multiple Monitors

NEW YORK

Table NY-2
Population Weighted Design Values

Period	Ozone (ppm)	24-Hour PM-2.5 (µg/m3)	Annual PM-2.5 (µg/m3)
2000 – 2002	0.085	35	13.3
2001 – 2003	0.087	36	13.3
2002 – 2004	0.084	36	12.9
2003 – 2005	0.081	36	13.1
2004 – 2006	0.078	35	12.5
2005 – 2007	0.081	34	12.5
2006 – 2008	0.078	32	11.7
2007 – 2009	0.075	29	10.9
2008 – 2010	0.073	26	9.9
2009 – 2011	0.072	25	9.4
2010 – 2012	0.076	24	9.4
2011 – 2013	0.074	23	9.1
2012 – 2014	0.070	21	8.7
2013 – 2015	0.068	22	8.4
2014 – 2016	0.068	19	7.8

NEW YORK

Table NY-3
People Breathing Ozone

Grade	2000-2002	2002-2004	2004-2006	2006-2008	2008-2010	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016
A	0	0	480,585	0	51,599	51,795	0	0	0	0
B	2,435,677	1,317,648	3,137,221	439,749	487,217	744,613	1,307,025	4,485,950	1,764,883	283,579
C	4,110,963	4,575,635	5,178,557	3,449,608	10,324,994	3,262,805	7,355,231	8,616,818	8,694,115	10,112,436
D	2,536,737	3,274,734	933,203	5,309,058	2,136,578	7,212,573	4,268,534	0	2,778,049	2,772,392
F	2,124,737	1,478,215	0	2,485,282	373,338	470,728	0	0	0	0
Subtotal	11,208,113	10,646,232	9,729,566	11,683,696	13,373,725	11,742,514	12,930,514	13,102,767	13,237,047	13,168,407
NM	7,929,687	8,525,335	9,375,065	7,528,740	6,004,377	8,007,747	6,720,337	6,643,460	6,558,744	6,576,882
Total	19,137,800	19,171,567	19,104,631	19,212,436	19,378,102	19,570,261	19,651,127	19,746,227	19,795,791	19,745,289

People Breathing Short-Term Particle Pollution (24-Hour PM-2.5)

Grade	2000-2002	2002-2004	2004-2006	2006-2008	2008-2010	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016
A	13,740,379	13,550,163	151,046	1,341,885	9,795,027	12,921,251	12,863,383	12,956,818	13,015,770	13,116,925
B	0	0	695,038	4,631,709	5,458,262	0	0	0	0	0
C	0	0	7,888,104	6,616,795	0	0	0	0	0	0
D	0	0	3,619,760	2,156,999	0	0	0	0	0	0
F	0	0	1,293,319	0	0	0	0	0	0	0
Subtotal	13,740,379	13,550,163	13,647,267	14,747,387	15,254,289	12,921,251	12,863,383	12,956,818	13,015,770	13,116,925
NM	5,397,421	5,621,404	5,457,364	4,465,049	4,123,813	6,649,010	6,787,744	6,789,409	6,780,021	6,628,364
Total	19,137,800	19,171,567	19,104,631	19,212,436	19,378,102	19,570,261	19,651,127	19,746,227	19,795,791	19,745,289

People Breathing Year Round Particle Pollution (Annual PM-2.5)

Grade	2000-2002	2002-2004	2004-2006	2006-2008	2008-2010	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016
A	3,452,585	5,025,310	4,956,586	9,104,666	14,461,353	12,921,251	7,768,395	11,419,605	12,195,511	12,021,102
B	4,490,587	3,136,849	4,621,533	4,167,467	792,937	0	4,010,882	1,128,147	411,130	1,095,823
C	4,307,373	4,341,373	2,830,675	681,744	0	0	1,084,106	409,067	411,130	0
D	452,913	1,046,631	1,238,474	793,511	0	0	0	0	0	0
F	1,036,921	0	0	0	0	0	0	0	0	0
Subtotal	13,740,379	13,550,163	13,647,267	14,747,387	15,254,289	12,921,251	12,863,383	12,956,818	13,015,770	13,116,925
NM	5,397,421	5,621,404	5,457,364	4,465,049	4,123,813	6,649,010	6,787,744	6,789,409	6,780,021	6,628,364
Total	19,137,800	19,171,567	19,104,631	19,212,436	19,378,102	19,570,261	19,651,127	19,746,227	19,795,791	19,745,289

NM – Not Monitored

Figure NY

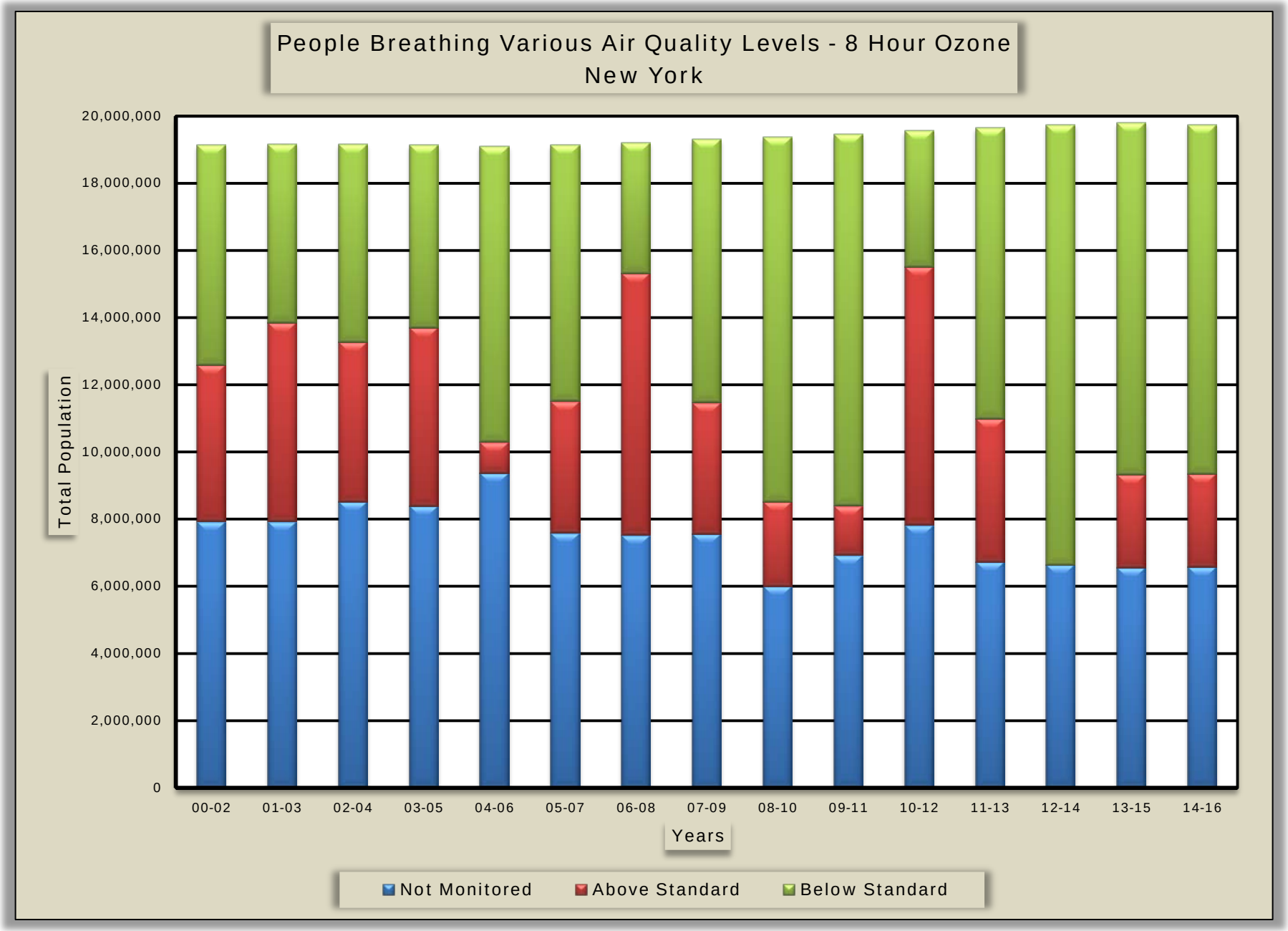

People Breathing Various Air Quality Levels - 8 Hour Ozone
New York
20,000,000
18,000,000
16,000,000
14,000,000
12,000,000
10,000,000
8,000,000
6,000,000
4,000,000
2,000,000
0
Total Population
00-02
01-03
02-04
03-05
04-06
05-07
06-08
07-09
08-10
09-11
10-12
11-13
12-14
13-15
14-16
Years
Not Monitored
Above Standard
Below Standard

Figure NY-2

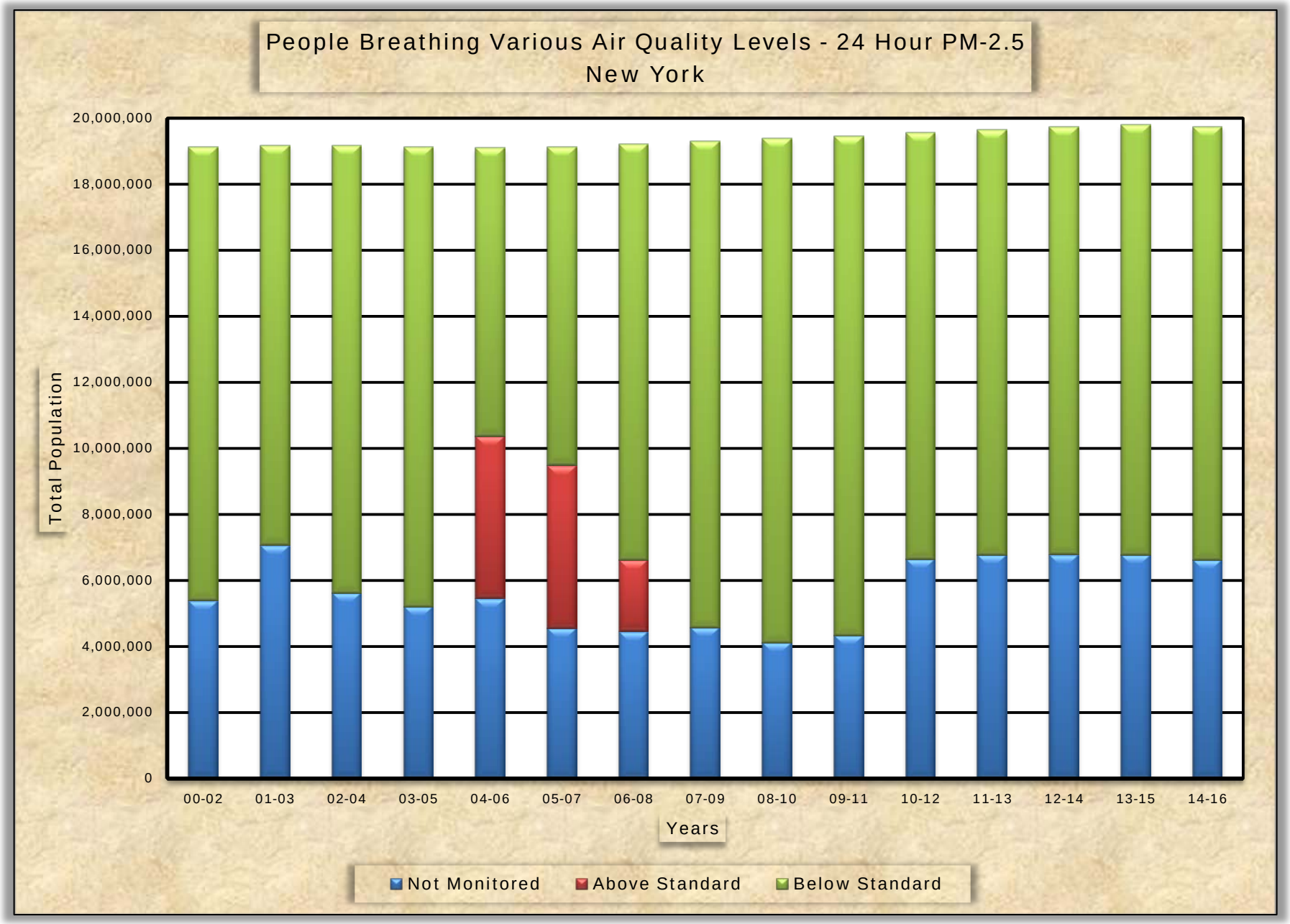
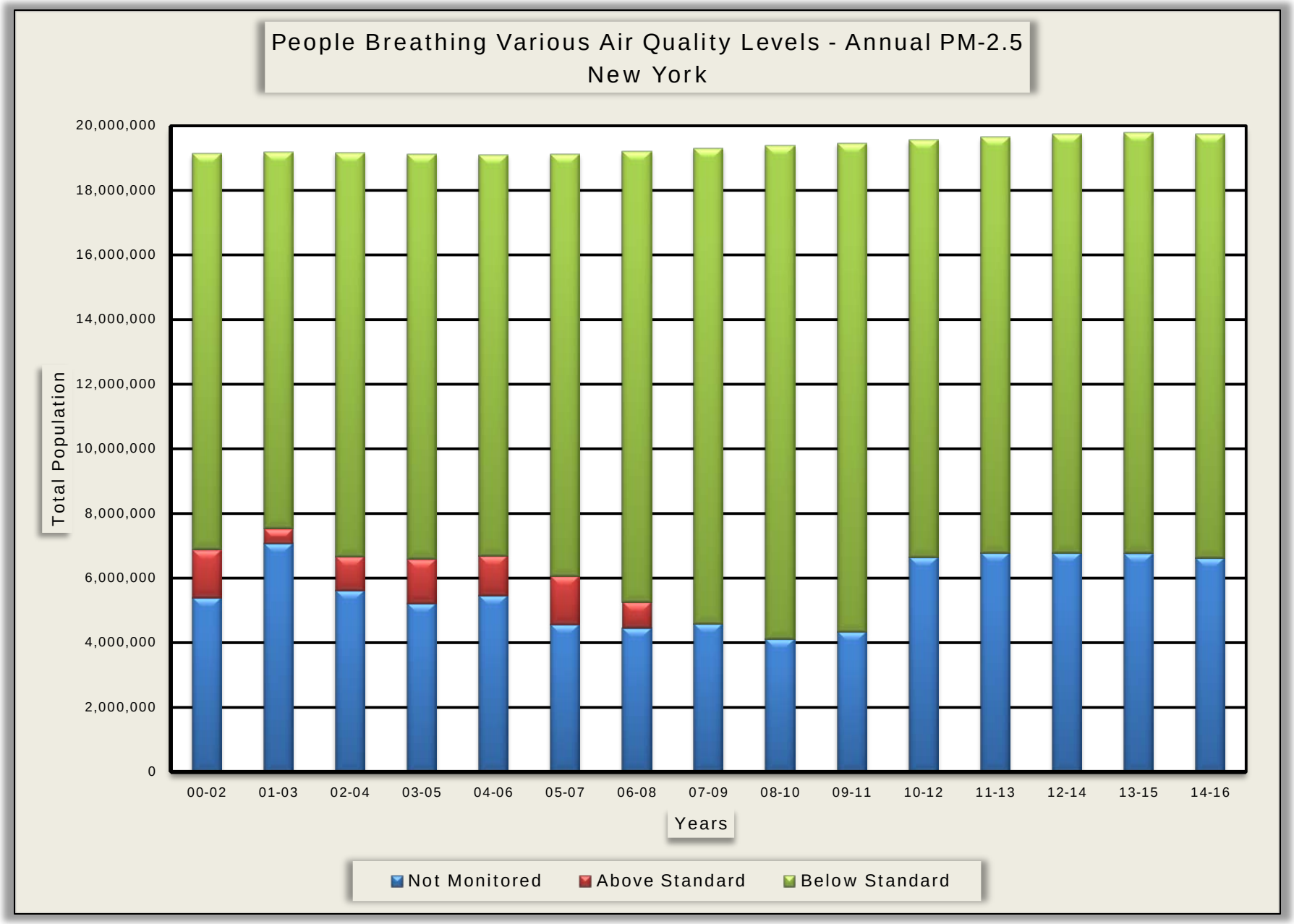

People Breathing Various Air Quality Levels - 24 Hour PM-2.5
New York
Total Population
20,000,000
18,000,000
16,000,000
14,000,000
12,000,000
10,000,000
8,000,000
6,000,000
4,000,000
2,000,000
0
00-02
01-03
02-04
03-05
04-06
05-07
06-08
07-09
08-10
09-11
10-12
11-13
12-14
13-15
14-16
Years
Not Monitored
Above Standard
Below Standard

Figure NY-3


People Breathing Various Air Quality Levels - Annual PM-2.5
New York
Total Population
20,000,000
18,000,000
16,000,000
14,000,000
12,000,000
10,000,000
8,000,000
6,000,000
4,000,000
2,000,000
0
00-02
01-03
02-04
03-05
04-06
05-07
06-08
07-09
08-10
09-11
10-12
11-13
12-14
13-15
14-16
Years
Not Monitored
Above Standard
Below Standard

NORTH CAROLINA

Ozone

In the 2000 – 2002 time period, 1.1 million people (12.9%) lived in counties that met the ozone standard. By 2014 – 2016 this had increased to approximately 5.7 million people (56.2%). The ozone standard was lowered from 0.085 ppm to 0.070 ppm. Figure NC-1 shows the distribution of people by year. The population weighted ozone design value in 2000 – 2002 was 0.090 ppm. By 2014 – 2016 this had lowered to a value of 0.065 ppm, a reduction of 27.8 percent.

24-Hour PM-2.5

In the 2000 – 2002 time period, approximately 4.3 million people (51.8%) lived in counties where 24-hour PM-2.5 levels met the standard. By 2014 - 2016 this was approximately 4.4 million people (43.8%). The remainder of the population lived in counties where PM-2.5 was not measured. The standard was lowered from 65 to 35 µg/m3. Figure NC-2 shows the distribution of people by year. The population weighted 24-hour PM-2.5 design value in 2000 – 2002 was 31 µg/m3. By 2014 – 2016 this had lowered to a value of 17 µg/m3, a reduction of 45.2 percent.

Annual PM-2.5

In the 2000 – 2002 time period, approximately 3.4 million people (41.4%) lived in counties where annual PM-2.5 levels met the standard. By 2014 – 2016 this had increased to approximately 4.4 million people (43.8%). The remainder of the population lived in counties where PM-2.5 was not measured. The standard was lowered from 15 to 12 µg/m3. Figure NC-3 shows the distribution of people by year. The population weighted annual PM-2.5 design value in 2000 – 2002 was 14.4 µg/m3. By 2014 – 2016 this had lowered to a value of 8.3 µg/m3, a reduction of 42.4 percent.

NORTH CAROLINA

Table NC-1
2014 – 2016

		Ozone			Particle Pollution (PM-2.5)				
County	Population	Avg. DV	Grade	MM	Avg. 24-Hr DV	Grade	Avg. Ann DV	Grade	MM
Alamance	159,688	ND	ND	ND	23	A	7.8	A	N
Alexander	37,428	0.065	C	N	ND	ND	ND	ND	ND
Avery	17,516	0.063	C	Y	ND	ND	ND	ND	ND
Buncombe	256,088	0.063	C	N	ND	ND	ND	ND	ND
Caldwell	81,449	0.064	C	N	ND	ND	ND	ND	ND
Carteret	68,890	0.060	B	N	ND	ND	ND	ND	ND
Caswell	22,910	0.063	C	N	ND	ND	ND	ND	ND
Catawba	156,459	ND	ND	ND	19	A	6.9	A	N
Cumberland	327,127	0.061	B	N	16	A	8.3	A	N
Davidson	164,926	ND	ND	ND	18	A	9.0	A	N
Durham	306,212	0.062	B	N	15	A	8.0	A	N
Edgecombe	53,318	0.062	B	N	ND	ND	ND	ND	ND
Forsyth	371,511	0.067	C	Y	17	A	8.2	A	N
Graham	8,558	0.064	C	N	ND	ND	ND	ND	ND
Greenville	59,031	0.064	C	N	ND	ND	ND	ND	ND
Guilford	521,330	0.065	C	N	15	A	7.9	A	N
Haywood	60,682	0.064	C	Y	ND	ND	ND	ND	ND
Jackson	42,241	ND	ND	ND	25	A	7.7	A	N
Johnston	191,450	0.064	C	N	16	A	7.4	A	N
Lee	59,616	0.062	B	N	ND	ND	ND	ND	ND
Lenoir	57,307	0.063	C	N	ND	ND	ND	ND	ND
Lincoln	81,168	0.067	C	N	ND	ND	ND	ND	ND
Macon	34,376	0.062	B	N	ND	ND	ND	ND	ND
Martin	23,172	0.060	B	N	ND	ND	ND	ND	ND
Mecklenburg	1,054,835	0.069	C	N	18	A	8.8	A	Y
Mitchell	15,126	ND	ND	ND	21	A	7.8	A	N
Montgomery	27,418	0.061	B	N	ND	ND	ND	ND	ND
New Hanover	223,483	0.060	B	N	ND	ND	ND	ND	ND
Person	39,284	0.063	C	N	ND	ND	ND	ND	ND
Pitt	177,220	0.062	B	N	15	A	7.6	A	N
Rockingham	71,393	0.066	C	N	ND	ND	ND	ND	ND
Rowan	139,933	0.065	C	N	ND	ND	ND	ND	ND
Swain	14,346	0.060	B	Y	26	A	8.1	A	N
Union	226,606	0.068	C	N	ND	ND	ND	ND	ND
Wake	1,046,791	0.065	C	N	17	A	8.3	A	N
Yancey	17,678	0.068	C	N	ND	ND	ND	ND	ND

DV – Design Value ND - No Data MM – Multiple Monitors

NORTH CAROLINA

Table NC-2
Population Weighted Design Values

Period	Ozone (ppm)	24-Hour PM-2.5 (µg/m3)	Annual PM-2.5 (µg/m3)
2000 – 2002	0.090	31	14.4
2001 – 2003	0.088	31	13.7
2002 – 2004	0.084	30	13.4
2003 – 2005	0.080	30	13.5
2004 – 2006	0.078	30	13.5
2005 – 2007	0.080	30	13.5
2006 – 2008	0.080	27	12.8
2007 – 2009	0.076	24	11.5
2008 – 2010	0.073	22	10.7
2009 – 2011	0.072	21	9.9
2010 – 2012	0.074	21	9.6
2011 – 2013	0.070	20	9.0
2012 – 2014	0.066	18	8.7
2013 – 2015	0.063	18	8.7
2014 – 2016	0.065	17	8.3

NORTH CAROLINA

Table NC-3
People Breathing Ozone

Grade	2000-2002	2002-2004	2004-2006	2006-2008	2008-2010	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016
A	0	0	13,693	0	0	0	14,058	48,623	0	0
B	13,120	228,501	1,981,050	31,896	33,660	399,525	1,230,893	3,892,577	2,140,742	1,344,163
C	1,059,579	2,797,016	2,012,647	1,010,225	3,926,854	3,515,407	3,938,148	1,982,032	4,321,340	4,353,963
D	2,617,993	1,865,737	554,338	3,176,246	1,327,587	1,141,138	660,651	0	0	0
F	1,052,372	66,101	0	729,715	0	646,021	0	0	0	0
Subtotal	4,743,065	4,957,355	4,561,729	4,948,082	5,288,101	5,702,090	5,843,751	5,923,232	6,462,082	5,698,126
NM	3,583,137	3,595,797	4,355,542	4,361,368	4,247,383	4,049,983	4,004,310	4,020,732	3,580,720	4,448,662
Total	8,326,201	8,553,152	8,917,270	9,309,449	9,535,483	9,752,073	9,848,060	9,943,964	10,042,802	10,146,788

People Breathing Short-term Particle Pollution (24-Hour PM-2.5)

Grade	2000-2002	2002-2004	2004-2006	2006-2008	2008-2010	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016
A	4,312,162	5,064,828	879,780	1,988,357	4,955,298	5,442,395	5,673,534	5,846,493	5,225,248	4,445,662
B	0	0	2,439,402	1,631,796	0	0	0	0	0	0
C	0	0	667,990	0	0	0	0	0	0	0
D	0	0	0	0	0	0	0	0	0	0
F	0	0	0	0	0	0	0	0	0	0
Subtotal	4,312,162	5,064,828	3,987,172	3,620,153	4,955,298	5,442,395	5,673,534	5,846,493	5,225,248	4,445,662
NM	4,014,039	3,488,324	4,930,098	5,689,296	4,580,185	4,309,678	4,174,526	4,097,471	4,817,554	5,701,126
Total	8,326,201	8,553,152	8,917,270	9,309,449	9,535,483	9,752,073	9,848,060	9,943,964	10,042,802	10,146,788

People Breathing Year Round Particle Pollution (Annual PM-2.5)

Grade	2000-2002	2002-2004	2004-2006	2006-2008	2008-2010	2010-2012	2011-2013	2012-2014	2013-2015	2014-2015
A	356,825	587,288	691,216	697,979	4,792,420	5,442,395	3,877,183	5,097,766	4,201,050	4,445,662
B	343,510	1,577,713	888,672	2,173,088	162,878	0	1,796,352	686,500	0	0
C	2,746,959	2,598,632	2,174,551	749,086	0	0	0	62,228	1,024,198	0
D	713,573	301,195	232,434	0	0	0	0	0	0	0
F	151,296	0	0	0	0	0	0	0	0	0
Subtotal	4,312,162	5,064,828	3,987,172	3,620,153	4,955,298	5,442,395	5,673,534	5,846,493	5,225,248	4,445,662
NM	4,014,039	3,488,324	4,930,098	5,689,296	4,580,185	4,309,678	4,174,526	4,097,471	4,817,554	5,701,126
Total	8,326,201	8,553,152	8,917,270	9,309,449	9,535,483	9,752,073	9,848,060	9,943,964	10,042,802	10,146,788

NM – Not Monitored

Figure NC-1

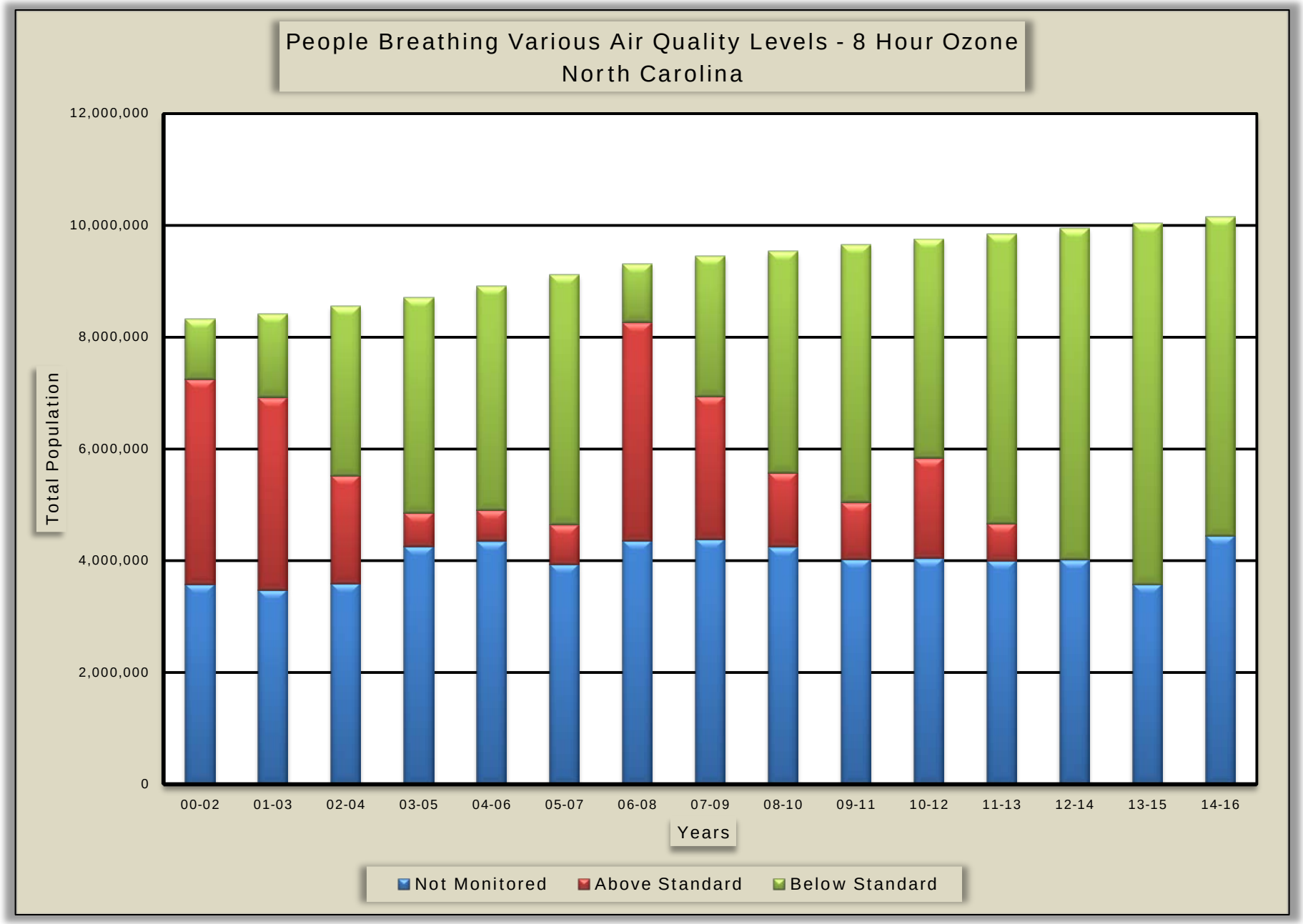

People Breathing Various Air Quality Levels - 8 Hour Ozone
North Carolina
12,000,000
10,000,000
8,000,000
6,000,000
4,000,000
2,000,000
0
Total Population
00-02
01-03
02-04
03-05
04-06
05-07
06-08
07-09
08-10
09-11
10-12
11-13
12-14
13-15
14-16
Years
Not Monitored
Above Standard
Below Standard

Figure NC-2

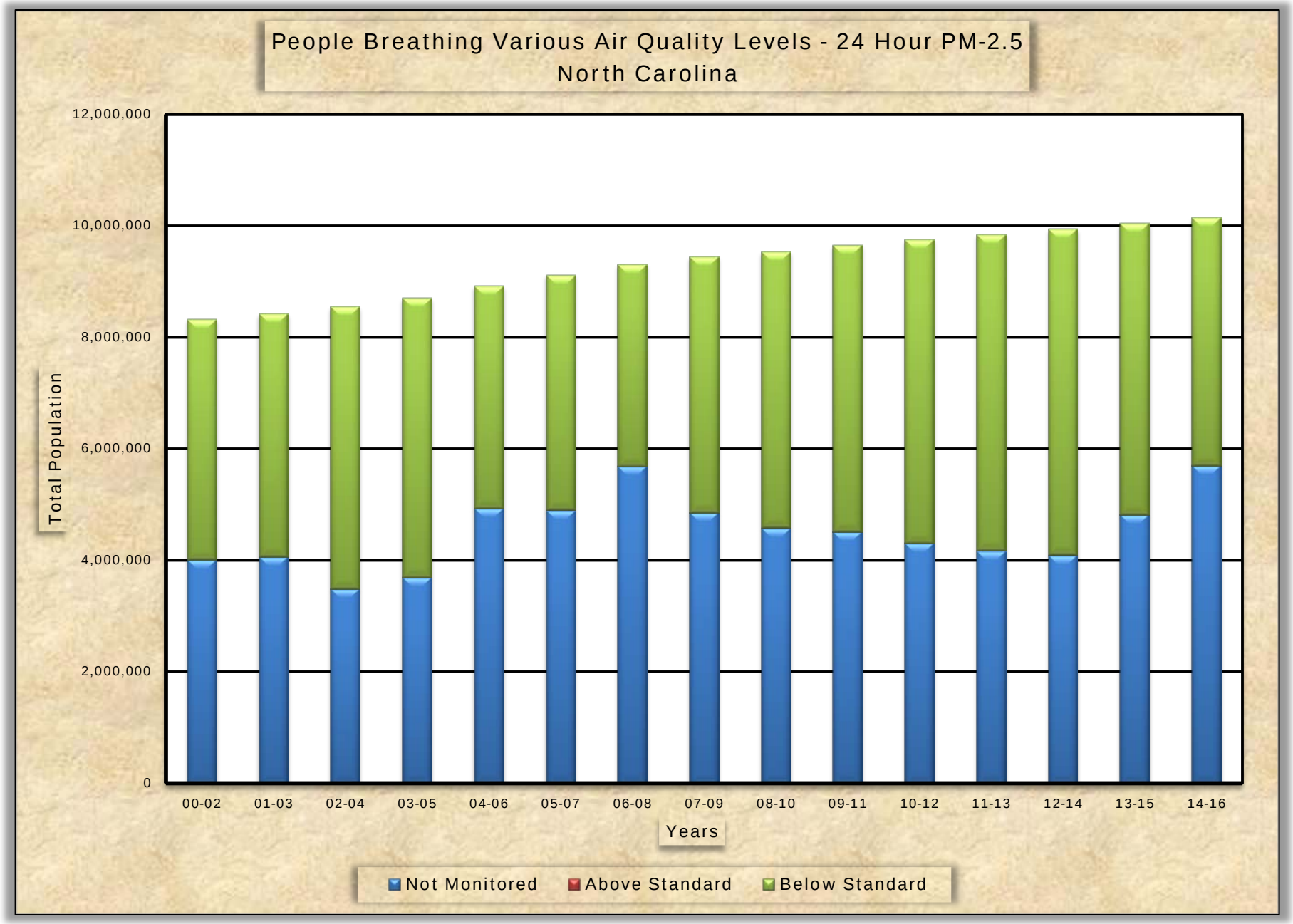
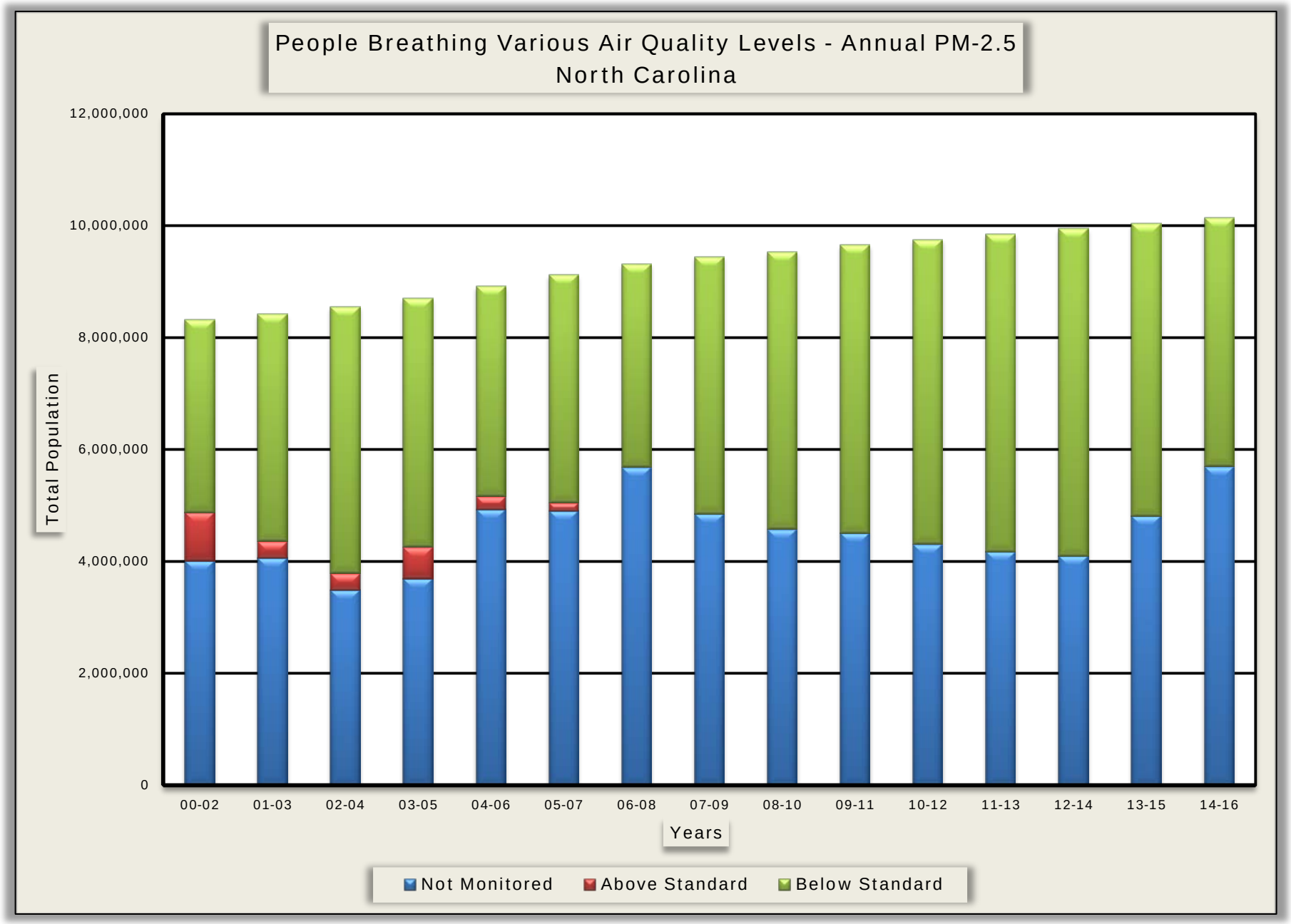

People Breathing Various Air Quality Levels - 24 Hour PM-2.5
North Carolina
12,000,000
10,000,000
8,000,000
6,000,000
4,000,000
2,000,000
0
Total Population
00-02
01-03
02-04
03-05
04-06
05-07
06-08
07-09
08-10
09-11
10-12
11-13
12-14
13-15
14-16
Years
Not Monitored
Above Standard
Below Standard

Figure NC-3


People Breathing Various Air Quality Levels - Annual PM-2.5
North Carolina
Total Population
12,000,000
10,000,000
8,000,000
6,000,000
4,000,000
2,000,000
0
00-02
01-03
02-04
03-05
04-06
05-07
06-08
07-09
08-10
09-11
10-12
11-13
12-14
13-15
14-16
Years
Not Monitored
Above Standard
Below Standard

NORTH DAKOTA

Ozone

In the 2000 – 2002 time period, 0.14 million people (21.4%) lived in counties that met the ozone standard. By 2014 – 2016 this had increased to approximately 0.33 million people (43.7%). The remainder of the population lived in counties where ozone was not measured. The ozone standard was lowered from 0.085 to 0.070 ppm. Figure ND-1 shows the distribution of people by year. The population weighted ozone design value in 2000 – 2002 was 0.062 ppm. By 2014 – 2016 this had lowered to a value of 0.056 ppm, a reduction of 9.7 percent.

24-Hour PM-2.5

In the 2000 – 2002 time period, approximately 0.21 million people (32.7%) lived in counties where 24-hour PM-2.5 levels met the standard. By 2014 - 2016 this was approximately 0.33 million people (44.2%). The remainder of the population lived in counties where PM-2.5 was not measured. The standard was lowered from 65 to 35 µg/m3. Figure ND-2 shows the distribution of people by year. The population weighted 24-hour PM-2.5 in 2000 – 2002 was 21 µg/m3. By 2014 – 2016 this had lowered to a value of 17 µg/m3, a reduction of 19.0 percent.

Annual PM-2.5

In the 2000 – 2002 time period, approximately 0.21 million people (32.7%) lived in counties where annual PM-2.5 levels met the standard. By 2014 – 2016 this had increased to approximately 0.33 million people (44.2%). The remainder of the population lived in counties where PM-2.5 was not measured. The standard was lowered from 15 to 12 µg/m3. Figure ND-3 shows the distribution of people by year. The population weighted annual PM-2.5 design value in 2000 – 2002 was 7.3 µg/m3. By 2014 – 2016 this had lowered to a value of 5.2 µg/m3, a reduction of 28.8 percent.

Table ND-1
2014 – 2016

		Ozone			Particle Pollution (PM-2.5)				
County	Population	Avg. DV	Grade	MM	Avg. 24-Hr DV	Grade	Avg. Ann DV	Grade	MM
Billings	934	0.058	B	N	15	A	4.2	A	N
Burke	2,197	ND	ND	ND	13	A	3.8	A	N
Burleigh	94,487	ND	ND	ND	18	A	5.5	A	N
Cass	175,249	0.056	B	N	17	A	5.6	A	N
Dunn	4,366	0.058	B	N	21	A	5.1	A	N
McKenzie	12,621	0.057	B	N	17	A	2.8	A	N
Mercer	8,694	ND	ND	ND	13	A	3.8	A	N
Oliver	1,870	0.059	B	N	17	A	4.1	A	N
Williams	34,337	0.056	B	N	15	A	4.2	A	N

DV – Design Value ND - No Data MM – Multiple Monitors

NORTH DAKOTA

Table ND-2
Population Weighted Design Values

Period	Ozone (ppm)	24-Hour PM-2.5 (µg/m3)	Annual PM-2.5 (µg/m3)
2000 – 2002	0.062	21	7.3
2001 – 2003	0.063	19	7.4
2002 – 2004	0.061	20	7.1
2003 – 2005	0.060	20	7.2
2004 – 2006	0.060	21	7.2
2005 – 2007	0.060	18	7.4
2006 – 2008	0.059	18	7.5
2007 – 2009	0.056	18	7.4
2008 – 2010	0.058	21	7.6
2009 – 2011	0.058	20	7.4
2010 – 2012	0.060	21	7.4
2011 – 2013	0.059	17	6.5
2012 – 2014	0.059	17	6.2
2013 – 2015	0.059	16	5.6
2014 - 2016	0.056	17	5.2

NORTH DAKOTA

Table ND-3
People Breathing Ozone

Grade	2000-2002	2002-2004	2004-2006	2006-2008	2008-2010	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016
A	136,509	152,613	160,387	228,340	242,139	98,675	278,408	119,640	159,700	0
B	0	0	0	16,807	8,328	164,643	0	167,005	171,512	331,212
C	0	0	0	0	0	0	0	0	0	0
D	0	0	0	0	0	0	0	0	0	0
F	0	0	0	0	0	0	0	0	0	0
Subtotal	136,509	152,613	160,387	245,147	250,467	263,318	278,408	286,645	331,212	331,212
NM	501,659	492,092	489,035	412,422	422,124	436,310	444,985	452,837	425,715	426,740
Total	638,168	644,705	649,422	657,569	672,591	699,628	723,393	739,482	756,927	757,952

People Breathing Short-term Particle Pollution (24-Hour PM-2.5)

Grade	2000-2002	2002-2004	2004-2006	2006-2008	2008-2010	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016
A	208,882	222,955	229,057	232,031	240,293	251,322	276,534	286,645	331,212	334,756
B	0	0	0	0	0	0	0	0	0	0
C	0	0	0	0	0	0	0	0	0	0
D	0	0	0	0	0	0	0	0	0	0
F	0	0	0	0	0	0	0	0	0	0
Subtotal	208,882	222,955	229,057	232,031	240,293	251,322	276,534	286,645	331,212	334,756
NM	429,286	421,750	420,365	425,538	432,298	448,306	446.859	452,837	425,715	423,196
Total	638,168	644,705	649,422	657,569	672,591	699,628	723,393	739,482	756,927	757,952

People Breathing Year Round Particle Pollution (Annual PM-2.5)

Grade	2000-2002	2002-2004	2004-2006	2006-2008	2008-2010	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016
A	208,882	222,955	229,057	232,031	240,293	251,322	276,534	286,645	331,212	334,756
B	0	0	0	0	0	0	0	0	0	0
C	0	0	0	0	0	0	0	0	0	0
D	0	0	0	0	0	0	0	0	0	0
F	0	0	0	0	0	0	0	0	0	0
Subtotal	208,882	222,955	229,057	232,031	240,293	251,322	276,534	286,645	331,212	334,756
NM	429,286	421,750	420,365	425,538	432,298	448,306	446,859	452,837	425,715	423,196
Total	638,168	644,705	649,422	657,569	672,591	699,628	723,393	739,482	756,927	757,952

NM – Not Monitored

Figure ND-1

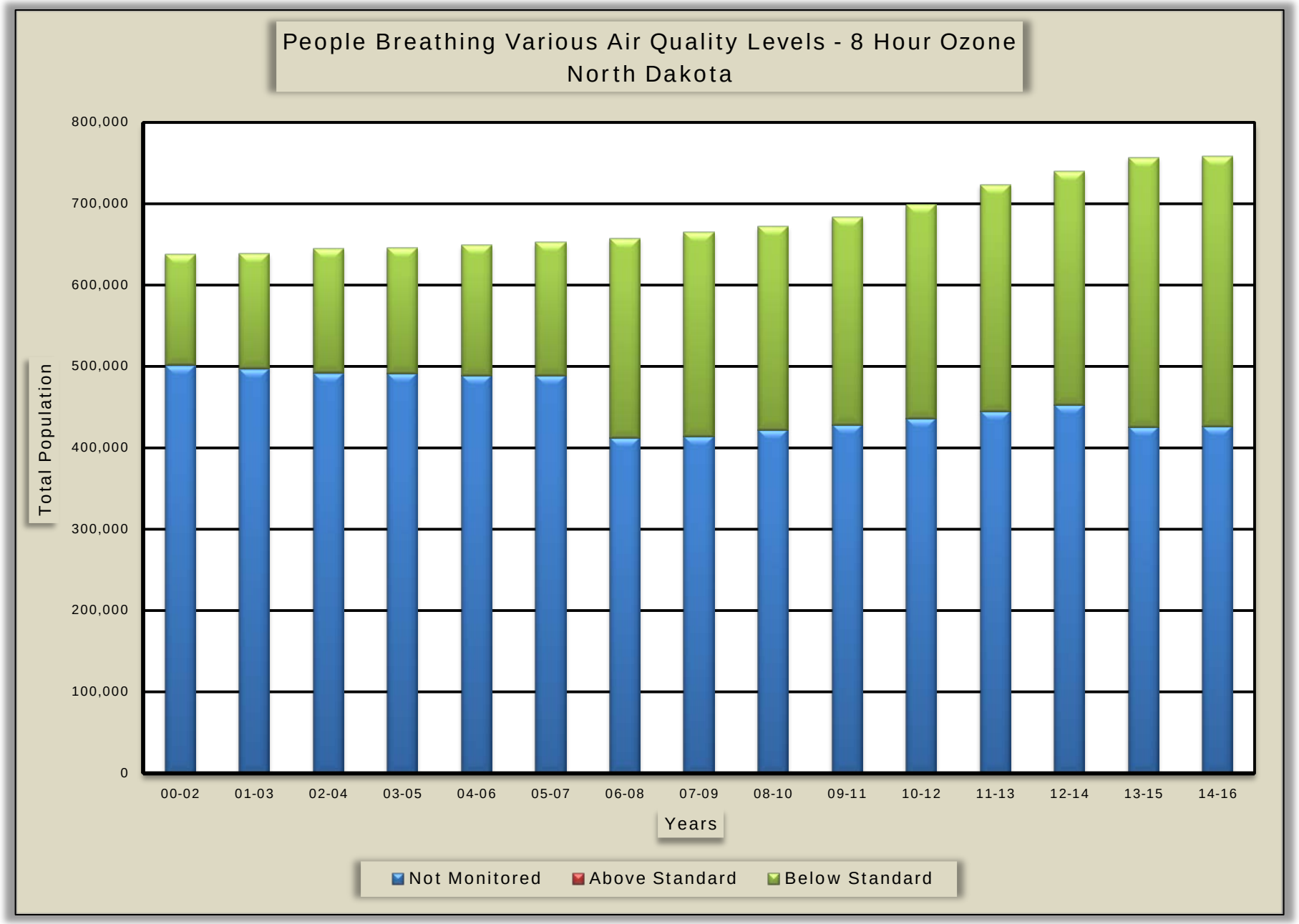

People Breathing Various Air Quality Levels - 8 Hour Ozone
North Dakota
800,000
700,000
600,000
500,000
400,000
300,000
200,000
100,000
0
Total Population
00-02
01-03
02-04
03-05
04-06
05-07
06-08
07-09
08-10
09-11
10-12
11-13
12-14
13-15
14-16
Years
Not Monitored
Above Standard
Below Standard

Figure ND-2

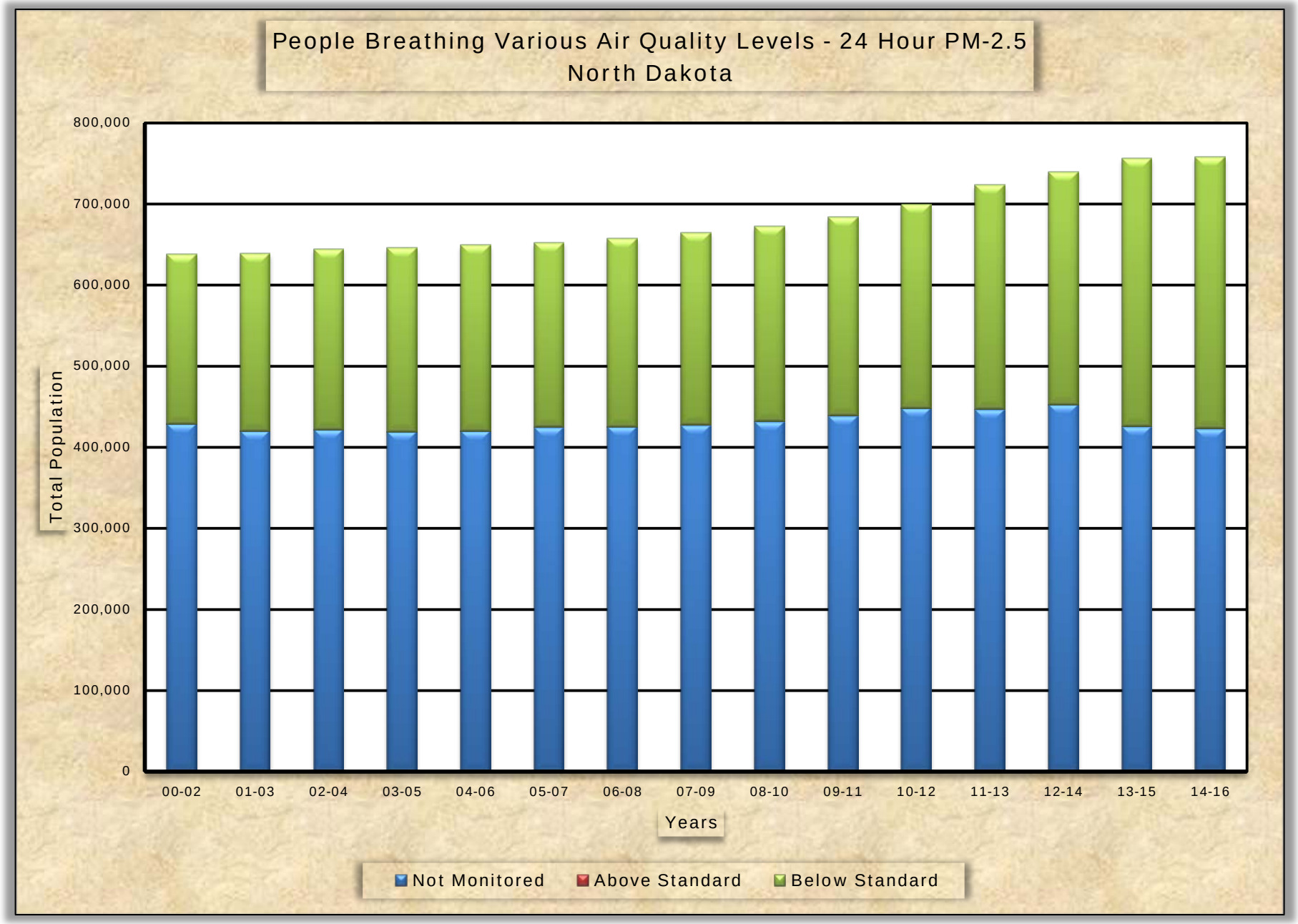
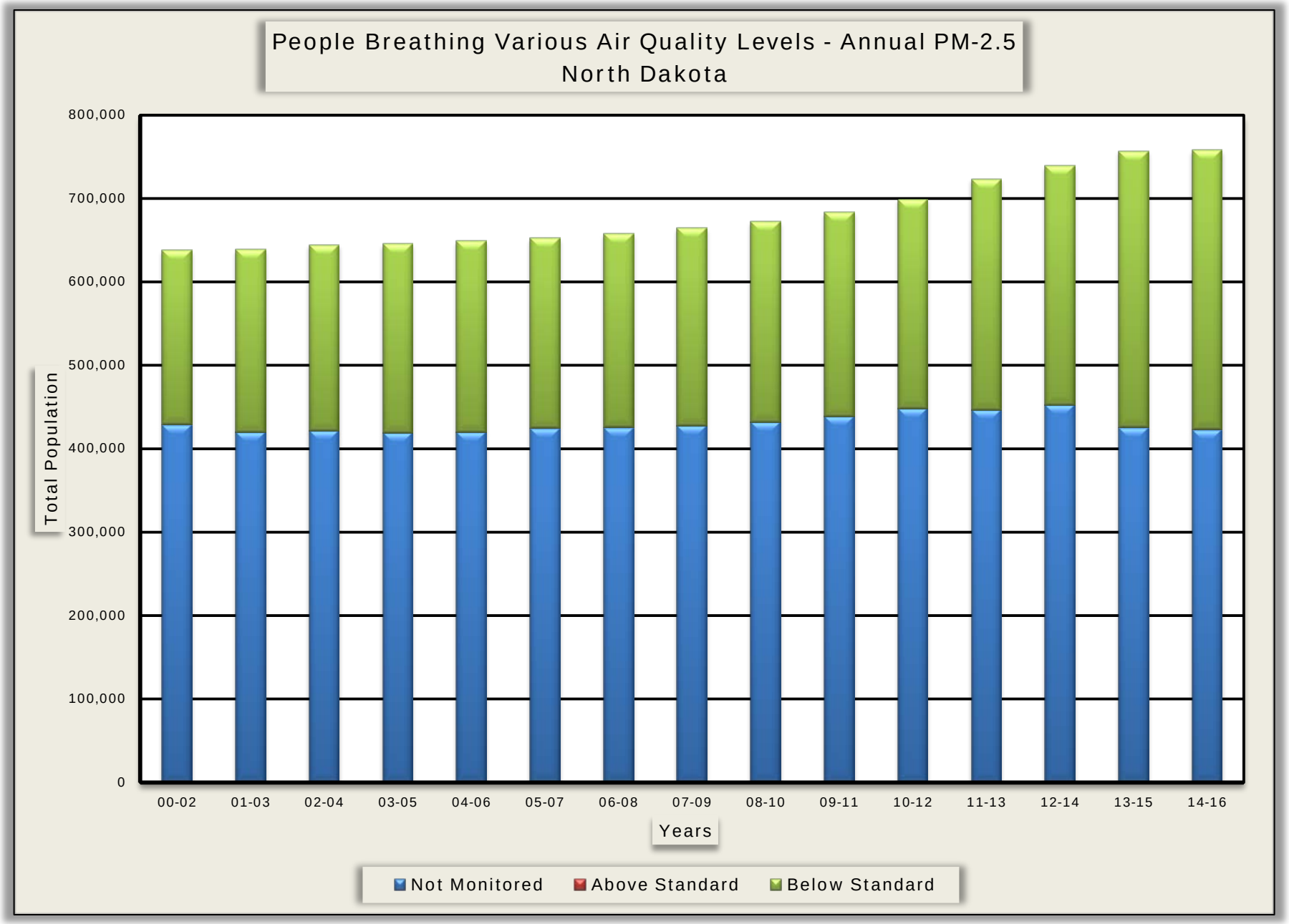

People Breathing Various Air Quality Levels - 24 Hour PM-2.5
North Dakota
Total Population
800,000
700,000
600,000
500,000
400,000
300,000
200,000
100,000
0
00-02
01-03
02-04
03-05
04-06
05-07
06-08
07-09
08-10
09-11
10-12
11-13
12-14
13-15
14-16
Years
Not Monitored
Above Standard
Below Standard

Figure ND-3


People Breathing Various Air Quality Levels - Annual PM-2.5
North Dakota
Total Population
800,000
700,000
600,000
500,000
400,000
300,000
200,000
100,000
0
00-02
01-03
02-04
03-05
04-06
05-07
06-08
07-09
08-10
09-11
10-12
11-13
12-14
13-15
14-16
Years
Not Monitored
Above Standard
Below Standard

OHIO

Ozone

In the 2000 – 2002 time period, 4.5 million people (39.5%) lived in counties that met the ozone standard. By 2014 – 2016 this had increased to approximately 7.0 million people (60.4%). The ozone standard was lowered from 0.085 ppm to 0.070 ppm. Figure OH-1 shows the distribution of people by year. The population weighted ozone design value in 2000 – 2002 was 0.087 ppm. By 2014 – 2016 this had lowered to a value of 0.067 ppm, a reduction of 23.0 percent.

24-Hour PM-2.5

In the 2000 – 2002 time period, 6.2 million people (54.4%) lived in counties where 24-hour PM-2.5 levels met the standard. By 2014 – 2016 this was approximately 6.9 million people (59.1%). The remainder of the population lived in counties where PM-2.5 was not measured. The standard was lowered from 65 to 35 µg/m3. Figure OH-2 shows the distribution of people by year. The population weighted 24-hour PM-2.5 design value in 2000 – 2002 was 40 µg/m3. By 2014 – 2016 this had lowered to a value of 21 µg/m3, a reduction of 47.5 percent.

Annual PM-2.5

In the 2000 – 2002 time period, approximately 1.1 million people (9.7%) lived in counties where annual PM-2.5 levels met the standard. By 2014 – 2016 this had increased to approximately 6.9 million people (59.1%). The standard was lowered from 15 to 12 µg/m3. Figure OH-3 shows the distribution of people by year. The population weighted annual PM-2.5 design value in 2000 – 2002 was 16.4 µg/m3. By 2014 – 2016 this had lowered to a value of 9.6 µg/m3, a reduction of 41.5 percent.

OHIO

Table OH-1
2014 – 2016

		Ozone			Particle Pollution (PM-2.5)				
County	Population	Avg. DV	Grade	MM	Avg. 24-Hr DV	Grade	Avg. Ann DV	Grade	MM
Allen	103,742	0.066	C	N	22	A	8.8	A	N
Ashtabula	98,231	0.070	C	N	ND	ND	ND	ND	ND
Athens	66,186	ND	ND	ND	15	A	7.1	A	N
Butler	377,537	0.070	C	Y	21	A	10.2	B	Y
Clark	134,786	0.068	C	Y	23	A	9.2	A	N
Clermont	203,022	0.070	C	N	ND	ND	ND	ND	ND
Clinton	41,902	0.070	C	N	ND	ND	ND	ND	ND
Cuyahoga	1,249,352	0.066	C	Y	24	A	10.6	B	Y
Delaware	196,463	0.067	C	N	ND	ND	ND	ND	ND
Fayette	28,676	0.068	N	ND	ND	ND	ND	ND	ND
Franklin	1,264,518	0.068	C	Y	20	A	9.5	A	Y
Geauga	**94,060**	**0.071**	**D**	**N**	ND	ND	ND	ND	ND
Greene	164,765	0.068	C	N	18	A	8.7	A	N
Hamilton	**809,079**	**0.071**	**D**	**Y**	21	A	9.9	B	Y
Jefferson	66,704	0.065	C	N	23	A	10.1	B	N
Knox	60,814	0.067	C	N	ND	ND	ND	ND	ND
Lake	**228,614**	**0.071**	**D**	**Y**	18	A	7.9	A	N
Lawrence	60,872	0.065	C	Y	15	A	7.2	A	N
Licking	172,198	0.067	C	N	ND	ND	ND	ND	ND
Lorain	306,065	0.066	C	N	20	A	6.1	A	N
Lucas	432,488	0.065	C	Y	23	A	9.6	B	Y
Madison	43,419	0.068	C	N	ND	ND	ND	ND	ND
Mahoning	230,008	0.063	C	N	22	A	9.6	B	N
Medina	177,221	0.064	C	N	19	A	7.8	A	N
Miami	104,679	0.067	C	N	ND	ND	ND	ND	ND
Montgomery	531,239	0.070	C	N	ND	ND	ND	ND	ND
Noble	14,294	0.066	C	N	ND	ND	ND	ND	ND
Portage	161,921	0.061	B	N	18	A	8.3	A	N
Preble	41,247	0.067	C	N	20	A	8.4	A	N
Scioto	76,088	ND	ND	ND	19	A	8.4	A	N
Stark	373,612	0.066	C	Y	23	A	10.3	B	Y
Summit	540,300	0.061	B	N	21	A	9.5	A	Y
Trumbull	201,825	0.068	C	N	ND	ND	ND	ND	ND
Warren	**227,063**	**0.072**	**D**	**N**	ND	ND	ND	ND	ND
Washington	60,610	0.065	C	N	ND	ND	ND	ND	ND
Wood	130,219	0.063	C	N	ND	ND	ND	ND	ND

DV – Design Value ND - No Data MM – Multiple Monitors

OHIO

Table OH-2
Population Weighted Design Values

Period	Ozone (ppm)	24-Hour PM-2.5 (µg/m3)	Annual PM-2.5 (µg/m3)
2000 – 2002	0.087	40	16.4
2001 – 2003	0.089	39	15.7
2002 – 2004	0.085	37	15.0
2003 – 2005	0.080	38	15.3
2004 – 2006	0.077	36	14.9
2005 – 2007	0.080	37	15.0
2006 – 2008	0.078	32	13.6
2007 – 2009	0.075	30	12.9
2008 – 2010	0.072	29	12.4
2009 – 2011	0.073	27	11.9
2010 – 2012	0.076	26	11.5
2011 – 2013	0.073	24	10.8
2012 – 2014	0.070	23	10.4
2013 – 2015	0.066	23	10.1
2014 – 2016	0.067	21	9.6

OHIO

Table OH-3
People Breathing Ozone

Grade	2000-2002	2002-2004	2004-2006	2006-2008	2008-2010	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016
A	0	0	31,399	0	0	0	178,490	0	0	0
B	0	1,408,883	4,562,715	0	308,691	177,054	2,937,481	1,685,088	1,018,223	702,221
C	4,502,353	4,568,899	6,320,301	3,880,639	9,406,752	4,001,213	3,058,322	7,219,034	7,375,799	6,311,918
D	5,867,080	5,022,648	417,072	6,286,746	1,560,341	4,071,616	2,704,463	0	531,863	1,917,726
F	753,094	185,866	0	1,147,671	0	382,137	0	0	0	0
Subtotal	11,122,527	11,186,295	11,331,486	11,315,056	11,275,783	8,632,019	8,878,755	8,904,122	8,925,885	8,931,865
NM	285,362	265,956	149,727	200,335	260,721	2,912,206	2,692,053	2,690,041	2,687,538	2,682,508
Total	11,407,889	11,452,251	11,481,213	11,515,391	11,536,504	11,544,225	11,570,808	11,594,163	11,613,423	11,614,373

People Breathing Short-Term Particle Pollution (24-Hour PM-2.5)

Grade	2000-2002	2002-2004	2004-2006	2006-2008	2008-2010	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016
A	6,208,456	7,004,050	0	0	2,646,985	6,391,288	6,977,279	6,843,028	6,594,256	6,608,946
B	0	0	148,630	2,639,933	3,531,216	1,054,694	421,051	209,971	209,320	0
C	0	0	2,642,464	3,791,382	697,598	0	0	0	0	178,479
D	0	0	3,771,841	588,486	0	0	0	0	0	0
F	0	0	473,113	0	0	0	0	0	0	0
Subtotal	6,208,456	7,004,050	7,036,047	7,016,801	6,875,799	7,445,981	7,398,330	7,052,999	6,803,576	6,865,425
NM	5,199,433	4,448,201	4,445,166	4,498,590	4,660,705	4,098,244	4,172,478	4,541,164	4,809,847	4,748,948
Total	11,407,889	11,452,251	11,481,213	11,515,391	11,536,504	11,544,225	11,570,808	11,594,163	11,613,423	11,614,373

People Breathing Year Round Particle Pollution (Annual PM-2.5)

Grade	2000-2002	2002-2004	2004-2006	2006-2008	2008-2010	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016
A	0	0	0	364,360	2,649,589	4,604,097	597,365	941,411	1,640,169	3,410,796
B	0	682,834	528,490	3,347,062	2,597,952	2,841,884	3,292,228	3,771,835	3,201,878	3,089,344
C	1,103,019	2,806,886	4,197,221	3,106,716	1,467,783	0	2,243,879	1,616,300	1,333,568	365,285
D	1,743,464	2,770,485	1,579,676	368,994	160,475	0	1,141,101	629,914	627,961	0
F	3,361,973	743,846	730,661	0	0	0	123,757	93,540	0	0
Subtotal	6,208,456	7,004,050	7,036,047	7,187,131	6,875,799	7,445,981	7,398,330	7,052,999	6,803,576	6,865,425
NM	5,199,433	4,448,201	4,445,166	4,328,260	4,660,705	4,098,244	4,172,478	4,541,164	4,809,847	4,748,948
Total	11,407,889	11,452,251	11,481,213	11,515,391	11,536,504	11,544,225	11,570,808	11,594,163	11,613,423	11,614,373

NM – Not Monitored

Figure OH-1

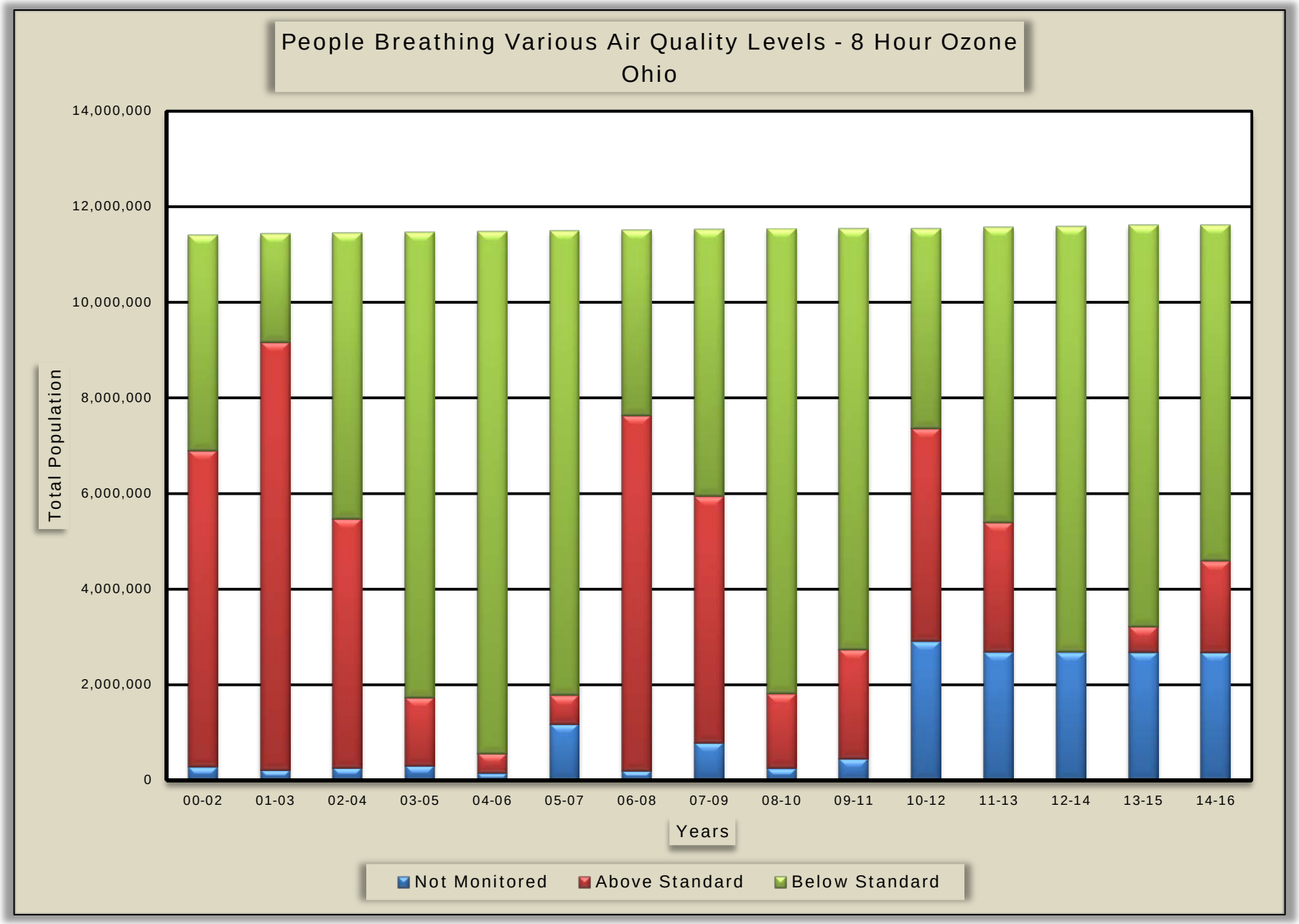

People Breathing Various Air Quality Levels - 8 Hour Ozone
Ohio
14,000,000
12,000,000
10,000,000
8,000,000
6,000,000
4,000,000
2,000,000
0
Total Population
00-02
01-03
02-04
03-05
04-06
05-07
06-08
07-09
08-10
09-11
10-12
11-13
12-14
13-15
14-16
Years
Not Monitored
Above Standard
Below Standard

Figure OH-2

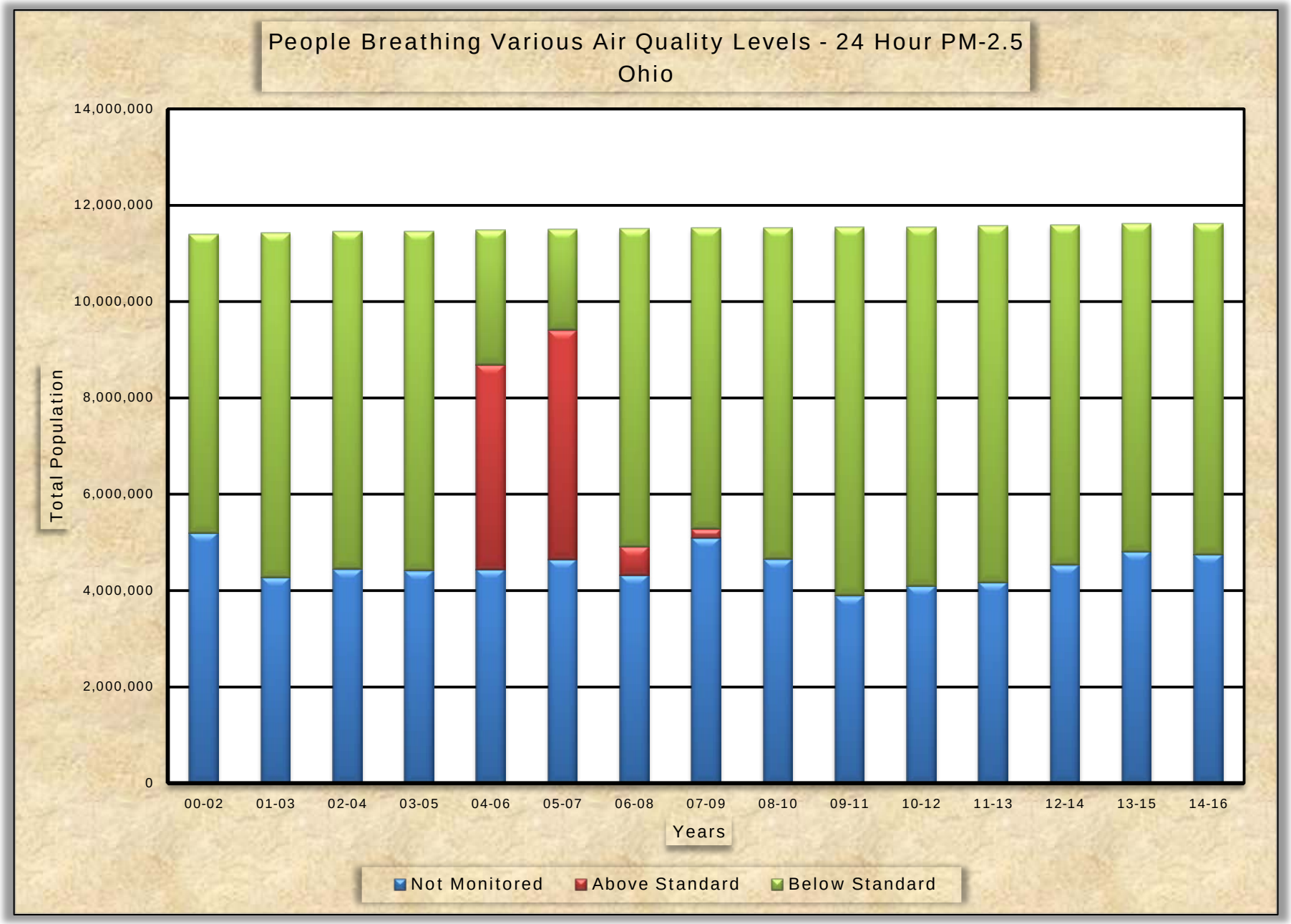
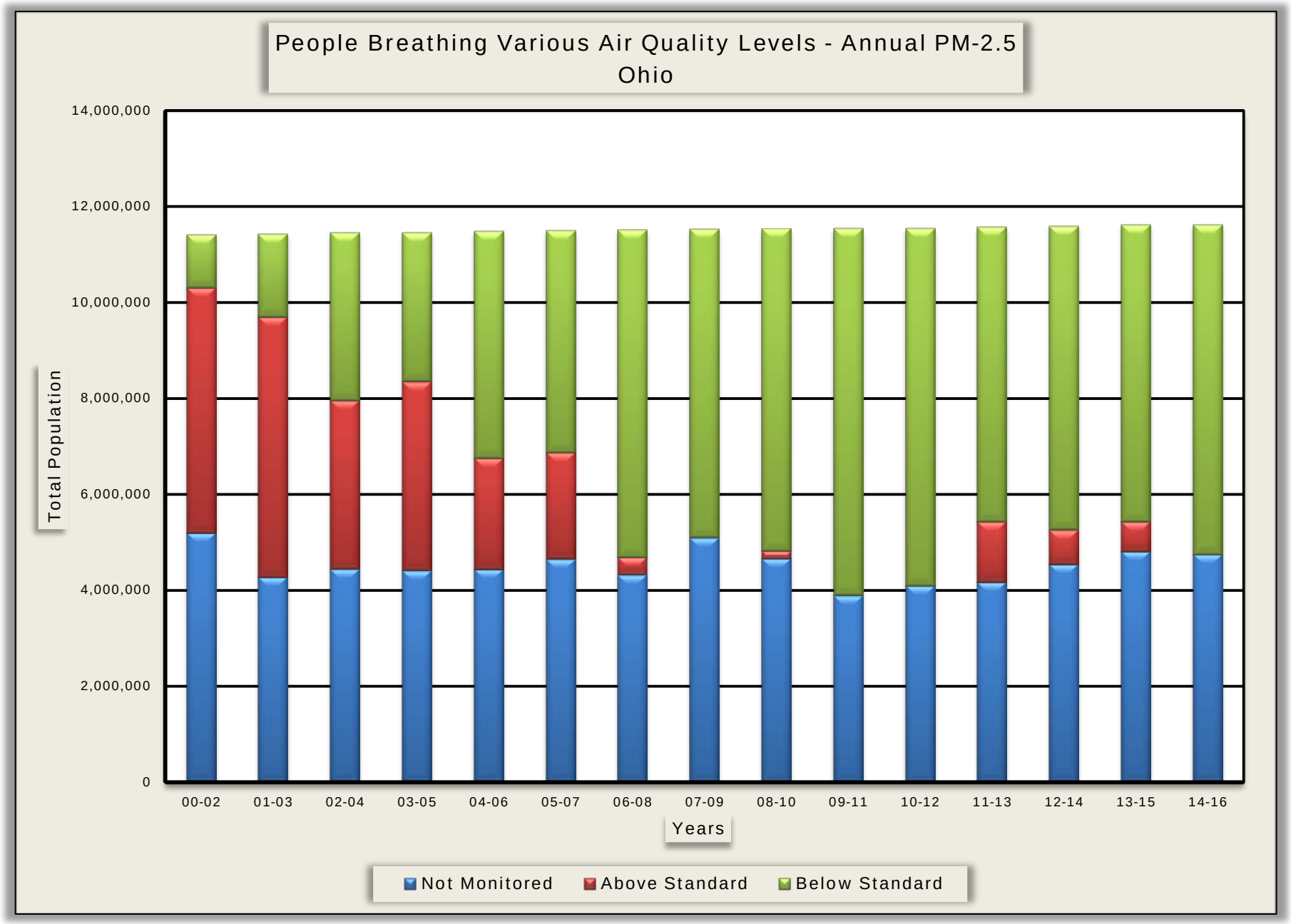

People Breathing Various Air Quality Levels - 24 Hour PM-2.5
Ohio
14,000,000
12,000,000
10,000,000
8,000,000
6,000,000
4,000,000
2,000,000
0
Total Population
00-02
01-03
02-04
03-05
04-06
05-07
06-08
07-09
08-10
09-11
10-12
11-13
12-14
13-15
14-16
Years
Not Monitored
Above Standard
Below Standard

Figure OH-3


People Breathing Various Air Quality Levels - Annual PM-2.5
Ohio
14,000,000
12,000,000
10,000,000
8,000,000
6,000,000
4,000,000
2,000,000
0
Total Population
00-02
01-03
02-04
03-05
04-06
05-07
06-08
07-09
08-10
09-11
10-12
11-13
12-14
13-15
14-16
Years
Not Monitored
Above Standard
Below Standard

OKLAHOMA

Ozone

In the 2000 – 2002 time period, 1.4 million people (40.3%) lived in counties that met the ozone standard. By 2013 – 2015 this had increased to approximately 2.4 million people (60.5). The ozone standard was lowered from 0.085 ppm to 0.070 ppm. Figure OK-1 shows the distribution of people by year. The population weighted ozone design value in 2000 – 2002 was 0.081 ppm. By 2013 – 2015 this had lowered to a value of 0.067 ppm, a reduction of 17.3 percent.

24-Hour PM-2.5

In the 2000 – 2002 time period, approximately 1.5 million people (52.9%) lived in counties where 24-hour PM-2.5 levels met the standard. By 2013 - 2015 this was approximately 1.5 million people (38.4%). The remainder of the population lived in counties where PM-2.5 was not measured. The standard was lowered from 65 µg/m3 to 35 µg/m3. Figure OK-2 shows the distribution of people by year. The population weighted 24-hour PM-2.5 design value in 2000 – 2002 was 27 µg/m3. By 2013 – 2015 this had lowered to a value of 20 µg/m3, a reduction of 25.9 percent

Annual PM-2.5

In the 2000 – 2002 time period, approximately 1.8 million people (52.9%) lived in counties where annual PM-2.5 levels met the standard. By 2013 – 2015 this had decreased to approximately 1.5 million people (38.4%). The remainder of the population lived in counties where PM-2.5 was not measured. The standard was lowered from 15 to 12 µg/m3. Figure OK-3 shows the distribution of people by year. The population weighted annual PM-2.5 design value in 2000 – 2002 was 11.1 µg/m3. By 2013 – 2015 this had lowered to a value of 8.6 µg/m3, a reduction of 22.5m percent.

Table OK-1

2014 – 2016

		Ozone			Particle Pollution (PM-2.5)				
County	Population	Avg. DV	Grade	MM	Avg. 24-Hr DV	Grade	Avg. Ann DV	Grade	MM
Adair	22,098	0.061	B	N	ND	ND	ND	ND	ND
Canadian	136,532	0.065	C	N	ND	ND	ND	ND	ND
Cherokee	48,700	0.060	B	N	ND	ND	ND	ND	ND
Cleveland	278,655	0.065	C	N	ND	ND	ND	ND	ND
Comanche	22,136	0.065	C	N	17	A	7.5	A	N
Creek	11,312	0.064	C	N	ND	ND	ND	ND	ND
Dewey	4,819	0.065	C	N	16	A	6.2	A	N
Kay	44,943	0.063	C	N	20	A	8.8	A	N
McClain	38,682	0.066	C	N	ND	ND	ND	ND	ND
Mayes	40,920	0.062	B	N	ND	ND	ND	ND	ND
Oklahoma	783,970	0.066	C	Y	18	A	7.8	A	N
Ottawa	31,691	0.054	A	N	ND	ND	ND	ND	ND
Pittsburg	44,173	0.060	B	N	19	A	8.4	A	N
Sequoyah	41,294	0.060	B	N	19	A	8.5	A	N
Tulsa	642,943	0.063	C	Y	20	A	8.7	A	Y

DV – Design Value ND - No Data MM – Multiple Monitors

OKLAHOMA

Table OK-2
Population Weighted Design Values

Period	Ozone (ppm)	24-Hour PM-2.5 (µg/m3)	Annual PM-2.5 (µg/m3)
2000 – 2002	0.081	27	11.1
2001 – 2003	0.079	26	10.9
2002 – 2004	0.077	26	10.5
2003 – 2005	0.076	27	10.8
2004 – 2006	0.077	26	10.5
2005 – 2007	0.077	27	11.0
2006 – 2008	0.075	25	10.9
2007 – 2009	0.071	24	10.9
2008 – 2010	0.070	22	10.3
2009 – 2011	0.074	21	10.1
2010 – 2012	0.077	21	10.0
2011 – 2013	0.077	20	9.9
2012 – 2014	0.071	20	9.3
2013 – 2015	0.067	20	8.6
2014 – 2016	0.064	19	8.2

OKLAHOMA

Table OK-3
People Breathing Ozone

Grade	2000-2002	2002-2004	2004-2006	2006-2008	2008-2010	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016
A	0	0	0	0	0	0	0	0	0	31,691
B	0	889,243	930,332	0	378,123	0	0	29,317	109,771	411,498
C	1,405,971	955,181	1,127,314	1,384,574	1,818,039	390,868	256,628	2,308,105	2,256,563	1,908,676
D	284,585	0	0	761,911	0	1,987,964	2,057,659	0	0	0
F	0	0	0	0	0	0	0	0	0	0
Subtotal	1,690,556	1,844,424	2,057,645	2,146,485	2,196,162	2,878,832	2,314,287	2,337,422	2,366,334	2,351,865
NM	1,798,524	1,680,809	1,536,445	1,522,491	1,555,189	1,435,988	1,536,281	1,540,629	1,545,004	1,571,696
Total	3,489,080	3,525,233	3,594,090	3,668,976	3,751,351	3,814,820	3,850,568	3,878,051	3,911,338	3,923,561

People Breathing Short-term Particle Pollution (24-Hour PM-2.5)

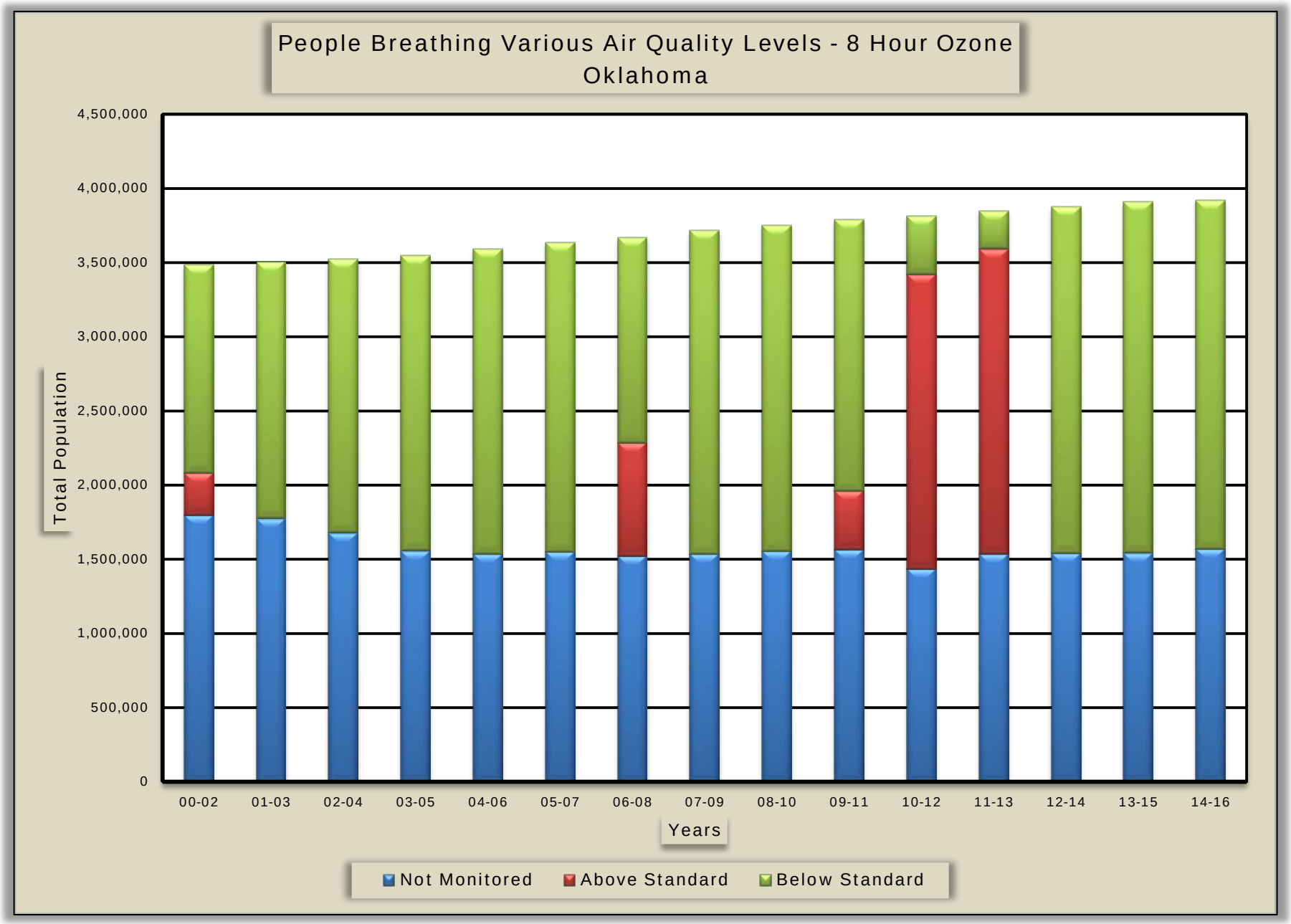
Grade	2000-2002	2002-2004	2004-2006	2006-2008	2008-2010	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016
A	1,845,968	1,807,628	1,163,369	1,520,908	1,495,733	1,400,645	1,463,575	1,481,797	1,501,869	1,683,275
B	0	0	410,490	28,612	0	0	0	0	0	0
C	0	0	0	0	0	0	0	0	0	0
D	0	0	0	0	0	0	0	0	0	0
F	0	0	0	0	0	0	0	0	0	0
Subtotal	1,845,968	1,807,628	1,573,858	1,549,520	1,495,733	1,400,645	1,463,575	1,481,797	1,501,869	1,683,275
NM	1,643,112	1,717,605	2,020,232	2,119,456	2,255,618	2,414,175	2,386,993	2,396,254	2,409,469	2,240,286
Total	3,489,080	3,525,233	3,594,090	3,668,976	3,751,351	3,814,820	3,850,568	3,878,051	3,911,338	3,923,561

People Breathing Year Round Particle Pollution (Annual PM-2.5)

Grade	2000-2002	2002-2004	2004-2006	2006-2008	2008-2010	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016
A	1,561,383	1,807,628	1,573,858	1,549,520	1,495,733	1,400,645	0	1,395,813	1,501,869	1,683,275
B	284,585	0	0	0	0	0	1,463,575	85,984	0	0
C	0	0	0	0	0	0	0	0	0	0
D	0	0	0	0	0	0	0	0	0	0
F	0	0	0	0	0	0	0	0	0	0
Subtotal	1,845,968	1,807,628	1,573,858	1,549,520	1,495,733	1,400,645	1,463,575	1,481,797	1,501,869	1,683,275
NM	1,643,112	1,717,605	2,020,232	2,119,456	2,255,618	2,414,175	2,386,993	2,396,254	2,409,469	2,240,286
Total	3,489,080	3,525,233	3,594,090	3,668,976	3,751,351	3,814,820	3,850,568	3,878,051	3,911,338	3,923,561

NM – Not Monitored

Figure OK-1


People Breathing Various Air Quality Levels - 8 Hour Ozone
Oklahoma
Total Population
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4,000,000
3,500,000
3,000,000
2,500,000
2,000,000
1,500,000
1,000,000
500,000
0
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03-05
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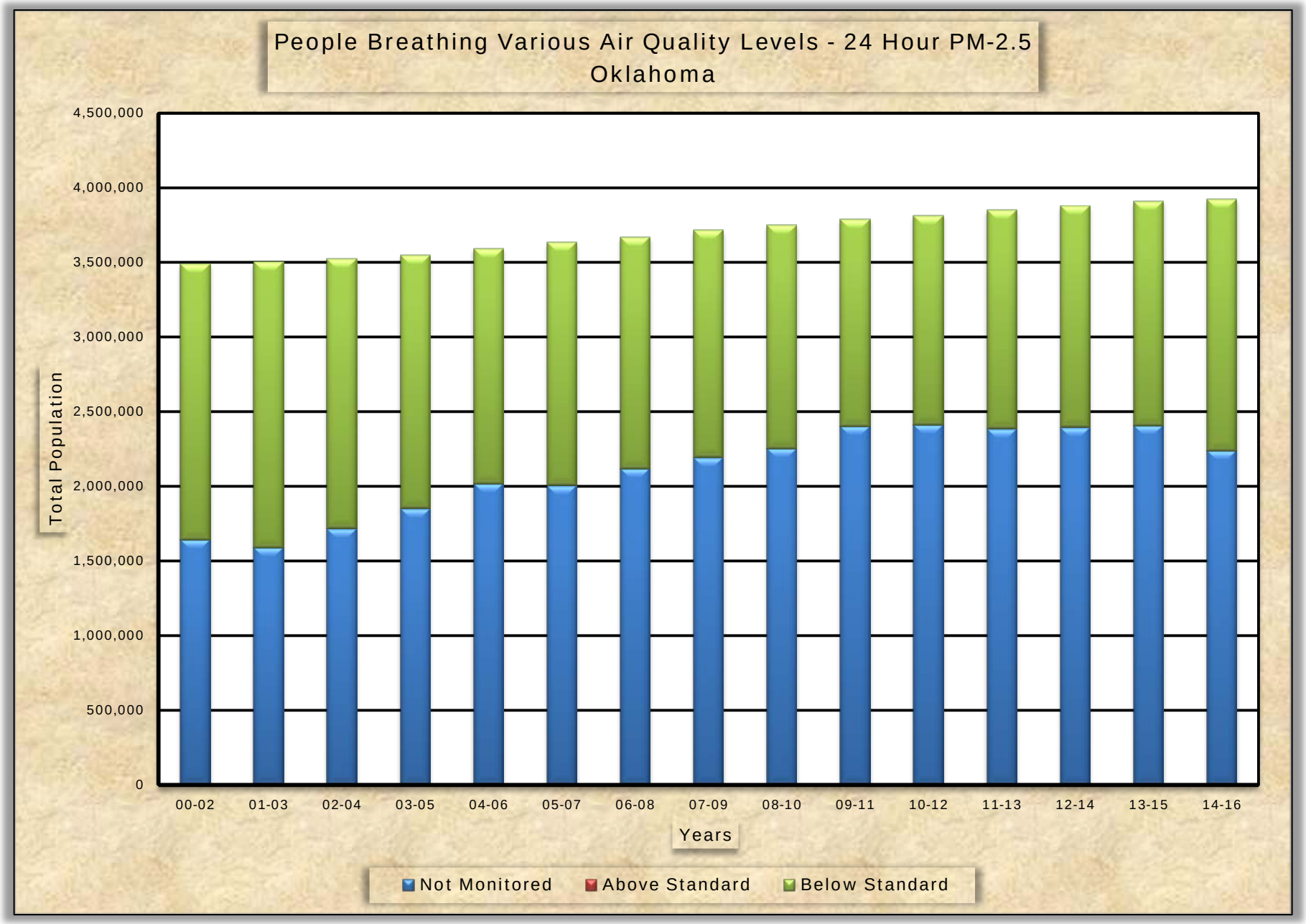
08-10
09-11
10-12
11-13
12-14
13-15
14-16
Years
Not Monitored
Above Standard
Below Standard

Figure OK-2


People Breathing Various Air Quality Levels - 24 Hour PM-2.5
Oklahoma
Total Population
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4,000,000
3,500,000
3,000,000
2,500,000
2,000,000
1,500,000
1,000,000
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0
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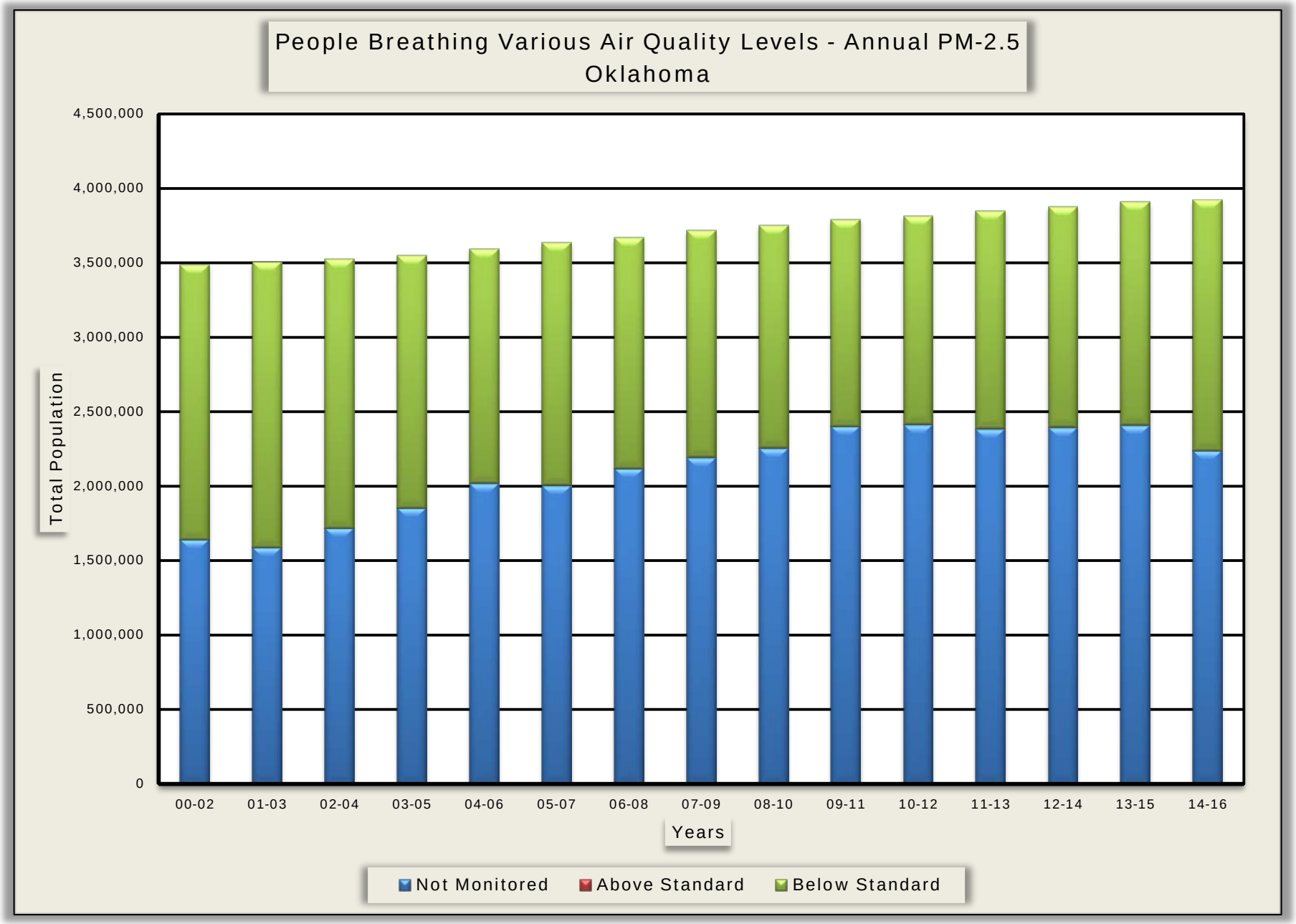
12-14
13-15
14-16
Years
Not Monitored
Above Standard
Below Standard

Figure OK-3


People Breathing Various Air Quality Levels - Annual PM-2.5
Oklahoma
Total Population
4,500,000
4,000,000
3,500,000
3,000,000
2,500,000
2,000,000
1,500,000
1,000,000
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09-11
10-12
11-13
12-14
13-15
14-16
Years
Not Monitored
Above Standard
Below Standard

OREGON

Ozone

In the 2000 – 2002 time period, approximately 1.2 million (34.2%) lived in counties that met the ozone standard. By 2014 – 2016 this had increased to approximately 2.8 million people (69.4%). The remainder of the population lived in counties where ozone was not measured. The ozone standard was lowered from 0.085 ppm to 0.070 ppm. Figure OR-1 shows the distribution of people by year. The population weighted ozone design value in 2000 – 2002 was 0.062 ppm. By 2014 – 2016 this had lowered to a value of 0.059 ppm, a reduction of 4.8 percent.

24-Hour PM-2.5

In the 2000 – 2002 time period, approximately 2.6 million people (73.6%) lived in counties where 24-hour PM-2.5 levels met the standard. By 2014 - 2016 this was approximately 2.1 million people (52.2%). The standard was lowered from 65 to 35 µg/m3. Figure OR-2 shows the distribution of people by year. The population weighted 24-hour PM-2.5 design value in 2000 – 2002 was 29 µg/m3. By 2014 – 2016 this had decreased to a value of 23 µg/m3, an increase of 20.7 percent.

Annual PM-2.5

In the 2000 – 2002 time period, approximately 2.6 million people (73.6%) lived in counties where annual PM-2.5 levels met the standard. By 2014 – 2016 this had decreased to approximately 2.2 million people (52.7%). The remainder of the population lived in counties where PM-2.5 was not measured. The standard was lowered from 15 to 12 µg/m3. Figure OR-3 shows the distribution of people by year. The population weighted annual PM-2.5 design value in 2000 – 2002 was 8.7 µg/m3. By 2014 -2016 this had lowered to a value of 7.1 µg/m3, a reduction of 18.4 percent.

Table OR-1
2014 – 2016

		Ozone			Particle Pollution (PM-2.5)				
County	Population	Avg. DV	Grade	MM	Avg. 24-Hr DV	Grade	Avg. Ann DV	Grade	MM
Clackamas	408,062	0.065	C	N	ND	ND	ND	ND	ND
Columbia	50,785	0.054	A	N	ND	ND	ND	ND	ND
Crook	22,570	ND	ND	ND	38	D	8.5	A	N
Harney	7,292	ND	ND	ND	28	B	8.5	A	N
Jackson	216,527	0.068	B	N	33	C	9.4	A	N
Josephine	85,904	ND	ND	ND	20	A	7.2	A	N
Klamath	66,443	ND	ND	ND	26	A	8.1	A	N
Lake	7,837	ND	ND	ND	31	B	7.8	A	N
Lane	369,519	0.061	B	Y	23	A	6.9	A	Y
Marion	336,316	0.064	C	N	ND	ND	ND	ND	ND
Multnomah	799,766	0.055	A	N	19	A	6.4	A	N
Umatilla	76,456	0.065	C	N	ND	ND	ND	ND	ND
Washington	582,779	0.058	A	Y	25	A	7.0	A	N

DV – Design Value ND - No Data MM – Multiple Monitors

OREGON

Table OR-2
Population Weighted Design Values

Period	Ozone (ppm)	24-Hour PM-2.5 (µg/m3)	Annual PM-2.5 (µg/m3)
2000 – 2002	0.062	29	8.7
2001 – 2003	0.066	28	8.5
2002 – 2004	0.066	29	8.7
2003 – 2005	0.065	29	8.8
2004 – 2006	0.063	29	9.2
2005 – 2007	0.062	29	8.4
2006 – 2008	0.063	28	8.2
2007 – 2009	0.062	28	8.2
2008 – 2010	0.062	23	7.4
2009 – 2011	0.060	26	7.8
2010 – 2012	0.059	25	7.5
2011 – 2013	0.058	32	8.4
2012 – 2014	0.058	28	7.9
2013 – 2015	0.059	31	8.1
2014 – 2016	0.059	23	7.1

OREGON

Table OR-3
People Breathing Ozone

Grade	2000-2002	2002-2004	2004-2006	2006-2008	2008-2010	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016
A	1,014,094	687,374	1,398,749	49,209	1,136,400	2,015,747	2,216,255	1,917,894	839,894	850,551
B	186,704	536,228	536,784	1,741,997	970,422	844,360	673,528	1,007,474	1,443,189	1,168,825
C	0	0	0	201,162	0	0	0	0	690,613	820,834
D	0	0	0	0	0	0	0	0	0	0
F	0	0	0	0	0	0	0	0	0	0
Subtotal	1,200,798	1,223,601	1,935,533	1,992,368	2,106,822	2,860,107	2,889,783	2,925,368	2,973,696	2,840,210
NM	2,312,626	2,345,862	1,735,350	1,776,380	1,724,252	1,039,246	1,040,282	1,044,871	1,055,281	1,253,255
Total	3,513,424	3,569,463	3,670,883	3,768,749	3,831,074	3,899,353	3,930,065	3,970,239	4,028,977	4,093,465

People Breathing Short-term Particle Pollution (24-Hour PM-2.5)

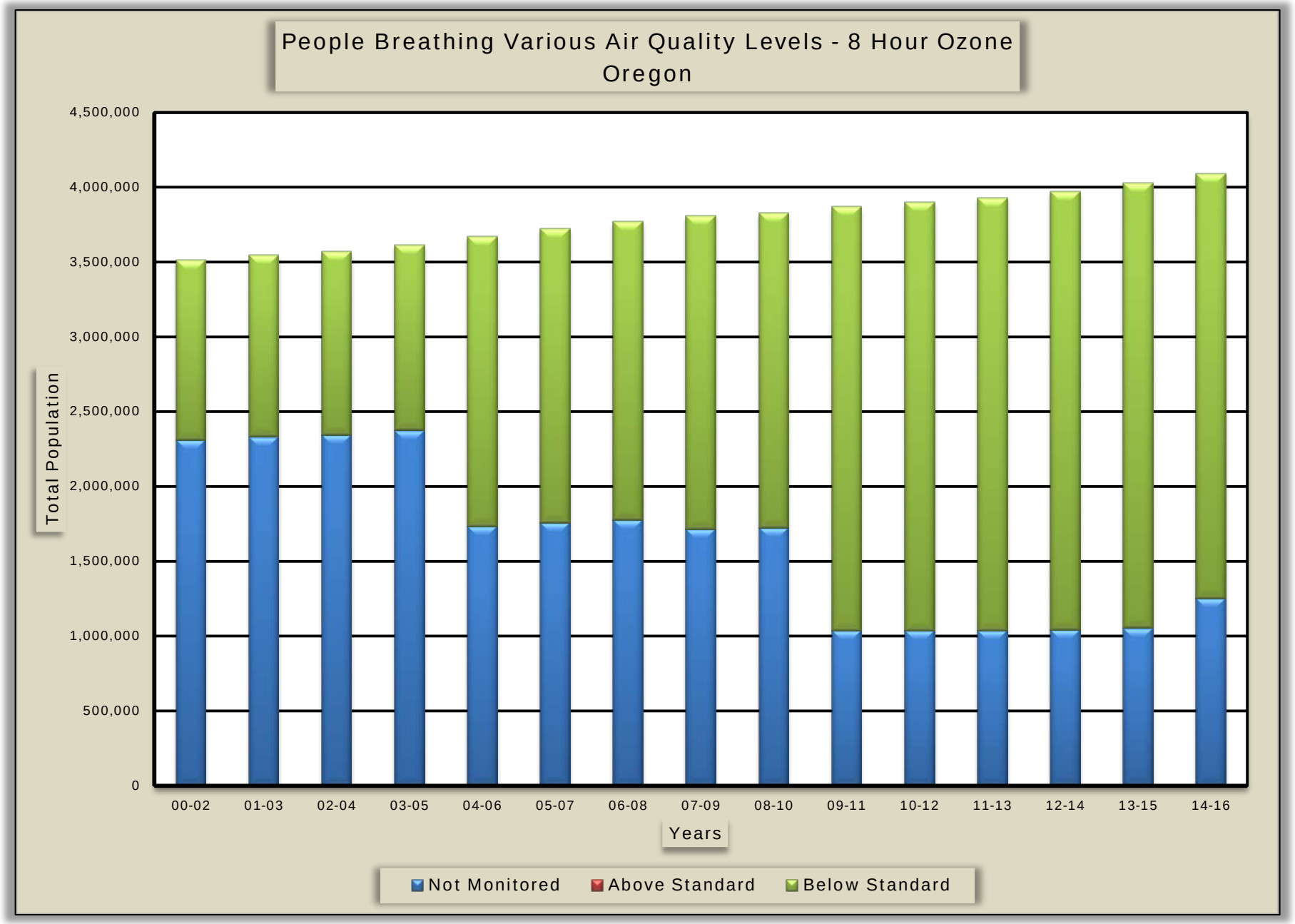
Grade	2000-2002	2002-2004	2004-2006	2006-2008	2008-2010	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016
A	2,502,306	1,918,894	534,798	598,607	2,091,705	1,909,451	249,079	1,003,646	1,021,197	2,047,034
B	81,877	0	407,503	457,076	0	7,212	178,106	641,791	7,200	85,387
C	0	0	36,921	116,059	0	73,683	1,536,822	347,409	785,500	3,646
D	0	0	0	66,732	78,238	118,181	86,725	0	72,579	22,570
F	0	0	105,215	116,059	66,380	0	96,873	100,503	242,026	0
Subtotal	2,584,182	1,918,894	1,084,437	1,354,532	2,236,323	2,108,527	2,147,605	2,093,350	2,128,502	2,158,637
NM	929,242	1,650,569	2,586,446	2,414,216	1,594,751	1,790,826	1,782,460	1,876,889	1,900,475	1,934,828
Total	3,513,424	3,569,463	3,670,883	3,768,749	3,831,074	3,899,353	3,930,065	3,970,239	4,028,977	4,093,465

People Breathing Year Round Particle Pollution (Annual PM-2.5)

Grade	2000-2002	2002-2004	2004-2006	2006-2008	2008-2010	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016
A	2,502,306	1,808,118	1,047,516	1,354,532	2,236,323	2,108,527	1,844,515	1,788,772	1,747,881	2,158,637
B	0	110,776	36,921	0	0	0	229,360	304,578	168,054	0
C	81,877	0	0	0	0	0	73,730	0	212,567	0
D	0	0	0	0	0	0	0	0	0	0
F	0	0	0	0	0	0	0	0	0	0
Subtotal	2,584,182	1,918,894	1,084,437	1,354,532	2,236,323	2,108,527	2,147,605	2,093,350	2,178,502	2,158,637
NM	929,242	1,650,569	2,586,446	2,414,216	1,594,751	1,790,826	1,782,460	1,876,889	1,900,475	1,934,828
Total	3,513,424	3,569,463	3,670,883	3,759,749	3,831,074	3,899,353	3,930,065	3,970,239	4,028,977	4,093,465

NM – Not Monitored

Figure OR-1


People Breathing Various Air Quality Levels - 8 Hour Ozone
Oregon
Total Population
4,500,000
4,000,000
3,500,000
3,000,000
2,500,000
2,000,000
1,500,000
1,000,000
500,000
0
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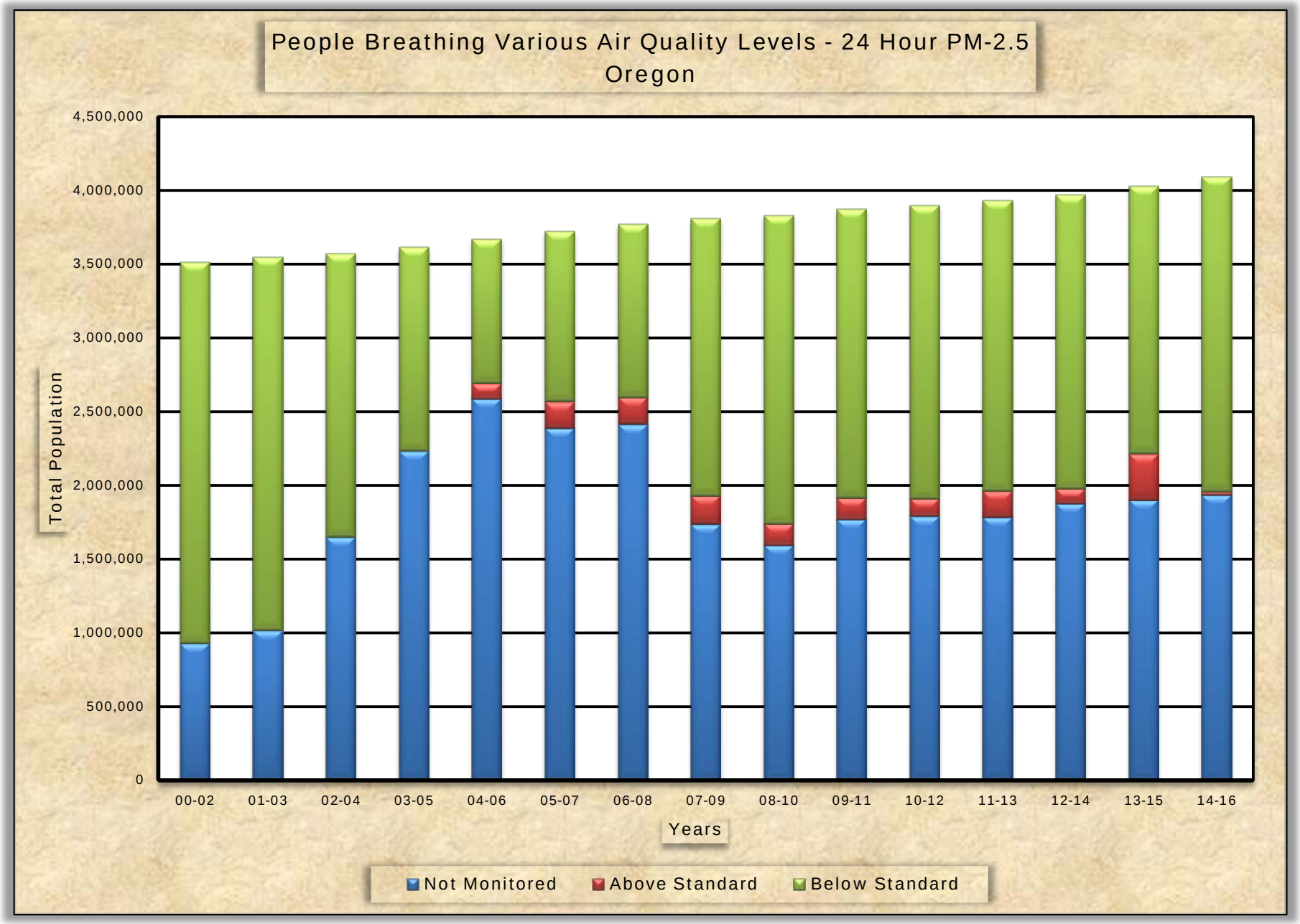
07-09
08-10
09-11
10-12
11-13
12-14
13-15
14-16
Years
Not Monitored
Above Standard
Below Standard

Figure OR-2


People Breathing Various Air Quality Levels - 24 Hour PM-2.5
Oregon
Total Population
4,500,000
4,000,000
3,500,000
3,000,000
2,500,000
2,000,000
1,500,000
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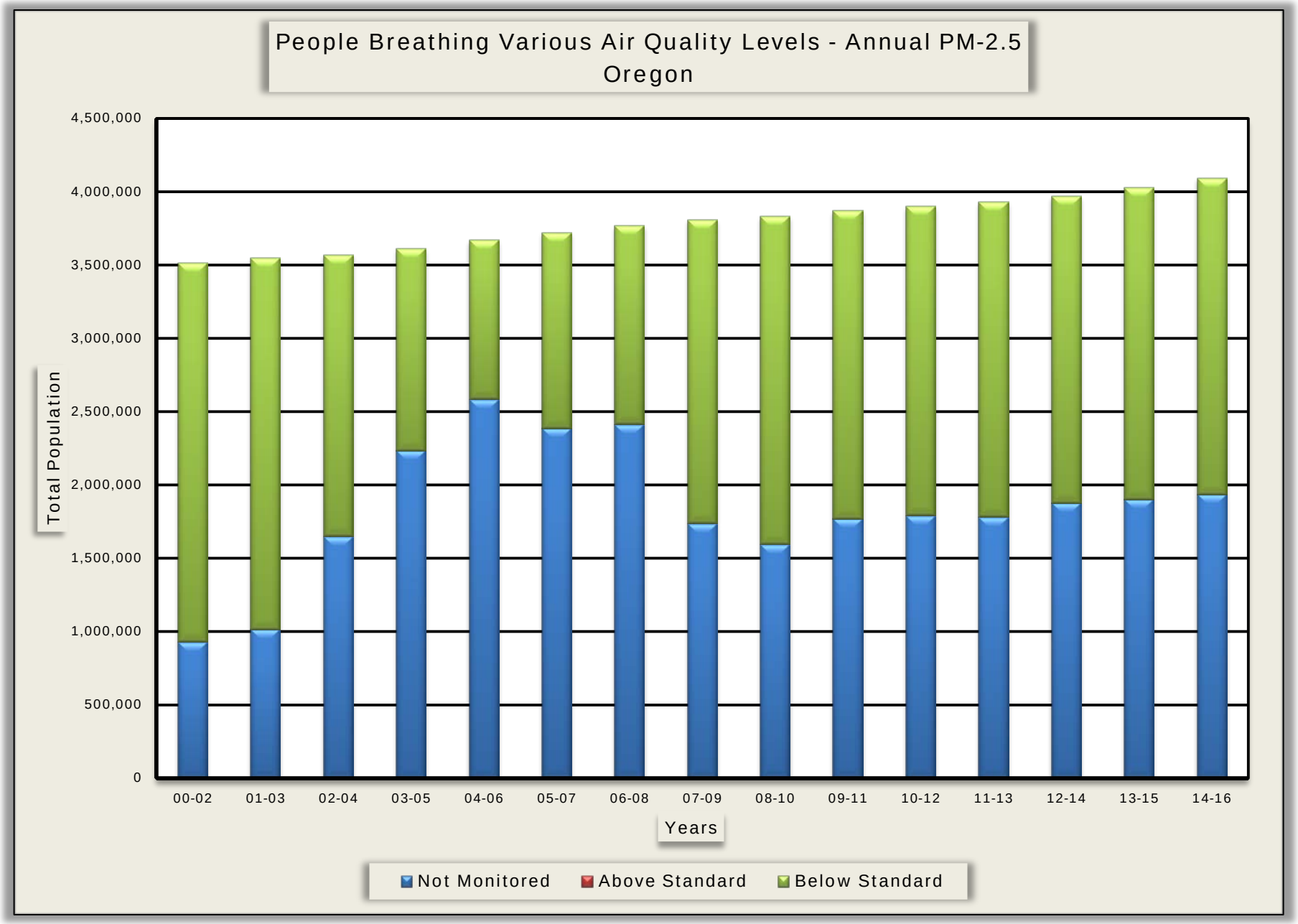
14-16
Years
Not Monitored
Above Standard
Below Standard

Figure OR-3


People Breathing Various Air Quality Levels - Annual PM-2.5
Oregon
Total Population
4,500,000
4,000,000
3,500,000
3,000,000
2,500,000
2,000,000
1,500,000
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03-05
04-06
05-07
06-08
07-09
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09-11
10-12
11-13
12-14
13-15
14-16
Years
Not Monitored
Above Standard
Below Standard

PENNSYLVANIA

Ozone

In the 2000 – 2002 time period, approximately 1.7 million people (12.4%) lived in counties that met the ozone standard. By 2014 – 2016 this had increased to approximately 8.7 million people (67.7%). The ozone standard was lowered from 0.085 ppm to 0.070 ppm. Figure PA-1 shows the distribution of people by year. The population weighted ozone design value in 2000 – 2002 was 0.091 ppm. By 2014 – 2016 this had lowered to a value of 0.068 ppm, a reduction of 25.3 percent.

24-Hour PM-2.5

In the 2000 – 2002 time period, approximately 8.9 million people (72.1%) lived in counties where 24-hour PM-2.5 levels met the standard. By 2014- 2016 this was approximately 8.0 million people (62.5%). The standard was lowered from 65 µg/m3 to 35 µg/m3. Figure PA-2 shows the distribution of people by year. The population weighted 24-hour PM-2.5 design value in 2000 – 2002 was 39 µg/m3. By 2014 – 2016 this had lowered to a value of 25 µg/m3, a reduction of 35.9 percent.

Annual PM-2.5

In the 2000 – 2002 time period, approximately 4.4 million people (35.8%) lived in counties where annual PM-2.5 levels met the standard. By 2014 – 2016 this had increased to approximately 7.8 million people (60.9%). The standard was lowered from 15 to 12 µg/m3. Figure PA-3 shows the distribution of people by year. The population weighted annual PM-2.5 design value in 2000 – 2002 was 15.1 µg/m3. By 2014 – 2016 this had lowered to a value of 10.2 µg/m3, a reduction of 32.5 percent.

PENNSYLVANIA

Table PA-1
2014 – 2016

		Ozone			Particle Pollution (PM-2.5)				
County	Population	Avg. DV	Grade	MM	Avg. 24-Hr DV	Grade	Avg. Ann DV	Grade	MM
Adams	102,180	0.067	C	N	21	A	6.6	A	N
Allegheny	1,225,365	0.068	C	Y	23	A	10.0	B	Y
Armstrong	66,486	0.068	C	N	22	A	11.0	C	N
Beaver	167,429	0.067	C	Y	22	A	10.0	B	N
Berks	414,812	0.066	C	Y	27	A	9.4	A	N
Blair	124,650	0.063	C	N	24	A	10.1	B	N
Bradford	60,770	0.055	A	N	ND	ND	ND	ND	ND
Bucks	**626,399**	**0.075**	**D**	**N**	ND	ND	ND	ND	ND
Cambria	134,732	0.062	B	N	26	A	10.7	B	N
Centre	161,464	0.064	C	Y	20	A	9.1	A	N
Chester	516,312	0.070	C	N	26	A	10.7	B	N
Clearfield	80,596	0.064	C	N	ND	ND	ND	ND	ND
Cumberland	248,506	ND	ND	ND	27	A	9.3	A	N
Dauphin	273,707	0.064	C	N	29	B	9.8	B	N
Delaware	**563,402**	**0.072**	**D**	**N**	26	A	11.5	C	N
Elk	30,480	0.066	C	N	ND	ND	ND	ND	ND
Erie	276,207	0.065	C	N	21	A	9.3	A	N
Franklin	153,851	0.060	B	N	ND	ND	ND	ND	ND
Greene	37,197	0.067	C	N	ND	ND	ND	ND	ND
Indiana	86,364	0.069	C	N	ND	ND	ND	ND	ND
Lackawanna	211,321	0.066	C	N	ND	ND	ND	ND	ND
Lancaster	538,500	0.065	C	Y	31	B	11.5	C	Y
Lawrence	87,294	0.067	C	N	ND	ND	ND	ND	ND
Lebanon	**138,863**	0.067	C	N	32	C	**12.2**	**D**	N
Lehigh	363,147	0.068	C	N	ND	ND	ND	ND	ND
Luzerne	316,383	0.064	C	N	ND	ND	ND	ND	ND
Lycoming	115,248	0.063	C	N	ND	ND	ND	ND	ND
Mercer	112,913	0.066	C	Y	ND	ND	ND	ND	ND
Monroe	166,098	0.065	C	N	18	A	7.6	A	N
Montgomery	821,725	0.070	C	N	ND	ND	ND	ND	ND
Northampton	302,294	0.067	C	Y	30	B	11.3	C	N
Philadelphia	1,567,872	0.068	C	Y	25	A	10.3	B	Y
Tioga	41,467	0.061	B	N	ND	ND	ND	ND	ND
Washington	207,981	0.066	C	Y	20	A	9.9	B	Y
Westmoreland	355,458	0.068	C	N	23	A	9.6	B	N
York	443,744	0.066	C	N	25	A	10.0	B	N

DV – Design Value ND - No Data MM – Multiple Monitors

PENNSYLVANIA

Table PA-2
Population Weighted Design Values

Period	Ozone (ppm)	24-Hour PM-2.5 (µg/m3)	Annual PM-2.5 (µg/m3)
2000 – 2002	0.091	39	15.1
2001 – 2003	0.090	41	15.0
2002 – 2004	0.085	38	14.5
2003 – 2005	0.081	38	14.7
2004 – 2006	0.080	36	14.2
2005 – 2007	0.081	37	14.2
2006 – 2008	0.079	35	13.4
2007 – 2009	0.075	32	12.7
2008 – 2010	0.074	30	11.9
2009 – 2011	0.073	29	11.5
2010 – 2012	0.077	28	11.3
2011 – 2013	0.073	28	11.0
2012 – 2014	0.069	26	10.6
2013 – 2015	0.067	27	10.5
2014 – 2016	0.068	25	10.2

PENNSYLVANIA

Table PA-2
People Breathing Ozone

Grade	2000-2002	2002-2004	2004-2006	2006-2008	2008-2010	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016
A	0	0	496,237	0	0	0	517,722	780,149	845,002	60,770
B	374,623	373,221	1,608,896	909,471	1,438,815	321,027	718,363	1,920,686	75,522	852,674
C	1,277,799	2,991,360	6,077,825	1,925,306	4,987,181	3,783,469	6,061,260	7,833,887	7,792,944	7,744,218
D	4,548,592	6,293,928	1,594,918	4,257,510	4,182,568	5,066,439	3,600,305	410,418	2,266,067	2,235,049
F	3,228,276	373,221	0	3,023,926	0	1,400,857	0	0	0	0
Subtotal	9,429,290	10,031,729	9,777,875	10,116,213	10,608,563	10,571,791	10,897,649	10,945,140	10,979,535	10,892,711
NM	2,901,742	2,378,993	2,732,934	2,496,072	2,093,816	2,191,745	1,876,152	1,842,069	1,822,968	1,891,516
Total	12,331,031	12,410,722	12,510,809	12,612,885	12,702,379	12,763,536	12,773,801	12,787,209	12,802,503	12,784,227

People Breathing Short-term Particle Pollution (24-Hour PM-2.5)

Grade	2000-2002	2002-2004	2004-2006	2006-2008	2008-2010	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016
A	8,763,264	9,391,344	0	0	1,683,505	4,143,283	3,571,940	4,753,465	4,062,745	6,441,128
B	0	113,412	212,595	1,281,980	3,869,807	4,002,863	2,284,909	1,792,832	1,857,379	1,196,313
C	126,558	113,412	3,139,158	4,256,358	1,226,842	175,620	1,401,377	1,160,713	1,801,474	318,363
D	0	0	4,064,665	2,720,810	0	0	153,941	0	0	153,171
F	0	0	1,586,540	407,024	203,891	175,620	0	0	0	0
Subtotal	8,889,822	9,618,168	9,002,958	8,666,172	6,984,045	8,497,386	7,412,167	7,707,010	7,721,598	8,108,975
NM	3,441,209	2,792,554	3,507,851	3,946,113	5,718,334	4,266,150	5,351,369	5,080,199	5,080,905	4,675,252
Total	12,331,031	12,410,722	12,510,809	12,612,885	12,702,379	12,763,536	12,773,801	12,787,209	12,802,503	12,784,227

People Breathing Year Round Particle Pollution (Annual PM-2.5)

Grade	2000-2002	2002-2004	2004-2006	2006-2008	2008-2010	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016
A	0	0	212,595	948,943	3,459,763	6,239,822	1,004,533	1,105,859	1,672,220	2,285,201
B	806,142	2,461,088	3,172,733	3,319,147	3,320,391	2,445,340	1,989,414	3,250,059	2,186,226	3,495,437
C	3,612,989	4,061,460	2,999,188	3,991,058	0	175,620	3,395,759	2,779,347	3,709,345	2,009,974
D	2,616,529	2,090,828	2,465,188	203,512	203,891	0	868,520	571,746	153,807	318,363
F	1,803,962	1,004,792	153,253	203,512	0	0	153,941	0	0	0
Subtotal	8,889,822	9,618,168	9,002,958	8,666,172	6,984,045	8,860,781	7,412,167	7,707,010	7,721,598	8,108,975
NM	3,441,209	2,792,554	3,507,851	3,946,113	5,718,334	3,902,755	5,351,369	5,080,199	5,080,905	4,675,252
Total	12,331,031	12,410,722	12,510,809	12,612,885	12,702,379	12,763,536	12,773,801	12,787,209	12,802,503	12,784,227

NM – Not Monitored

Figure PA-1

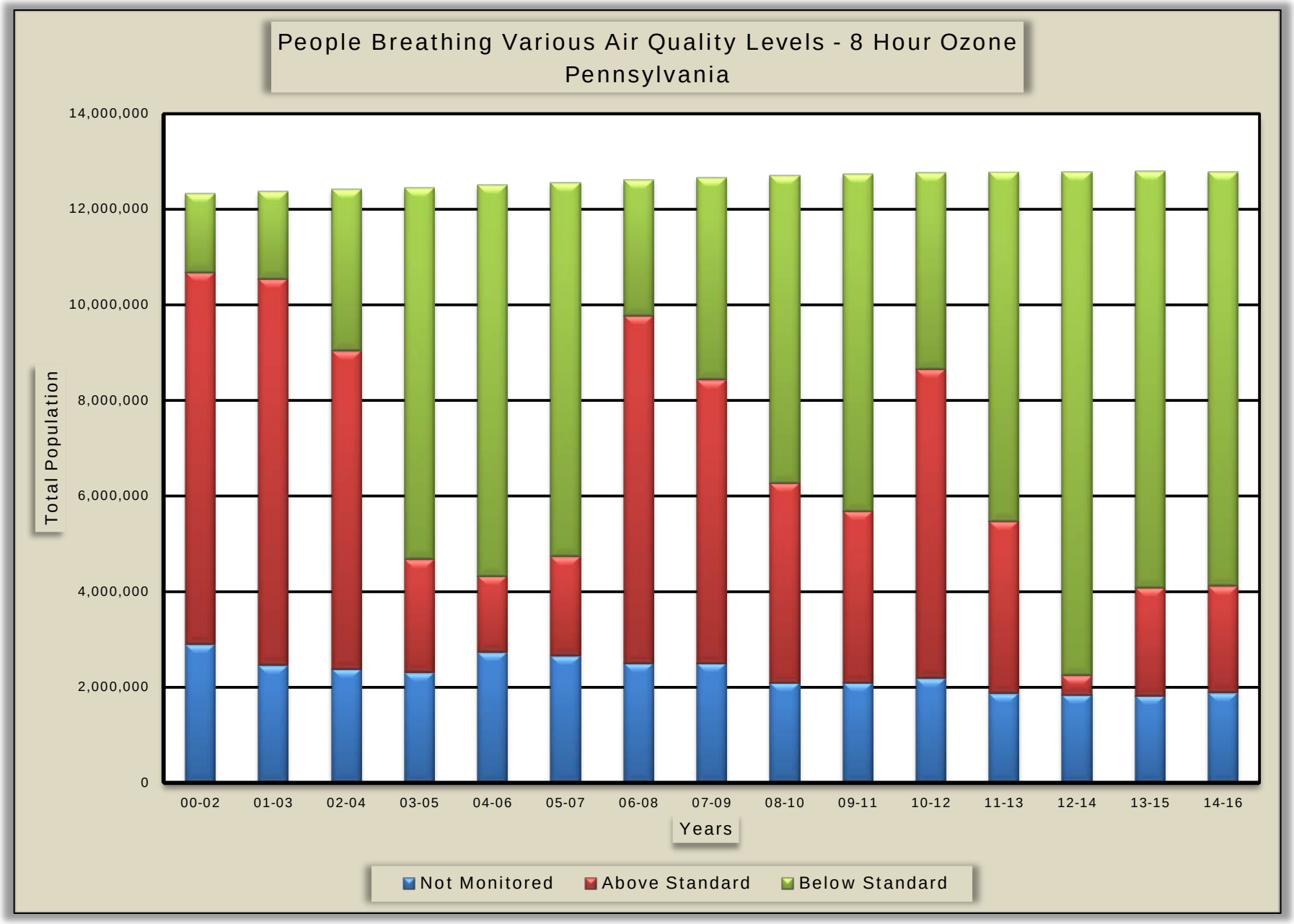

People Breathing Various Air Quality Levels - 8 Hour Ozone
Pennsylvania
14,000,000
12,000,000
10,000,000
8,000,000
6,000,000
4,000,000
2,000,000
0
Total Population
00-02
01-03
02-04
03-05
04-06
05-07
06-08
07-09
08-10
09-11
10-12
11-13
12-14
13-15
14-16
Years
Not Monitored
Above Standard
Below Standard

Figure PA-2

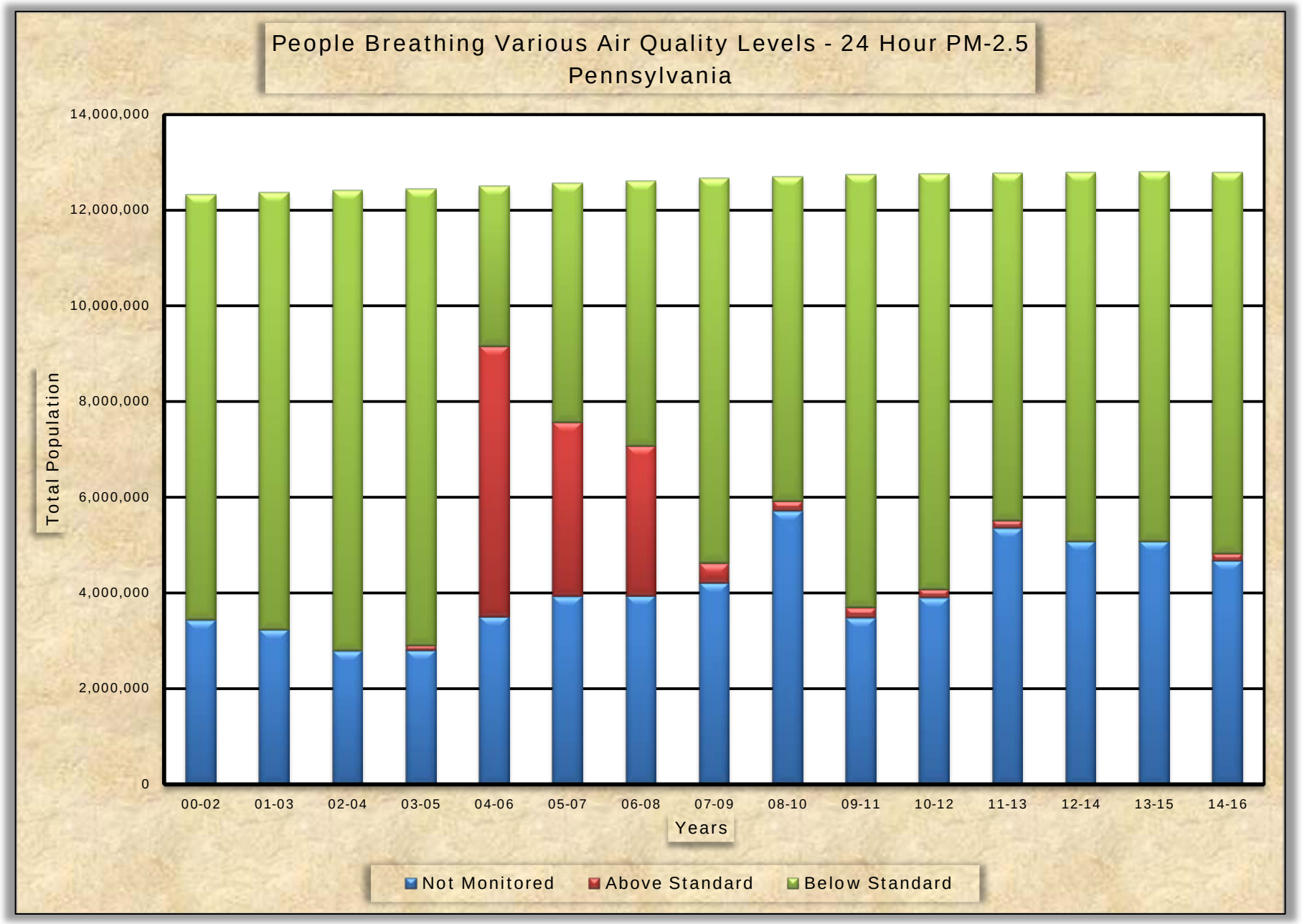
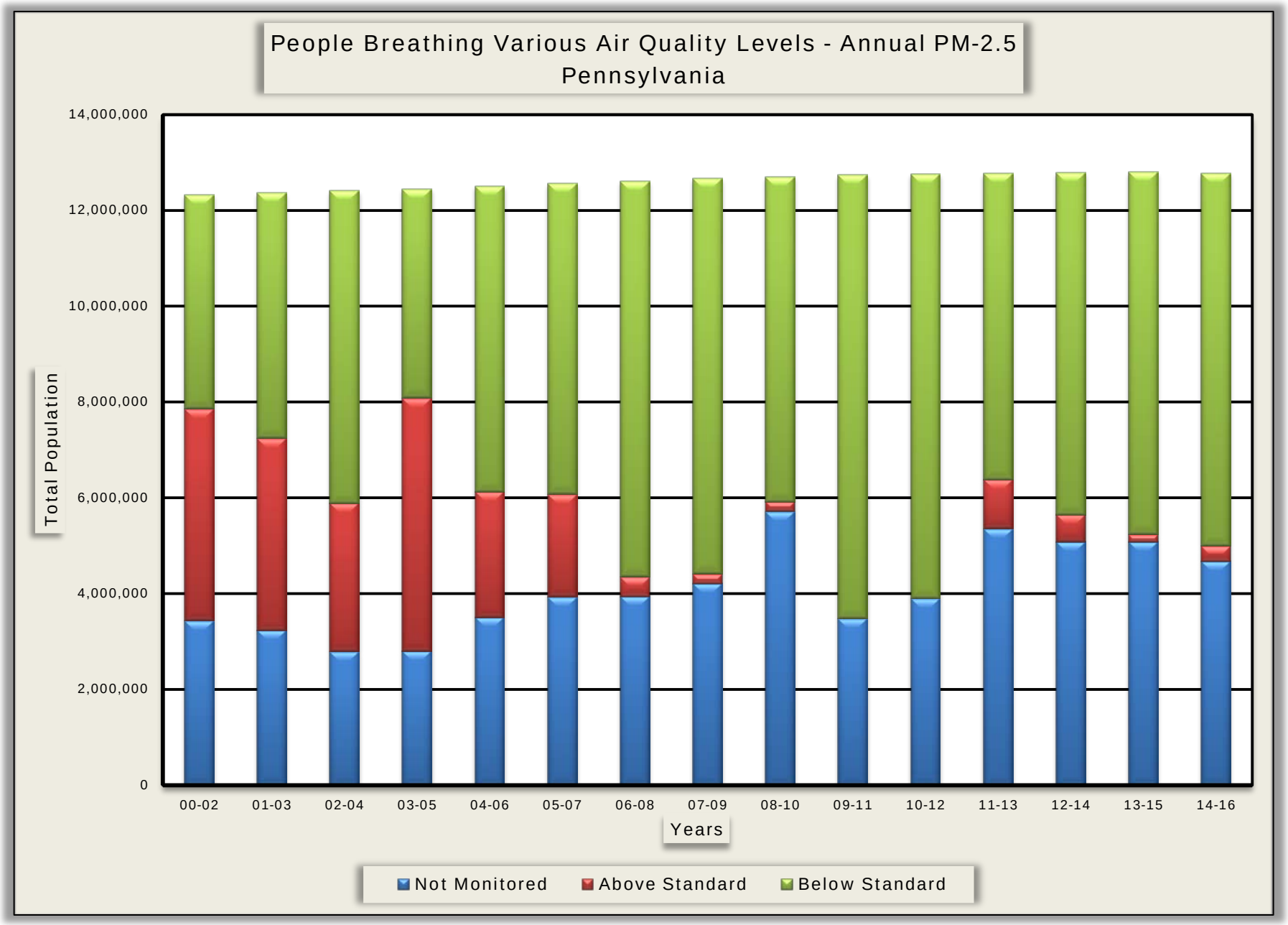

People Breathing Various Air Quality Levels - 24 Hour PM-2.5
Pennsylvania
Total Population
14,000,000
12,000,000
10,000,000
8,000,000
6,000,000
4,000,000
2,000,000
0
00-02
01-03
02-04
03-05
04-06
05-07
06-08
07-09
08-10
09-11
10-12
11-13
12-14
13-15
14-16
Years
Not Monitored
Above Standard
Below Standard

Figure PA-3


People Breathing Various Air Quality Levels - Annual PM-2.5
Pennsylvania
Total Population
14,000,000
12,000,000
10,000,000
8,000,000
6,000,000
4,000,000
2,000,000
0
00-02
01-03
02-04
03-05
04-06
05-07
06-08
07-09
08-10
09-11
10-12
11-13
12-14
13-15
14-16
Years
Not Monitored
Above Standard
Below Standard

RHODE ISLAND

Ozone

In the 2000 – 2002 time period, no people lived in counties that met the ozone standard. By 2014 – 2016 this had increased to approximately 0.9 million people (87.6%). The ozone standard was lowered from 0.085 ppm to 0.070 ppm. Figure RI-1 shows the distribution of people by year. The population weighted ozone design value in 2000 – 2002 was 0.092 ppm. By 2014 – 2016 this had lowered to a value of 0.069 ppm, a reduction of 25.0 percent.

24-Hour PM-2.5

In the 2000 – 2002 time period, approximately 0.9 million people (87.1%) lived in counties where 24-hour PM-2.5 levels met the standard. By 2014 - 2016 this was approximately 0.9 million people (87.5%). The remainder of the population lived in counties where PM-2.5 was not measured. The standard was lowered from 65 to 35 µg/m3. Figure RI-2 shows the distribution of people by year. The population weighted 24-hour PM-2.5 design value in 2000 – 2002 was 28 µg/m3. By 2014 – 2016 this had lowered to a value of 17 µg/m3, a reduction of 39.3 percent.

Annual PM-2.5

In the 2000 – 2002 time period, approximately 0.9 million people (87.1%) lived in counties where annual PM-2.5 levels met the standard. By 2014 – 2016 this was approximately 0.9 million people (87.5%). The remainder of the population lived in counties where PM-2.5 was not measured. The standard was lowered from 15 to 12 µg/m3. Figure RI-3 shows the distribution of people by year. The population weighted annual PM-2.5 design value in 2000 – 2002 was 10.2 µg/m3. By 2014 – 2016 this had lowered to a value of 6.4 µg/m3, a reduction of 37.3 percent.

Table RI-1

2014 – 2016

		Ozone			Particle Pollution (PM-2.5)				
County	Population	Avg. DV	Grade	MM	Avg.24-Hr DV	Grade	Avg. Ann DV	Grade	MM
Kent	165,614	0.070	C	N	13	A	4.5	A	N
Providence	633,673	0.068	C	N	18	A	7.2	A	Y
Washington	126,288	0.070	C	N	15	A	5.0	A	N

DV – Design Value ND - No Data MM- Multiple Monitors

RHODE ISLAND

Table RI-2
Population Weighted Design Values

Period	Ozone (ppm)	24-Hour PM-2.5 (µg/m3)	Annual PM-2.5 (µg/m3)
2000 – 2002	0.092	28	10.2
2001 – 2003	0.094	32	11.1
2002 – 2004	0.085	31	10.7
2003 – 2005	0.083	31	10.7
2004 – 2006	0.082	29	10.3
2005 – 2007	0.084	29	10.1
2006 – 2008	0.081	27	9.5
2007 – 2009	0.077	25	9.4
2008 – 2010	0.072	23	8.7
2009 – 2011	0.072	22	8.0
2010 – 2012	0.075	22	8.1
2011 – 2013	0.076	21	8.0
2012 – 2014	0.073	17	6.5
2013 – 2015	0.070	18	6.7
2014 – 2016	0.069	17	6.4

RHODE ISLAND

Table RI-3
People Breathing Ozone

Grade	2000-2002	2002-2004	2004-2006	2006-2008	2008-2010	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016
A	0	0	0	0	0	0	0	0	0	0
B	0	0	0	0	0	0	0	165,128	0	0
C	0	638,358	926,970	0	792,825	793,166	165,035	758,627	798,274	925,575
D	758,714	298,499	0	921,830	126,979	125,946	754,859	0	126,517	0
F	169,478	0	0	0	0	0	0	0	0	0
Subtotal	928,192	936,857	926,970	921,830	919,804	919,112	919,894	923,755	924,791	925,575
NM	137,803	137,722	136,126	133,173	132,763	131,180	131,617	131,418	131,507	130,851
Total	1,065,995	1,074,579	1,063,096	1,055,003	1,052,567	1,050,292	1,051,511	1,055,173	1,056,298	1,056,426

People Breathing Short-term Particle Pollution (24-Hour PM-2.5)

Grade	2000-2002	2002-2004	2004-2006	2006-2008	2008-2010	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016
A	928,192	808,897	800,213	638,186	626,667	793,166	793,685	923,755	924,791	924,575
B	0	0	0	156,972	0	0	0	0	0	0
C	0	0	0	0	0	0	0	0	0	0
D	0	0	0	0	0	0	0	0	0	0
F	0	0	0	0	0	0	0	0	0	0
Subtotal	928,192	808,897	800,213	795,158	626,667	793,166	793,635	923,755	924,791	924,575
NM	137,803	265,682	262,883	259,845	425,900	257,126	257,876	131,418	131,507	131,851
Total	1,065,995	1,074,579	1,063,096	1,055,003	1,052,567	1,050,292	1,051,511	1,055,173	1,056,298	1,056,426

People Breathing Year Round Particle Pollution (Annual PM-2.5)

Grade	2000-2002	2002-2004	2004-2006	2006-2008	2008-2010	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016
A	928,192	596,111	642,290	795,158	626,667	793,166	584,102	923,755	924,791	924,575
B	0	212,786	157,923	0	0	0	209,533	0	0	0
C	0	0	0	0	0	0	0	0	0	0
D	0	0	0	0	0	0	0	0	0	0
F	0	0	0	0	0	0	0	0	0	0
Subtotal	928,192	808,897	800,213	795,158	626,667	793,166	793,635	923,755	924,791	924,575
NM	137,803	265,682	262,883	259,845	425,900	257,126	257,876	131,418	131,507	131,851
Total	1,065,995	1,074,579	1,063,096	1,055,003	1,052,567	1,050,292	1,051,511	1,055,173	1,056,298	1,056,426

NM – Not Monitored

Figure RI-1

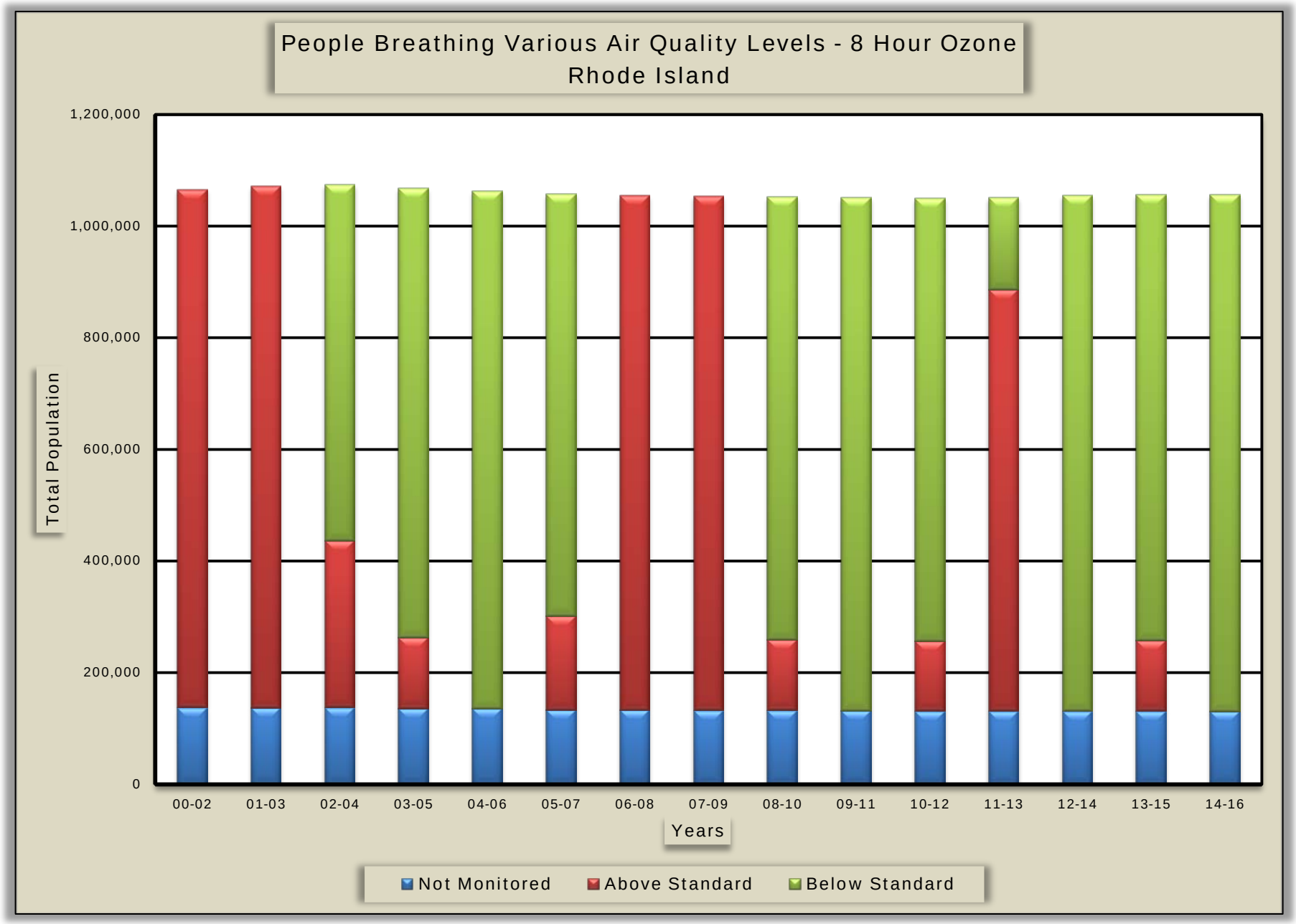

People Breathing Various Air Quality Levels - 8 Hour Ozone
Rhode Island
1,200,000
1,000,000
800,000
600,000
400,000
200,000
0
Total Population
00-02
01-03
02-04
03-05
04-06
05-07
06-08
07-09
08-10
09-11
10-12
11-13
12-14
13-15
14-16
Years
Not Monitored
Above Standard
Below Standard

Figure RI-2

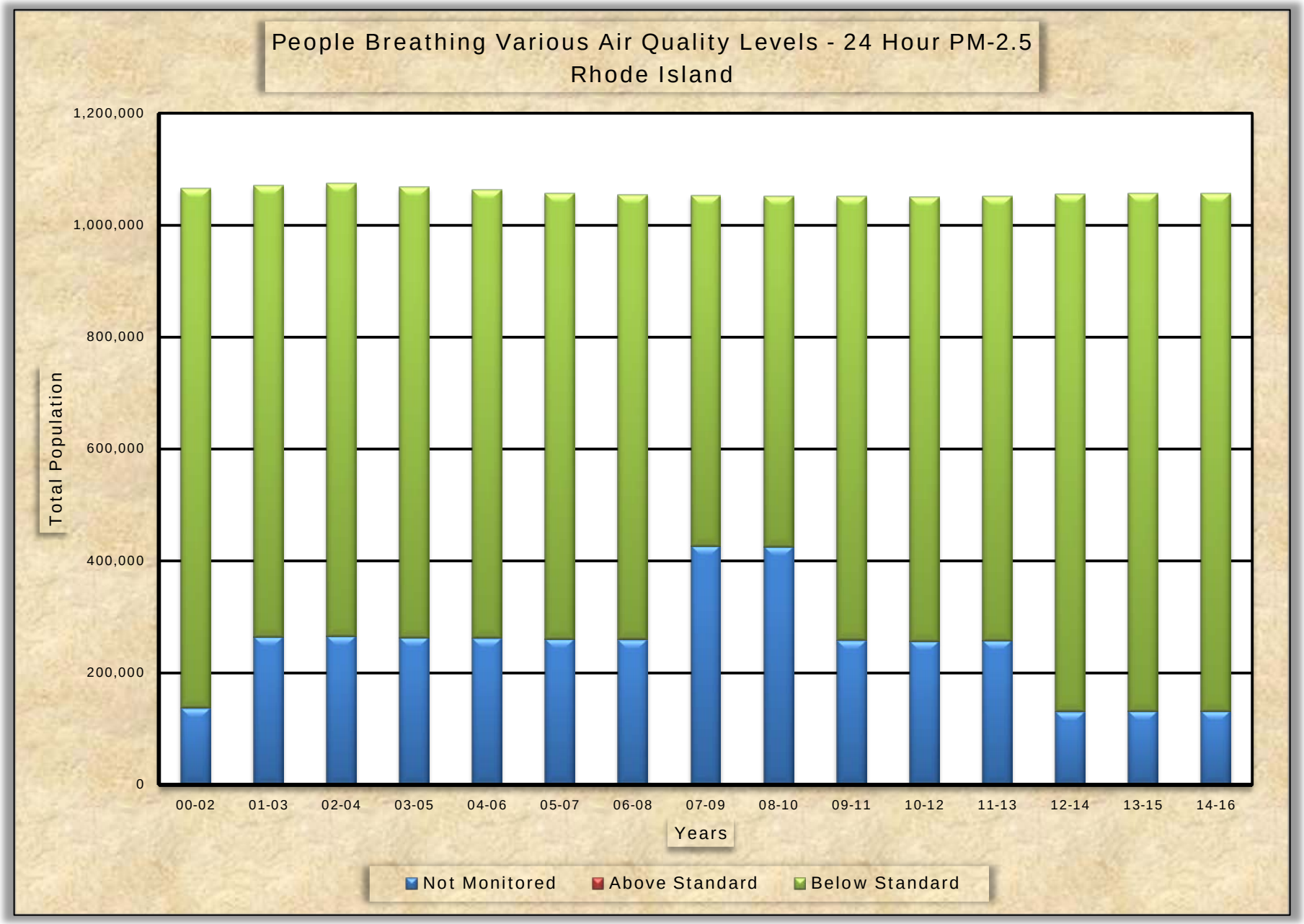
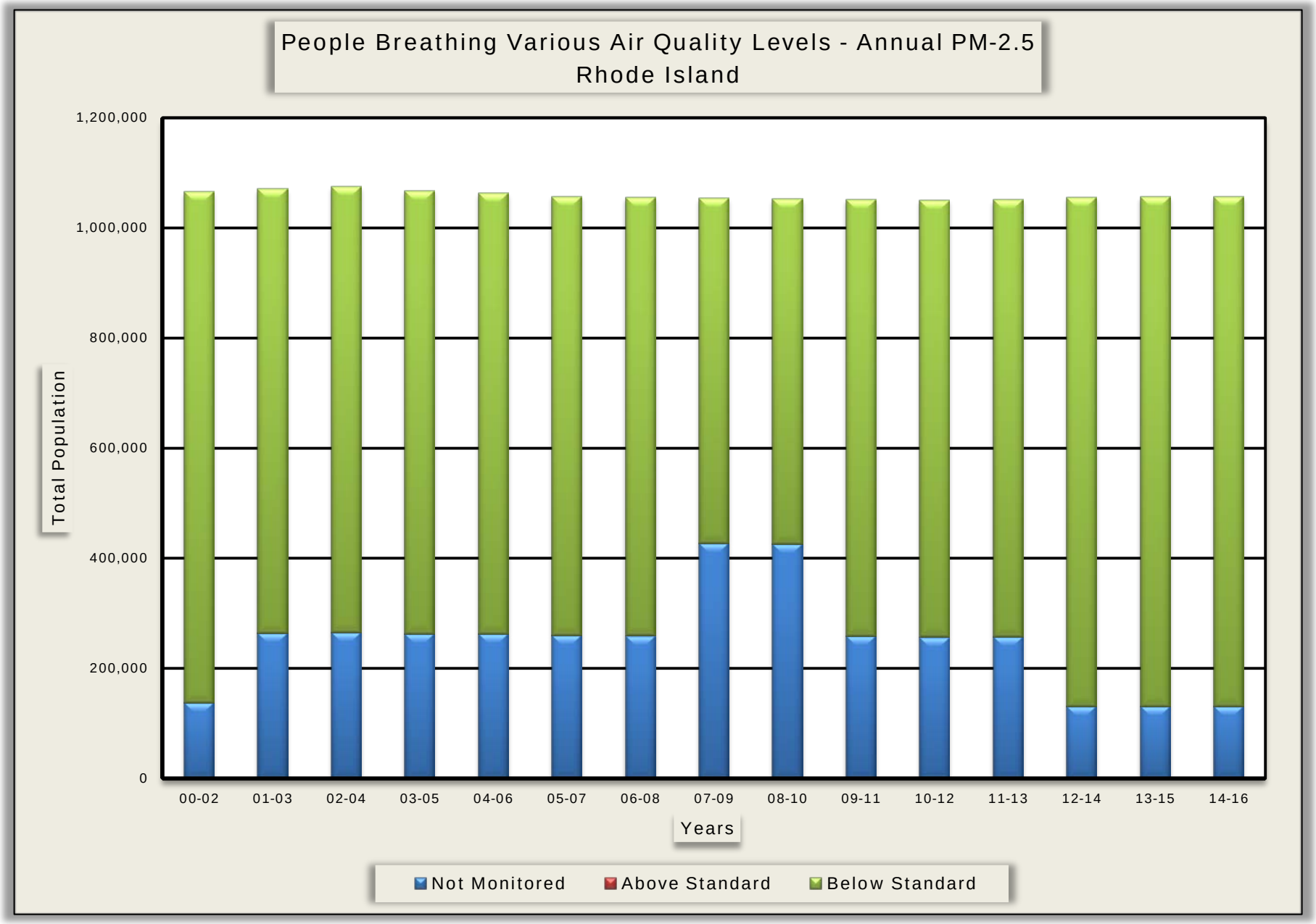

People Breathing Various Air Quality Levels - 24 Hour PM-2.5
Rhode Island
1,200,000
1,000,000
800,000
600,000
400,000
200,000
0
Total Population
00-02
01-03
02-04
03-05
04-06
05-07
06-08
07-09
08-10
09-11
10-12
11-13
12-14
13-15
14-16
Years
Not Monitored
Above Standard
Below Standard

Figure RI-3


People Breathing Various Air Quality Levels - Annual PM-2.5
Rhode Island
1,200,000
1,000,000
800,000
600,000
400,000
200,000
0
Total Population
00-02
01-03
02-04
03-05
04-06
05-07
06-08
07-09
08-10
09-11
10-12
11-13
12-14
13-15
14-16
Years
Not Monitored
Above Standard
Below Standard

SOUTH CAROLINA

Ozone

In the 2000 – 2002 time period, 1.3 million people (30.9%) lived in counties that met the ozone standard. By 2014 – 2016 this had increased to approximately 2.8 million people (57.3%). The remainder of the population lived in counties where ozone was not monitored. The ozone standard was lowered from 0.085 ppm to 0.070 ppm. Figure SC-1 shows the distribution of people by year. The population weighted ozone design value in 2000 – 2002 was 0.082 ppm. By 2014 – 2016 this had lowered to a value of 0.061 ppm, a reduction of 25.6 percent.

24-Hour PM-2.5

In the 2000 – 2002 time period, approximately 2.0 million people (49.6%) lived in counties where 24-hour PM-2.5 levels met the standard. By 2014 - 2016 this was approximately 2.2 million people (43.9%). The remainder of the population lived in counties where PM-2.5 was not measured. The standard was lowered from 65 you 35 µg/m3. Figure SC-2 shows the distribution of people by year. The population weighted 24-hour PM-2.5 design value in 2000 – 2002 was 29 µg/m3. By 2014 -2016 this had lowered to a value of 17 µg/m3, a reduction of 41.4 percent.

Annual PM-2.5

In the 2000 – 2002 time period, approximately 2.0 million people (49.6%) lived in counties where annual PM-2.5 levels met the standard. By 2014 – 2016 this was approximately 2.2 million people (43.9%). The remainder of the population lived in counties where PM-2.5 was not measured. The standard was lowered from 15 to 12 µg/m3. Figure SC-3 shows the distribution of people by year. The population weighted annual PM-2.5 design value in 2000 – 2002 was 13.6 µg/m3. By 2014 -2016 this had lowered to a value of 8.3 µg/m3, a reduction of 39.0 percent.

SOUTH CAROLINA

Table SC-1
2014 – 2016

		Ozone			Particle Pollution (PM-2.5)				
County	Population	Avg. DV	Grade	MM	Avg. 24-Hr DV	Grade	Avg. Ann DV	Grade	MM
Abbeville	24,872	0.059	B	N	ND	ND	ND	ND	ND
Aiken	167,458	0.061	B	N	ND	ND	ND	ND	ND
Anderson	196,568	0.061	B	N	ND	ND	ND	ND	ND
Berkeley	210,898	0.057	B	N	ND	ND	ND	ND	ND
Charleston	396,484	0.057	B	N	15	A	7.5	A	Y
Chesterfield	46,013	0.060	B	N	15	A	7.8	A	N
Colleton	37,923	0.056	B	N	ND	ND	ND	ND	ND
Darlington	67,234	0.063	C	N	ND	ND	ND	ND	ND
Edgefield	26,358	0.059	B	N	17	A	6.2	A	N
Florence	138,742	ND	ND	ND	18	A	8.6	A	N
Greenville	498,766	0.065	C	N	17	A	8.4	A	Y
Lexington	286,196	ND	ND	ND	19	A	9.1	A	N
Oconee	76,365	0.063	C	N	16	A	6.2	A	N
Pickens	123,863	0.062	B	Y	ND	ND	ND	ND	ND
Richland	409,549	0.059	B	Y	18	A	8.7	A	Y
Spartanburg	301,463	0.067	C	N	18	A	8.7	A	N
York	258,526	0.059	B	N	ND	ND	ND	ND	ND

DV – Design Value ND - No Data MM – Multiple Monitors

Table SC-2
Population Weighted Design Values

Period	Ozone (ppm)	24-Hour PM-2.5 (µg/m3)	Annual PM-2.5 (µg/m3)
2000 – 2002	0.082	29	13.6
2001 – 2003	0.080	27	12.6
2002 – 2004	0.079	27	12.5
2003 – 2005	0.076	30	13.0
2004 – 2006	0.076	31	13.5
2005 – 2007	0.076	30	13.2
2006 – 2008	0.075	27	12.7
2007 – 2009	0.071	24	11.4
2008 – 2010	0.068	22	10.5
2009 – 2011	0.067	23	10.7
2010 – 2012	0.068	22	10.3
2011 – 2013	0.064	21	9.5
2012 – 2014	0.061	18	9.0
2013 – 2015	0.060	18	8.6
2014 – 2016	0.061	17	8.3

SOUTH CAROLINA

Table SC-3
People Breathing Ozone

Grade	2000-2002	2002-2004	2004-2006	2008-2010	2009-2011	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016
A	0	0	0	0	0	0	272,354	530,240	297,881	136,516
B	500,445	669,375	1,498,723	1,160,713	1,559,751	1,527,800	1,892,566	2,284,546	1,898,166	1,563,049
C	767,972	1,268,462	716,777	780,689	1,153,289	121,727	614,695	0	660,273	1,141,776
D	788,664	115,250	0	284,307	0	0	0	0	0	0
F	0	0	0	0	0	0	0	0	0	0
Subtotal	2,057,080	2,053,087	1,215,500	2,225,709	2,713,040	2,745,727	2,779,616	2,814,786	2,856,320	2,841,341
NM	2,050,715	2,157,834	2,142,347	2,399,655	1,966,190	1,977,996	1,995,223	2,017,696	2,039,826	2,119,778
Total	4,107,795	4,210,921	4,357,847	4,625,364	4,679,230	4,723,723	4,774,839	4,832,482	4,896,146	4,961,119

People Breathing Short-term Particle Pollution (24-Hour PM-2.5)

Grade	2000-2002	2002-2004	2004-2006	2006-2008	2008-2010	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016
A	2,038,396	2,469,116	167,413	1,249,671	1,333,930	1,996,146	2,022,005	2,048,672	2,078,742	2,179,926
B	0	0	1,139,307	718,415	0	0	0	0	0	0
C	0	0	1,104,622	0	0	0	0	0	0	0
D	0	0	0	0	0	0	0	0	0	0
F	0	0	0	0	0	0	0	0	0	0
Subtotal	2,038,396	2,469,116	2,411,342	1,968,086	1,333,930	1,996,146	2,022,005	2,048,672	2,078,742	2,179,926
NM	2,069,399	1,741,805	1,946,505	2,560,910	3,341,434	2,727,577	2,752,834	2,783,810	2,817,404	2,781,193
Total	4,107,795	4,210,921	4,357,847	4,528,996	4,625,364	4,723,723	4,774,839	4,832,482	4,896,146	4,961,119

People Breathing Year Round Particle Pollution (Annual PM-2.5)

Grade	2000-2002	2002-2004	2004-2006	2006-2008	2008-2010	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016
A	356,174	904,934	386,116	415,010	1,333,930	1,996,146	961,241	1,770,784	2,078,742	2,179,926
B	412,517	1,164,863	673,155	861,587	0	0	1,060,764	277,888	0	0
C	1,269,706	199,660	1,144,093	691,489	0	0	0	0	0	0
D	0	199,660	207,979	0	0	0	0	0	0	0
F	0	0	0	0	0	0	0	0	0	0
Subtotal	2,038,396	2,469,116	2,411,342	1,968,086	1,333,930	1,996,146	2,022,005	2,048,672	2,078,742	2,179,926
NM	2,069,399	1,741,805	1,946,505	2,560,910	3,341,434	2,727,577	2,752,834	2,783,810	2,817,404	2,781,193
Total	4,107,795	4,210,921	4,357,847	4,528,996	4,625,364	4,723,723	4,774,839	4,832,482	4,896,146	4,961,119

NM – Not Monitored

Figure SC-1

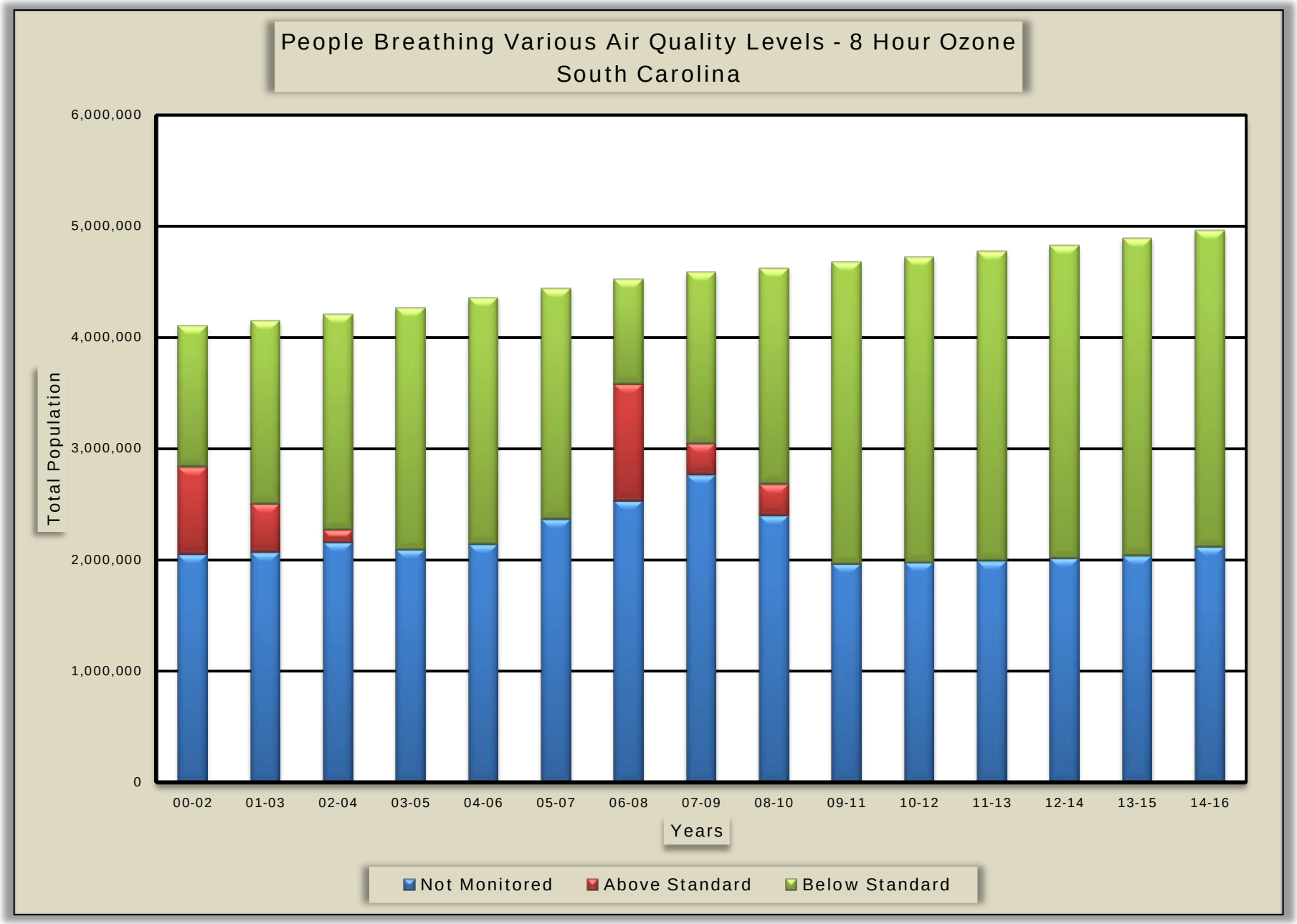

People Breathing Various Air Quality Levels - 8 Hour Ozone
South Carolina
Total Population
6,000,000
5,000,000
4,000,000
3,000,000
2,000,000
1,000,000
0
00-02
01-03
02-04
03-05
04-06
05-07
06-08
07-09
08-10
09-11
10-12
11-13
12-14
13-15
14-16
Years
Not Monitored
Above Standard
Below Standard

Figure SC-2

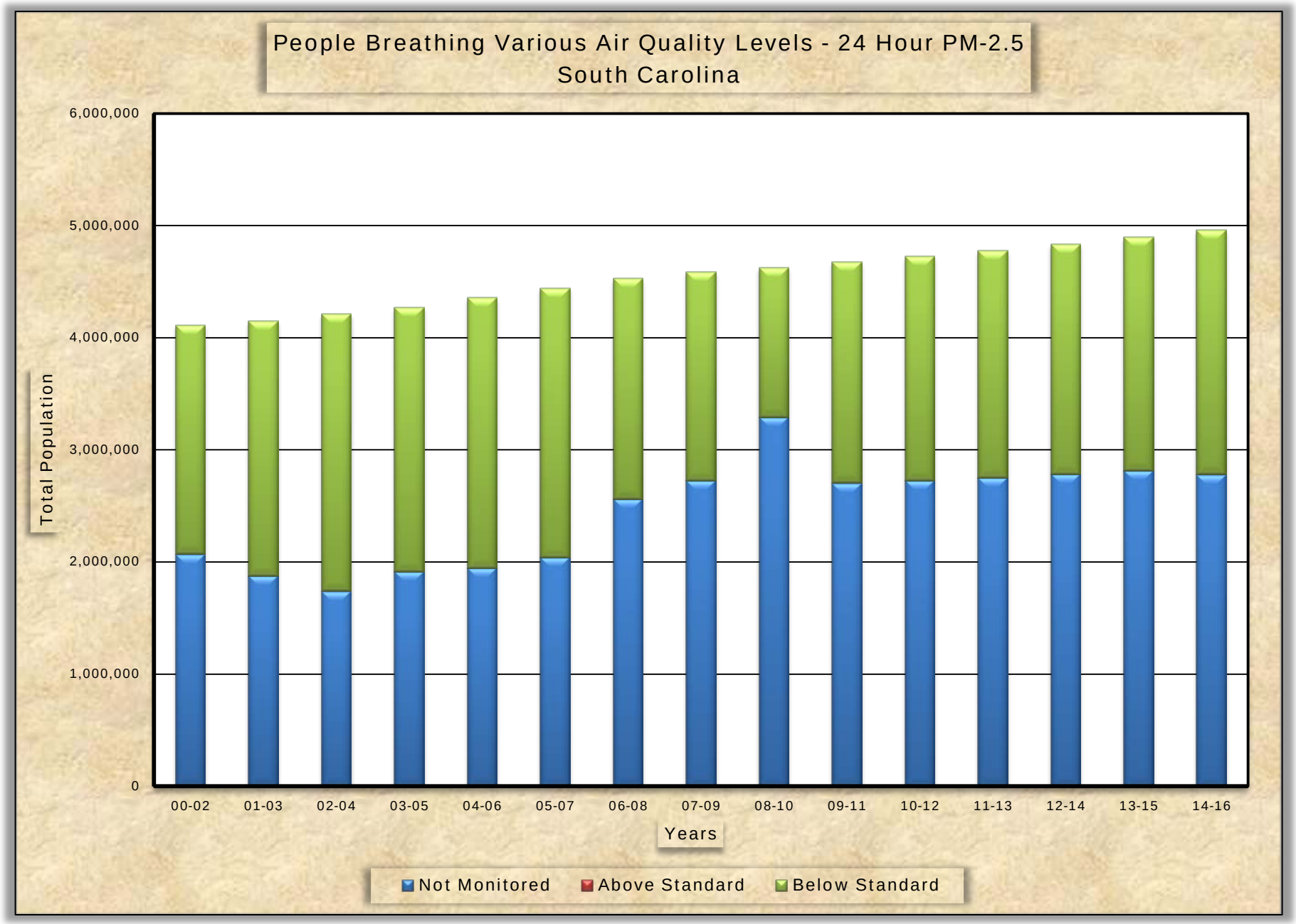
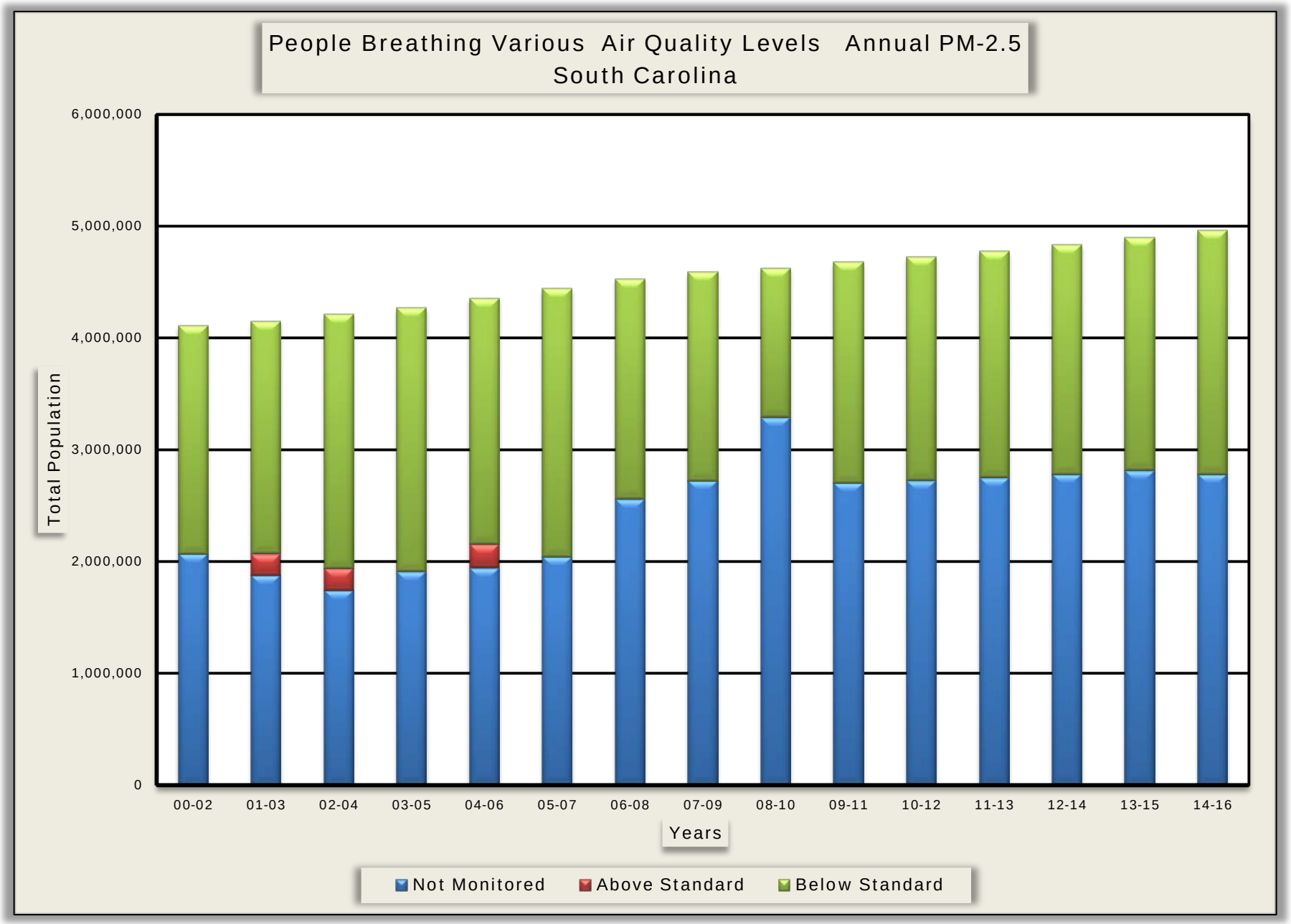

People Breathing Various Air Quality Levels - 24 Hour PM-2.5
South Carolina
Total Population
6,000,000
5,000,000
4,000,000
3,000,000
2,000,000
1,000,000
0
00-02
01-03
02-04
03-05
04-06
05-07
06-08
07-09
08-10
09-11
10-12
11-13
12-14
13-15
14-16
Years
Not Monitored
Above Standard
Below Standard

Figure SC-3


People Breathing Various Air Quality Levels Annual PM-2.5
South Carolina
Total Population
6,000,000
5,000,000
4,000,000
3,000,000
2,000,000
1,000,000
0
00-02
01-03
02-04
03-05
04-06
05-07
06-08
07-09
08-10
09-11
10-12
11-13
12-14
13-15
14-16
Years
Not Monitored
Above Standard
Below Standard

SOUTH DAKOTA

Ozone

In the 2000 – 2002 time period, there were no ozone monitors and no people lived in counties where measured air quality met the ozone standard. By 2014 – 2016 this had increased to approximately 0.28 million people (31.9%). The remainder of the population lived in counties where ozone was not measured. The ozone standard was lowered from 0.085 ppm to 0.070 ppm. Figure SD-1 shows the distribution of people by year. The population weighted ozone design value in 2002 – 2004 was 0.068 ppm. By 2014 – 2016 this had lowered to a value of 0.062 ppm, a reduction of 8.8 percent.

24-Hour PM-2.5

In the 2000 – 2002 time period, approximately 0.3 million people (40.8%) lived in counties where 24-hour PM-2.5 levels met the standard. By 2014 - 2016 this was approximately 0.42 million people (49.1%). The remainder of the population lived in counties where PM-2.5 was not measured. The standard was lowered from 65 to 35 µg/m3. Figure SD-2 shows the distribution of people by year. The population weighted 24-hour PM-2.5 design value in 2000 – 2002 was 23 µg/m3. By 2014 – 2016 this had lowered to a value of 18 µg/m3, a reduction of 21.7 percent.

Annual PM-2.5

In the 2000 – 2002 time period, approximately 0.3 million people (40.8%) lived in counties where annual PM-2.5 levels met the standard. By 2014 – 2016 this was approximately 0.42 million people (49.1%). The remainder of the population lived in counties where PM-2.5 was not measured. The standard was lowered from 15 to 12 µg/m3. Figure SD-3 shows the distribution of people by year. The population weighted annual PM-2.5 design value in 2000 – 2002 was 8.9 µg/m3. By 2014 – 2016 this had lowered to a value of 6.7 µg/m3, a reduction of 24.7 percent.

SOUTH DAKOTA

Table SD-1

2014 – 2016

		Ozone			Particle Pollution (PM-2.5)				
County	Population	Avg. DV	Grade	MM	Avg. 24-Hr DV	Grade	Avg. Ann DV	Grade	MM
Brookings	34,135	0.061	B	N	15	A	5.8	A	N
Brown	39,128	ND	ND	ND	15	A	6.2	A	N
Codington	28,063	ND	ND	ND	15	A	5.5	A	N
Custer	8,596	0.058	B	N	13	A	2.7	A	N
Jackson	3,326	0.058	B	N	13	A	3.7	A	N
Meade	27,693	0.057	B	N	ND	ND	ND	ND	ND
Minnehaha	187,318	0.063	C	N	20	A	7.6	A	N
Pennington	109,372	ND	ND	ND	19	A	6.3	A	N
Union	14,934	0.061	B	N	19	A	7.4	A	N

DV – Design Value ND - No Data MM – Multiple Monitors

Table SD-2

Population Weighted Design Values

Period	Ozone (ppm)	24-Hour PM-2.5 (µg/m3)	Annual PM-2.5 (µg/m3)
2000 – 2002	ND	23	8.9
2001 – 2003	ND	21	8.7
2002 – 2004	0.068	19	7.5
2003 – 2005	0.066	21	9.1
2004 – 2006	0.065	21	9.1
2005 – 2007	0.066	21	9.0
2006 – 2008	0.063	20	8.6
2007 – 2009	0.060	20	8.3
2008 – 2010	0.061	21	8.2
2009 – 2011	0.062	21	7.8
2010 – 2012	0.066	20	7.6
2011 – 2013	0.066	19	7.6
2012 – 2014	0.066	19	7.4
2013 – 2015	0.063	20	7.8
2014 – 2016	0.062	18	6.7

SOUTH DAKOTA

Table SD-3
People Breathing Ozone

Grade	2000-2002	2002-2004	2004-2006	2006-2008	2008-2010	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016
A	0	0	258,009	0	68,646	3,191	3,216	0	0	0
B	0	92,560	0	174,380	169,468	256,912	83,467	87,013	87,559	88,684
C	0	0	0	0	0	0	179,640	182,882	185,197	187,318
D	0	0	0	0	0	0	0	0	0	0
F	0	0	0	0	0	0	0	0	0	0
Subtotal	0	92,560	258,009	174.380	238,114	260,103	266,323	269,895	272,756	276,002
NM	760,020	677,836	525,024	624,744	576,066	573,251	578,554	583,280	585,713	589,452
Total	760,020	770,396	783,033	799,124	814,180	833,354	844,877	853,175	858,469	765,454

People Breathing Short-term Particle Pollution (24-Hour PM-2.5)

Grade	2000-2002	2002-2004	2004-2006	2006-2008	2008-2010	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016
A	309,715	340,933	350,638	369,729	377,386	403,335	410,642	417,532	292,970	424,872
B	0	0	0	0	0	0	0	0	0	0
C	0	0	0	0	0	0	0	0	0	0
D	0	0	0	0	0	0	0	0	0	0
F	0	0	0	0	0	0	0	0	0	0
Subtotal	309,715	340,933	350,638	369,729	377,386	403,335	410,642	417,532	292,970	424,872
NM	450,305	429,463	432,395	429,395	436,794	430,019	434,235	435,643	565,439	440,582
Total	760,020	770,396	783,033	799,124	814,180	833,354	844,877	853,175	858,469	865,454

People Breathing Year Round Particle Pollution (Annual PM-2.5)

Grade	2000-2002	2002-2004	2004-2006	2006-2008	2008-2010	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016
A	309,715	340,933	350,638	369,729	377,386	403,335	382,789	417,532	292,970	424,872
B	0	0	0	0	0	0	27,853	0	0	0
C	0	0	0	0	0	0	0	0	0	0
D	0	0	0	0	0	0	0	0	0	0
F	0	0	0	0	0	0	0	0	0	0
Subtotal	309,715	340,933	350,638	369,729	377,386	403,335	410,648	417,532	292,970	424,872
NM	450,305	429,463	432,395	429,395	436,794	430,019	434,235	435,643	565,499	440,582
Total	760,020	770,396	783,033	799,124	814,180	833,354	844,877	853,175	858,469	865,454

NM –Not Monitored

Figure SD-1

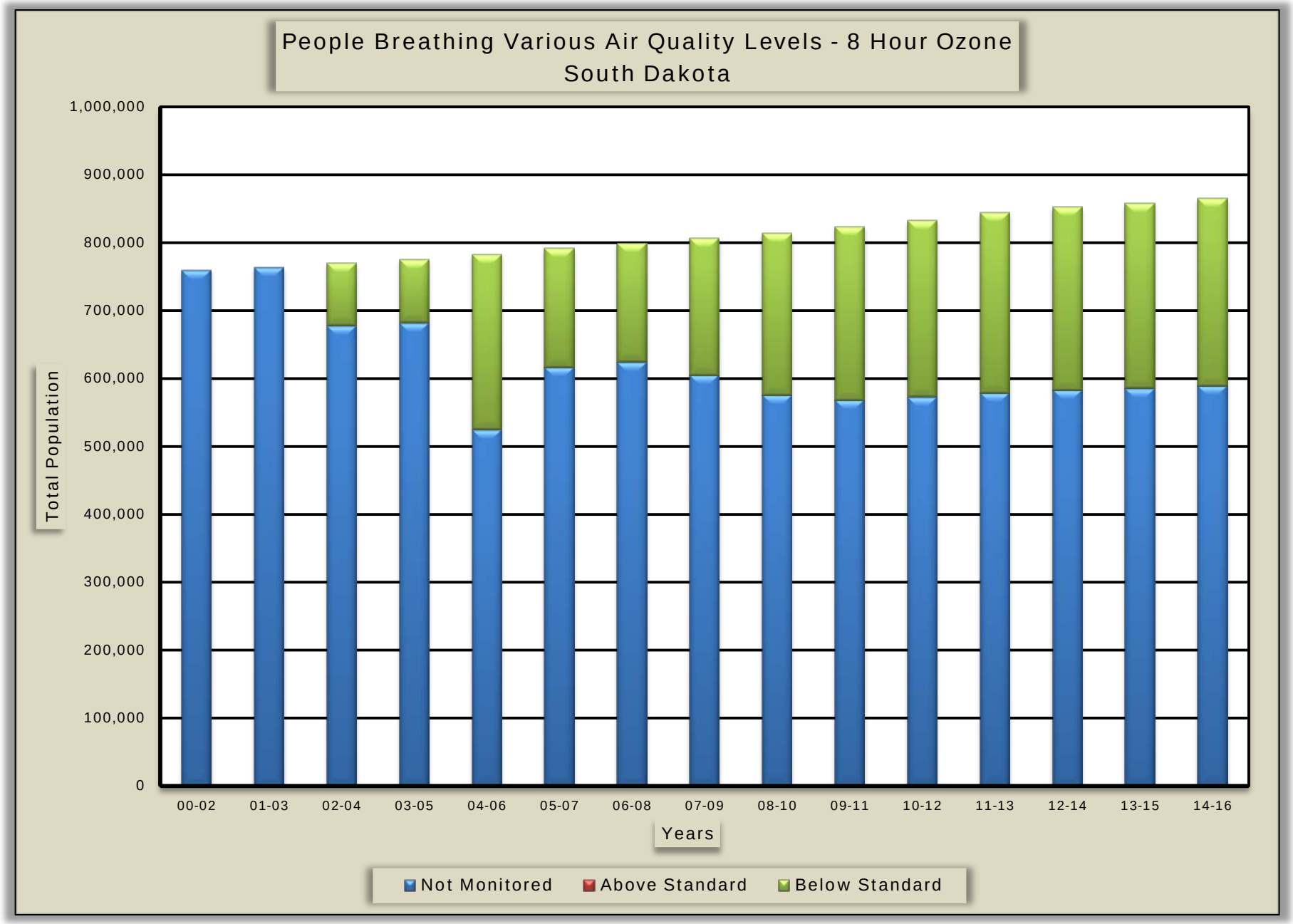

People Breathing Various Air Quality Levels - 8 Hour Ozone
South Dakota
Total Population
1,000,000
900,000
800,000
700,000
600,000
500,000
400,000
300,000
200,000
100,000
0
00-02
01-03
02-04
03-05
04-06
05-07
06-08
07-09
08-10
09-11
10-12
11-13
12-14
13-15
14-16
Years
Not Monitored
Above Standard
Below Standard

Figure SD-2

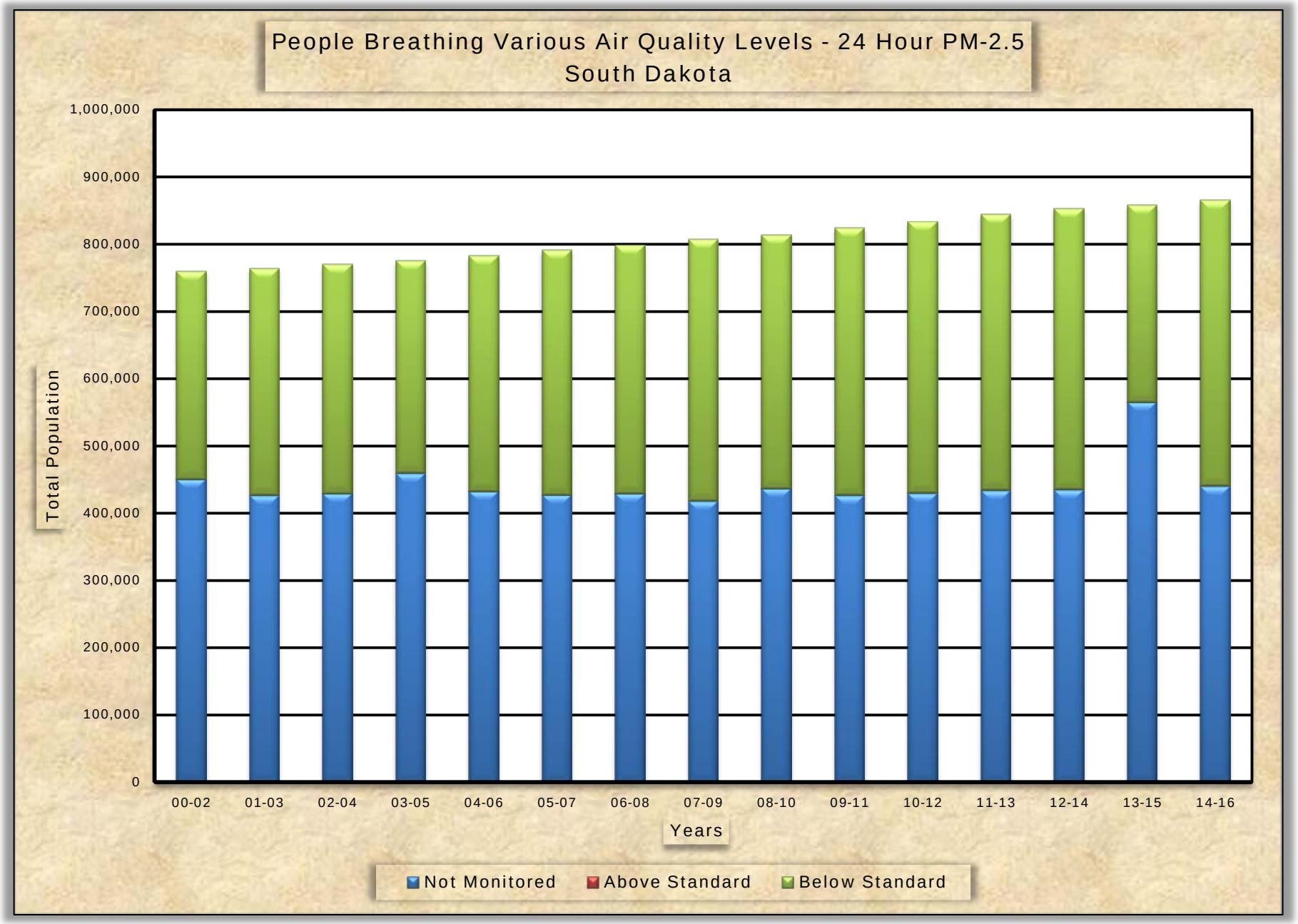
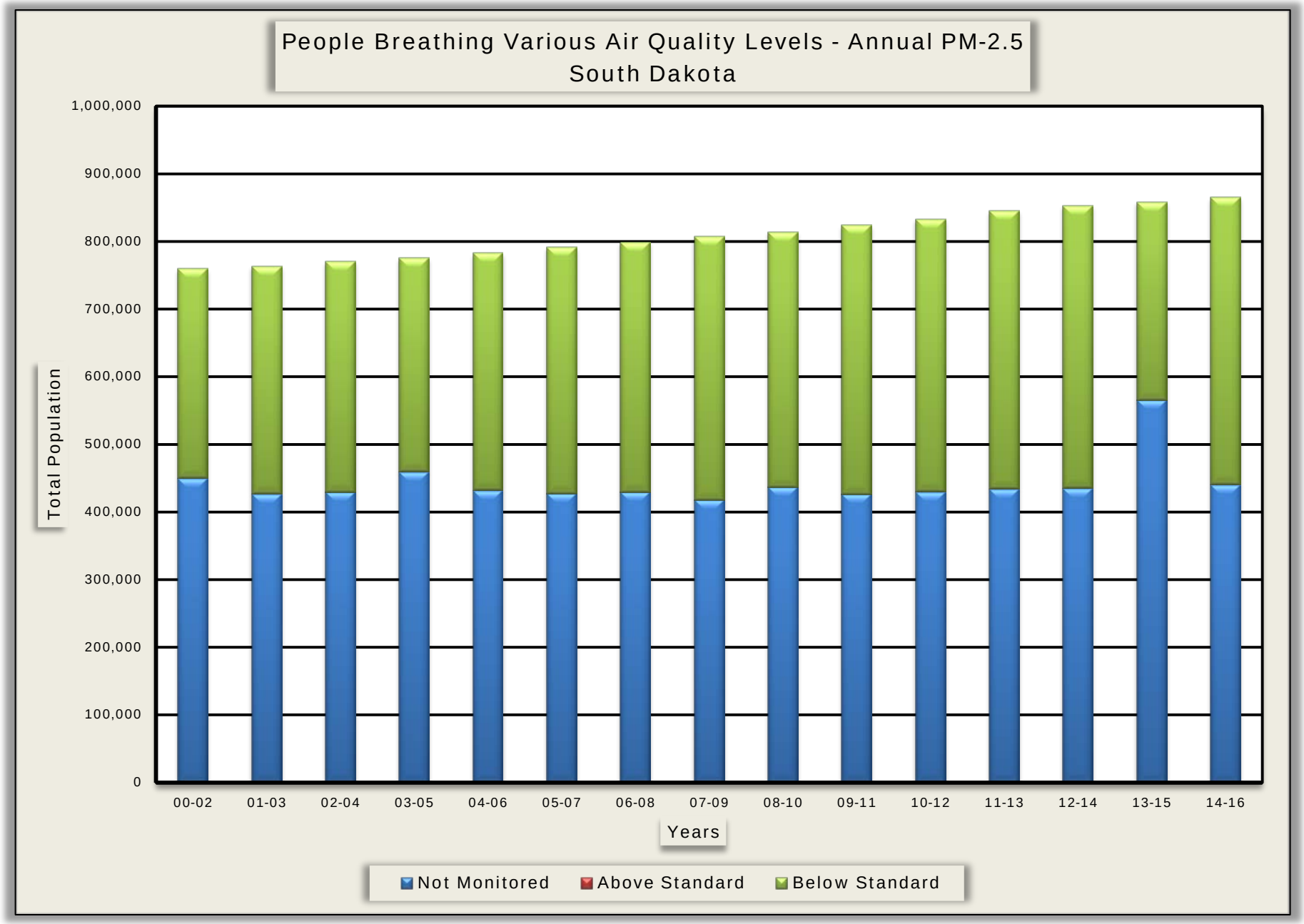

People Breathing Various Air Quality Levels - 24 Hour PM-2.5
South Dakota
Total Population
1,000,000
900,000
800,000
700,000
600,000
500,000
400,000
300,000
200,000
100,000
0
00-02
01-03
02-04
03-05
04-06
05-07
06-08
07-09
08-10
09-11
10-12
11-13
12-14
13-15
14-16
Years
Not Monitored
Above Standard
Below Standard

Figure SD-3


People Breathing Various Air Quality Levels - Annual PM-2.5
South Dakota
1,000,000
900,000
800,000
700,000
600,000
500,000
400,000
300,000
200,000
100,000
0
Total Population
00-02
01-03
02-04
03-05
04-06
05-07
06-08
07-09
08-10
09-11
10-12
11-13
12-14
13-15
14-16
Years
Not Monitored
Above Standard
Below Standard

TENNESSEE

Ozone

In the 2000 – 2002 time period, 0.96 million people (16.5%) lived in counties that met the ozone standard. By 2014 – 2016 this had increased to approximately 3.6 million people (53.8%). The ozone standard was lowered from 0.085 ppm to 0.070 ppm. Figure TN-1 shows the distribution of people by year. The population weighted ozone design value in 2000 – 2002 was 0.087 ppm. By 2014 – 2016 this had lowered to a value of 0.065 ppm, a reduction of 25.3 percent.

24-Hour PM-2.5

In the 2000 – 2002 time period, approximately 3.0 million people (52.0%) lived in counties where 24-hour PM-2.5 levels met the standard. By 2014 - 2016 this was approximately 3.6 million people (54.1%). The remainder of the population lived in counties where PM-2.5 was not measured. The standard was lowered from 65 to 35 µg/m3. Figure TN-2 shows the distribution of people by year. The population weighted 24-hour PM-2.5 design value in 2000 – 2002 was 35 µg/m3. By 2014 – 2016 this had lowered to a value of 18 µg/m3, a reduction of 48.6 percent.

Annual PM-2.5

In the 2000 – 2002 time period, approximately 1.8 million people (30.4%) lived in counties where annual PM-2.5 levels met the standard. By 2014 – 2016 this had increased to approximately 3.6 million people (54.1%). The standard was lowered from 15 to 12 µg/m3. Figure TN-3 shows the distribution of people by year. The population weighted annual PM-2.5 design value in 2000 – 2002 was 15.1 µg/m3. By 2014 – 2016 this had lowered to a value of 8.6, a reduction of 43.0 percent.

TENNESSEE

Table TN-1
2014 – 2016

		Ozone			Particle Pollution (PM-2.5)				
County	Population	Avg. DV	Grade	MM	Avg. 24-Hr DV	Grade	Avg. Ann DV	Grade	MM
Anderson	75,936	0.063	C	N	ND	ND	ND	ND	ND
Blount	128,670	0.063	C	Y	24	A	8.6	A	N
Claiborne	31,757	0.063	C	N	ND	ND	ND	ND	ND
Davidson	584,410	0.066	C	Y	19	A	7.3	A	Y
DeKalb	19,361	0.062	B	N	ND	ND	ND	ND	ND
Dyer	37,708	ND	ND	ND	15	A	7.6	A	N
Hamilton	357,738	0.066	C	Y	17	A	8.5	A	Y
Jefferson	53,566	0.068	C	N	ND	ND	ND	ND	ND
Knox	456,132	0.065	C	Y	24	A	9.7	B	Y
Lawrence	43,081	ND	ND	ND	15	A	7.3	A	N
Loudon	51,454	0.069	C	N	20	A	9.5	A	N
McMinn	52,850	ND	ND	ND	21	A	8.7	A	N
Madison	97,663	ND	ND	ND	15	A	7.5	A	N
Maury	89,981	ND	ND	ND	16	A	7.5	A	N
Montgomery	195,734	ND	ND	ND	18	A	8.5	A	N
Putnam	75,931	ND	ND	ND	18	A	7.8	A	N
Roane	52,874	ND	ND	ND	19	A	8.6	A	N
Sevier	96,673	0.068	C	N	ND	ND	ND	ND	ND
Shelby	934,603	0.066	C	Y	16	A	7.9	A	N
Sullivan	156,667	0.065	C	Y	15	A	7.9	A	N
Sumner	180,063	0.067	C	N	17	A	8.6	A	N
Williamson	219,107	0.061	B	N	ND	ND	ND	ND	ND
Wilson	132,781	0.064	C	N	ND	ND	ND	ND	ND

DV – Design Value ND - No Data MM – Multiple Monitors

TENNESSEE

Table TN-2
Population Weighted Design Values

Period	Ozone (ppm)	24-Hour PM-2.5 (µg/m3)	Annual PM-2.5 (µg/m3)
2000 – 2002	0.087	35	15.1
2001 – 2003	0.083	33	14.1
2002 – 2004	0.080	30	13.4
2003 – 2005	0.077	32	13.8
2004 – 2006	0.077	31	13.7
2005 – 2007	0.079	31	13.4
2006 – 2008	0.078	28	12.6
2007 – 2009	0.074	25	11.6
2008 – 2010	0.071	23	11.0
2009 – 2011	0.070	22	10.6
2010 – 2012	0.074	21	10.5
2011 – 2013	0.071	20	9.7
2012 – 2014	0.068	19	9.4
2013 – 2015	0.064	19	9.0
2014 – 2016	0.065	18	8.6

TENNESSEE

Table TN-3
People Breathing Ozone

Grade	2000-2002	2002-2004	2004-2006	2006-2008	2008-2010	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016
A	0	291,507	59,114	0	0	0	0	0	0	0
B	287,108	388,678	972,957	0	626,681	0	616,911	1,347,246	756,512	302,303
C	671,940	2,445,136	2,356,649	795,246	2,061,673	2,019,009	1,640,115	2,120,637	2,742,311	3,276,115
D	2,196,384	568,311	0	2,415,860	911,652	1,230,617	795,198	0	0	0
F	542,053	0	0	273,496	0	0	0	0	0	0
Subtotal	3,697,484	3,693,631	3,388,720	3,484,601	3,600,005	3,249,626	3,052,224	3,467,883	3,498,822	3,578,918
NM	2,098,434	2,217,178	2,700,046	2,762,810	2,746,100	3,206,617	3,443,754	3,081,469	3,101,477	3,072,276
Total	5,796,918	5,910,809	6,088,766	6,247,411	6,346,105	6,456,143	6,495,978	6,549,352	6,600,299	6,651,194

People Breathing Short-term Particle Pollution (24-Hour PM-2.5)

Grade	2000-2002	2002-2004	2004-2006	2006-2008	2008-2010	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016
A	3,013,576	2,494,577	362,123	1,401,703	3,422,601	3,497,363	3,518,121	3,547,279	3,572,788	3,481,526
B	0	0	1,106,530	1,292,381	0	0	0	0	0	0
C	0	0	1,661,884	174,000	0	0	0	0	0	114,033
D	0	0	0	0	0	0	0	0	0	0
F	0	0	0	0	0	0	0	0	0	0
Subtotal	3,013,576	2,494,577	2,130,537	2,868,083	3,422,601	3,497,363	3,518,121	3,547,279	3,572,788	3,595,559
NM	2,782,342	3,416,232	2,958,229	3,379,328	2,923,504	2,958,880	2,977,857	3,002,073	3,027,511	3,055,635
Total	5,796,918	5,910,809	6,088,766	6,247,411	6,346,105	6,456,143	6,495,978	6,549,352	6,600,299	6,651,194

People Breathing Year Round Particle Pollution (Annual PM-2.5)

Grade	2000-2002	2002-2004	2004-2006	2006-2008	2008-2010	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016
A	0	381,330	40,773	482,810	3,085,894	3,360,301	1,139,990	2,227,278	3,007,682	3,025,288
B	262,540	884,512	933,765	2,109,558	336,707	137,062	2,111,615	1,302,418	565,107	570,271
C	1,507,177	963,196	1,699,007	275,716	0	0	248,835	17,583	0	0
D	984,231	265,538	456,992	0	0	0	17,682	0	0	0
F	259,629	0	0	0	0	0	0	0	0	0
Subtotal	3,013,576	2,494,577	3,130,537	2,868,083	3,422,601	3,497,363	2,518,121	3,547,279	3,572,788	3,595,559
NM	2,782,342	3,416,232	2,958,229	3,379,328	2,923,504	2,958,880	2,977,857	3,002,073	3,027,511	3,055,635
Total	5,796,918	5,910,809	6,088,766	6,247,411	6,346,105	6,456,143	6,495,978	6,549,352	6,600,299	6,651,194

NM – Not Monitored

Figure TN-1

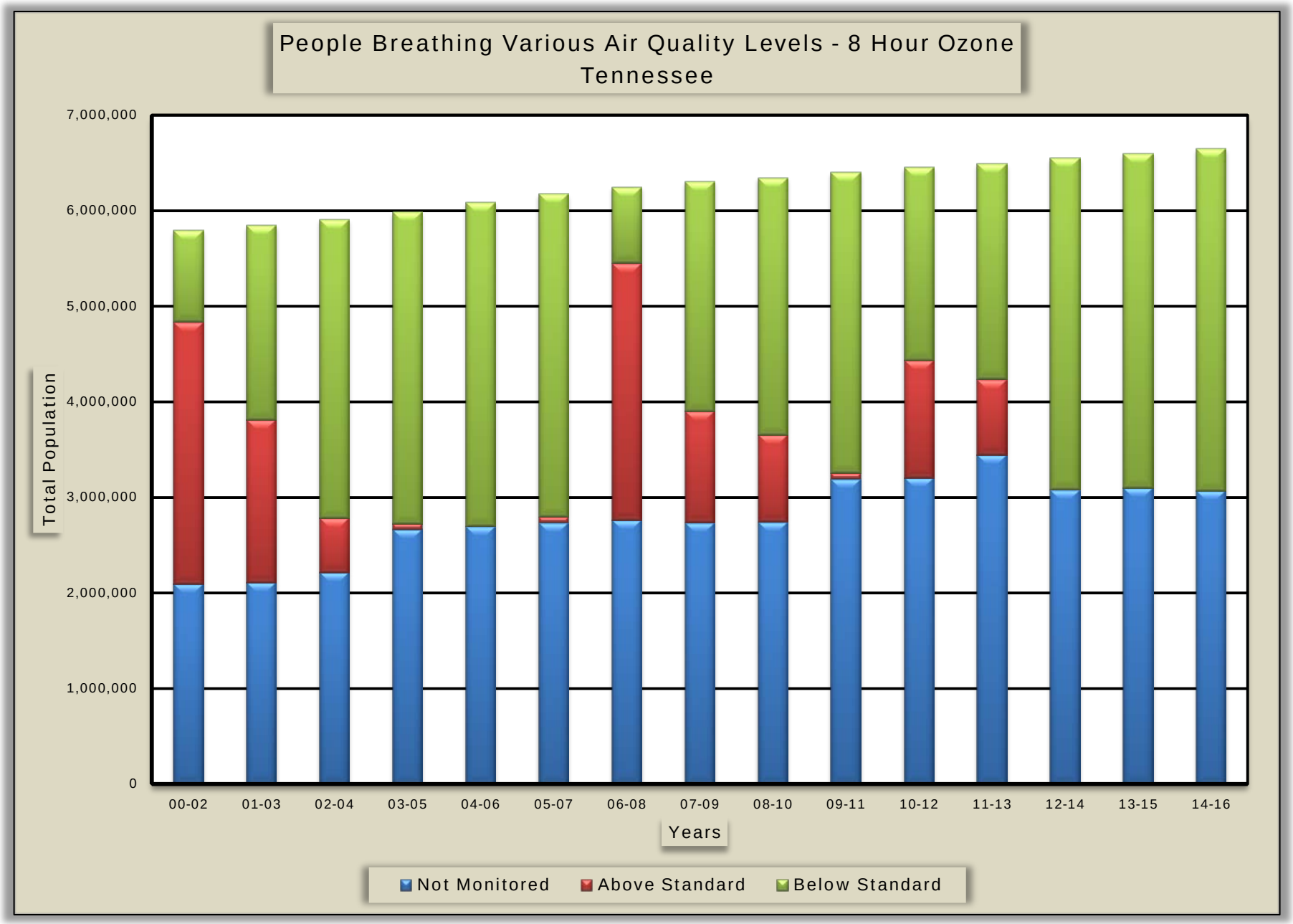

People Breathing Various Air Quality Levels - 8 Hour Ozone
Tennessee
Total Population
7,000,000
6,000,000
5,000,000
4,000,000
3,000,000
2,000,000
1,000,000
0
00-02
01-03
02-04
03-05
04-06
05-07
06-08
07-09
08-10
09-11
10-12
11-13
12-14
13-15
14-16
Years
Not Monitored
Above Standard
Below Standard

Figure TN-2

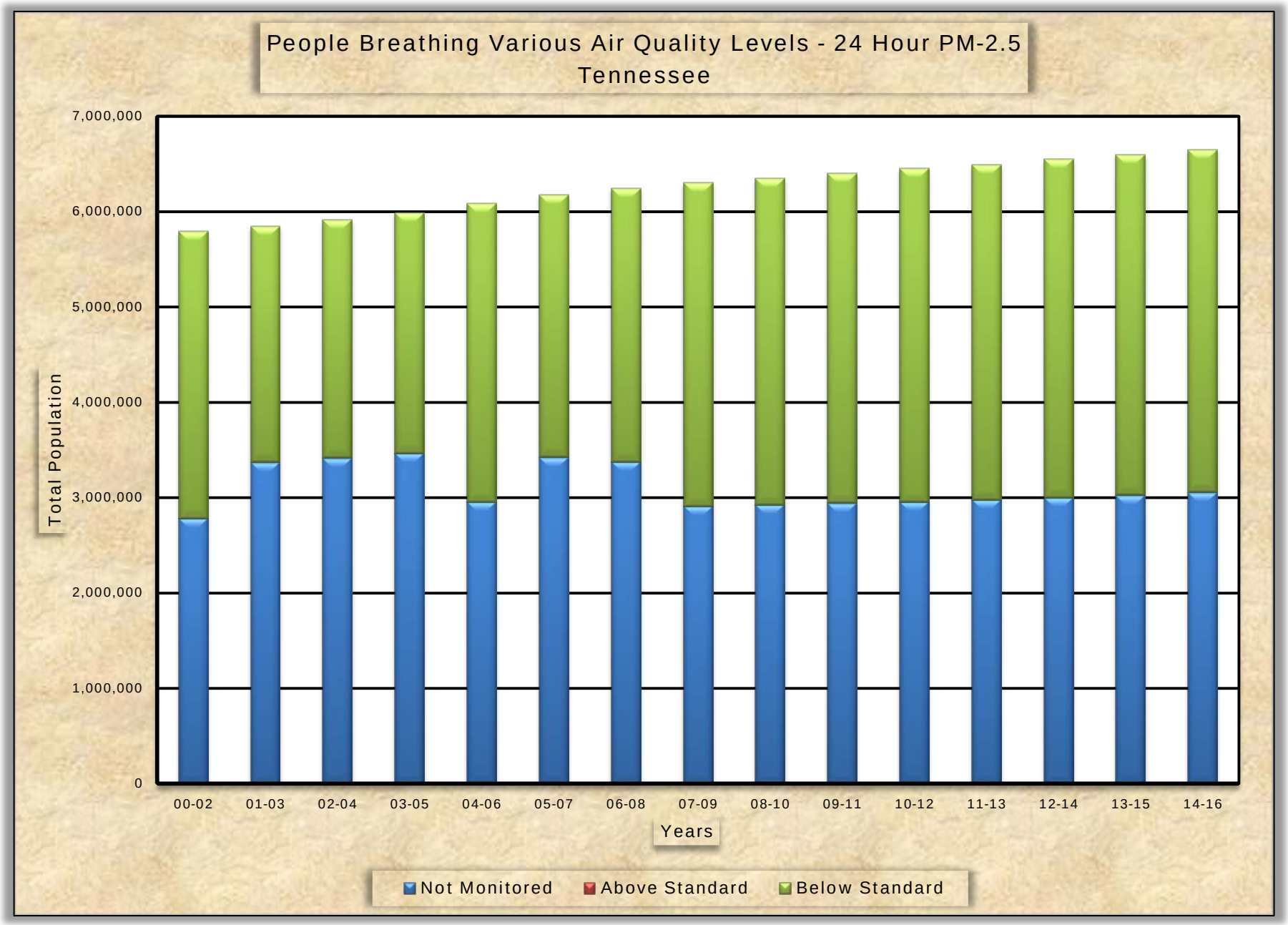
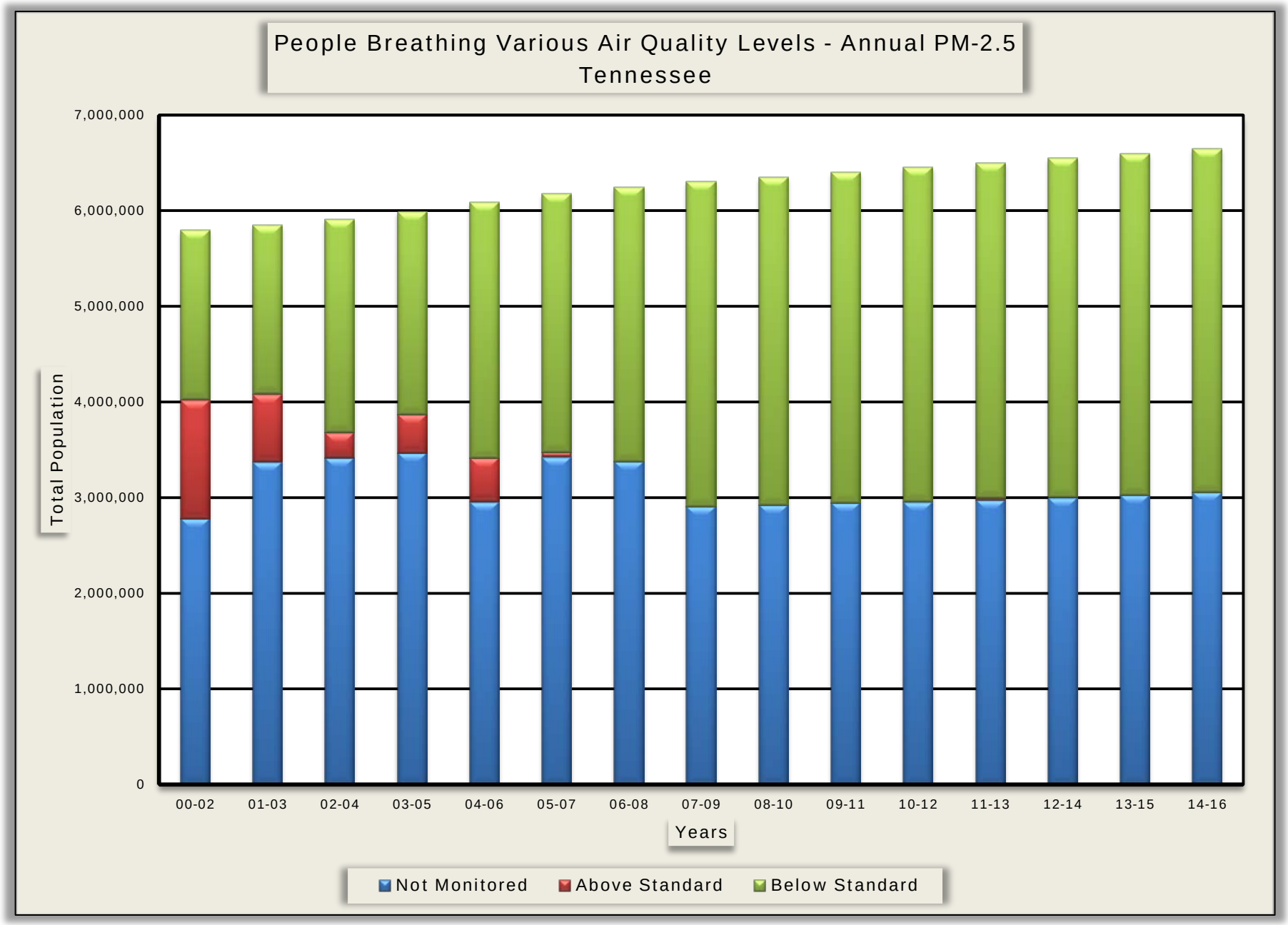

People Breathing Various Air Quality Levels - 24 Hour PM-2.5
Tennessee
Total Population
7,000,000
6,000,000
5,000,000
4,000,000
3,000,000
2,000,000
1,000,000
0
00-02
01-03
02-04
03-05
04-06
05-07
06-08
07-09
08-10
09-11
10-12
11-13
12-14
13-15
14-16
Years
Not Monitored
Above Standard
Below Standard

Figure TN-3


People Breathing Various Air Quality Levels - Annual PM-2.5
Tennessee
Total Population
7,000,000
6,000,000
5,000,000
4,000,000
3,000,000
2,000,000
1,000,000
0
00-02
01-03
02-04
03-05
04-06
05-07
06-08
07-09
08-10
09-11
10-12
11-13
12-14
13-15
14-16
Years
Not Monitored
Above Standard
Below Standard

TEXAS

Ozone

In the 2000 – 2002 time period, 5.9 million people (27.0%) lived in counties that met the ozone standard. By 2014 – 2016 this had increased to approximately 11.4 million people (40.9%). The ozone standard was lowered from 0.085 ppm to 0.070 ppm. Figure TX-1 shows the distribution of people by year. The population weighted ozone design value in 2000 – 2002 was 0.088 ppm. By 2014 – 2016 this had lowered to a value of 0.068 ppm, a reduction of 22.7 percent.

24-Hour PM-2.5

In the 2000 – 2002 time period, approximately 14.1 million people (65.2%) lived in counties where 24-hour PM-2.5 levels met the standard. By 2014 - 2016 this was approximately 13.7 million people (49.3%). The remainder of the population lived in counties where PM-2.5 was not measured. The standard was lowered from 65 to 35 µg/m3. Figure TX-2 shows the distribution of people by year. The population weighted 24-hour PM-2.5 design value in 2000 – 2002 was 28 µg/m3. By 2014 – 2016 this had lowered to a value of 20 µg/m3, a reduction of 28.6 percent.

Annual PM-2.5

In the 2000 – 2002 time period, approximately 14.1 million people (565.2%) lived in counties where annual PM-2.5 levels met the standard. By 2014– 2016 this had decreased to approximately 13.7 million people (49.3%). The remainder of the population lived in counties where PM-2.5 was not measured. The standard was lowered from 15 to 12 µg/m3. Figure TX-3 shows the distribution of people by year. The population weighted annual PM-2.5 design value in 2000 – 2002 was 11.2 µg/m3. By 2014 – 2016 this had lowered to a value of 9.4 µg/m3, a reduction of 16.1 percent.

TEXAS

Table TX-1
2014 – 2016

		Ozone			Particle Pollution (PM-2.5)				
County	Population	Avg. DV	Grade	MM	Avg. 24-Hr DV	Grade	Avg. Ann DV	Grade	MM
Bell	340,411	0.066	C	Y	ND	ND	ND	ND	ND
Bexar	1,928,680	0.070	C	Y	19	A	8.4	A	Y
Brazoria	354,195	0.067	C	Y	ND	ND	ND	ND	ND
Brewster	9,200	0.062	B	N	ND	ND	ND	ND	ND
Cameron	422,135	0.057	B	Y	ND	ND	ND	ND	ND
Collin	**939,585**	**0.073**	**D**	**N**	ND	ND	ND	ND	ND
Dallas	2,574,984	0.068	C	Y	19	A	9.1	A	Y
Denton	**806,180**	**0.074**	**D**	Y	ND	ND	ND	ND	ND
Ellis	168,499	0.062	B	Y	20	A	9.1	A	N
El Paso	837,912	0.066	C	Y	20	A	8.6	A	Y
Galveston	**329,431**	**0.076**	**D**	**N**	ND	ND	ND	ND	ND
Gregg	123,745	0.066	C	N	ND	ND	ND	ND	ND
Harris	4,589,928	0.069	C	Y	22	A	10.4	B	Y
Harrison	66,534	0.062	B	N	18	A	9.1	A	N
Hidalgo	849,843	0.055	A	N	ND	ND	ND	ND	ND
Hood	56,857	0.069	C	N	ND	ND	ND	ND	ND
Hunt	92,073	0.060	B	N	ND	ND	ND	ND	ND
Jefferson	254,679	0.065	C	Y	ND	ND	ND	ND	ND
Johnson	**163,274**	**0.072**	**D**	**N**	ND	ND	ND	ND	ND
Kaufman	118,350	0.061	B	N	ND	ND	ND	ND	ND
McLennan	247,934	0.063	C	N	ND	ND	ND	ND	ND
Montgomery	**556,203**	**0.072**	**D**	**N**	ND	ND	ND	ND	ND
Navarro	48,523	0.061	B	N	ND	ND	ND	ND	ND
Nueces	361,150	0.063	C	Y	24	A	9.5	A	Y
Orange	84,964	0.061	C	N	ND	ND	ND	ND	ND
Parker	**129,441**	**0.073**	**D**	**N**	ND	ND	ND	ND	ND
Polk	47,916	0.061	B	N	ND	ND	ND	ND	ND
Randall	132,501	0.064	C	N	ND	ND	ND	ND	ND
Rockwall	93,978	0.066	C	N	ND	ND	ND	ND	ND
Smith	225,290	0.065	C	N	ND	ND	ND	ND	ND
Tarrant	**2,016,872**	**0.071**	**D**	Y	19	A	9.0	A	Y
Travis	1,199,323	0.065	C	Y	18	A	8.7	A	Y
Victoria	92,467	0.065	C	N	ND	ND	ND	ND	ND
Webb	271,193	0.064	C	N	ND	ND	ND	ND	ND

DV – Design Value ND - No Data MM – Multiple Monitors

TEXAS

Table TX-2
Population Weighted Design Values

Period	Ozone (ppm)	24-Hour PM-2.5 (µg/m3)	Annual PM-2.5 (µg/m3)
2000 – 2002	0.088	28	11.2
2001 – 2003	0.086	28	11.5
2002 – 2004	0.086	28	11.8
2003 – 2005	0.085	27	12.2
2004 – 2006	0.085	26	12.5
2005 – 2007	0.081	25	12.0
2006 – 2008	0.078	24	11.0
2007 – 2009	0.074	24	10.8
2008 – 2010	0.074	22	10.3
2009 – 2011	0.076	21	10.4
2010 – 2012	0.077	22	10.4
2011 – 2013	0.077	23	10.3
2012 – 2014	0.072	22	10.0
2013 – 2015	0.070	23	10.1
2014 – 2016	0.068	20	9.4

TEXAS

Table TX-3

People Breathing Ozone

Grade	2000-2002	2002-2004	2004-2006	2006-2008	2008-2010	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016
A	870,400	920,049	1,313,618	368,347	250,304	0	407,998	1.418,162	0	1,121,036
B	868,446	1,142,421	1,174,521	1,243,938	2,255,873	1,387,589	1,278,449	2,280,460	1,927,501	1,156,044
C	4,114,068	4,226,013	5,699,123	3,996,215	7,981,972	4,387,029	5,386,098	9,170,921	7,779,976	9,105,672
D	3,895,628	4,960,471	5,348,563	6,615,622	6,538,057	9,907,364	7,770,654	6,669,578	9,852,056	9,151,504
F	4,262,482	3,972,398	2,913,711	4,657,031	858,990	3,010,483	4,166,868	0	632,584	0
Subtotal	14,011,024	15,221,351	16,449,536	16,881,153	17,885,195	18,692,465	18,960,067	19,539,121	20,192,117	20,534,256
NM	7,679,301	7,172,672	6,910,044	7,427,886	7,260,366	7,366,738	7,487,126	7,417,837	7,276,997	7,328,340
Total	21,690,325	22,394,023	23,359,580	24,309,039	25,145,561	26,059,203	26,448,193	26,956,958	27,469,114	27,862,596

People Breathing Short-term Particle Pollution (24-Hour PM-2.5)

Grade	2000-2002	2002-2004	2004-2006	2006-2008	2008-2010	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016
A	14,138,284	9,993,020	7,077,704	11,500,846	13,359,432	14,150,749	13,404,686	13,422,015	13,667,297	13,744,088
B	0	0	1,359,380	256,643	789,380	0	176,054	0	0	0
C	0	0	0	0	0	0	0	0	0	0
D	0	0	0	0	0	0	0	0	0	0
F	0	0	744,795	256,643	0	0	0	0	0	0
Subtotal	14,138,284	9,993,020	9,181,879	12,014,133	14,148,812	14,150,749	13,580,739	13,422,015	13,667,297	13,744,088
NM	7,552,041	12,401,003	14,177,701	12,294,906	10,996,749	11,908,454	12,867,454	13,534,943	13,801,817	14,118,508
Total	21,690,325	22,394,023	23,359,580	24,309,039	25,145,561	26,059,203	26,448,193	26,956,958	27,469,114	27,862,596

People Breathing Year Round Particle Pollution (Annual PM-2.5)

Grade	2000-2002	2002-2004	2004-2006	2006-2008	2008-2010	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016
A	8,342,426	5,358,426	5,050,081	9,040,421	12,517,777	12,732,849	2,968,000	2,867,464	4,320,140	9,484,840
B	4,826,751	3,296,734	2,117,858	1,404,209	1,364,153	1,417,900	6,067,480	6,113,182	3,532,437	4,259,248
C	969,108	979,034	1,269,145	1,312,860	266,882	0	4,545,260	4,441,370	5,814,721	0
D	0	0	744,795	256,643	0	0	0	0	0	0
F	0	358,826	0	0	0	0	0	0	0	0
Subtotal	14,138,284	9,993,020	9,181,879	12,014,133	14,148,812	14,150,749	13,580,739	13,422,015	13,667,297	13,744,088
NM	7,552,041	12,401,003	14,177,701	12,294,906	10,996,749	11,908,454	12,867,454	13,534,943	13,801,817	14,118,508
Total	21,690,325	22,394,023	23,359,580	24,309,039	25,145,561	26,059,203	26,448,193	26,956,958	27,469,114	27,862,596

NM – Not Monitored

Figure TX-1

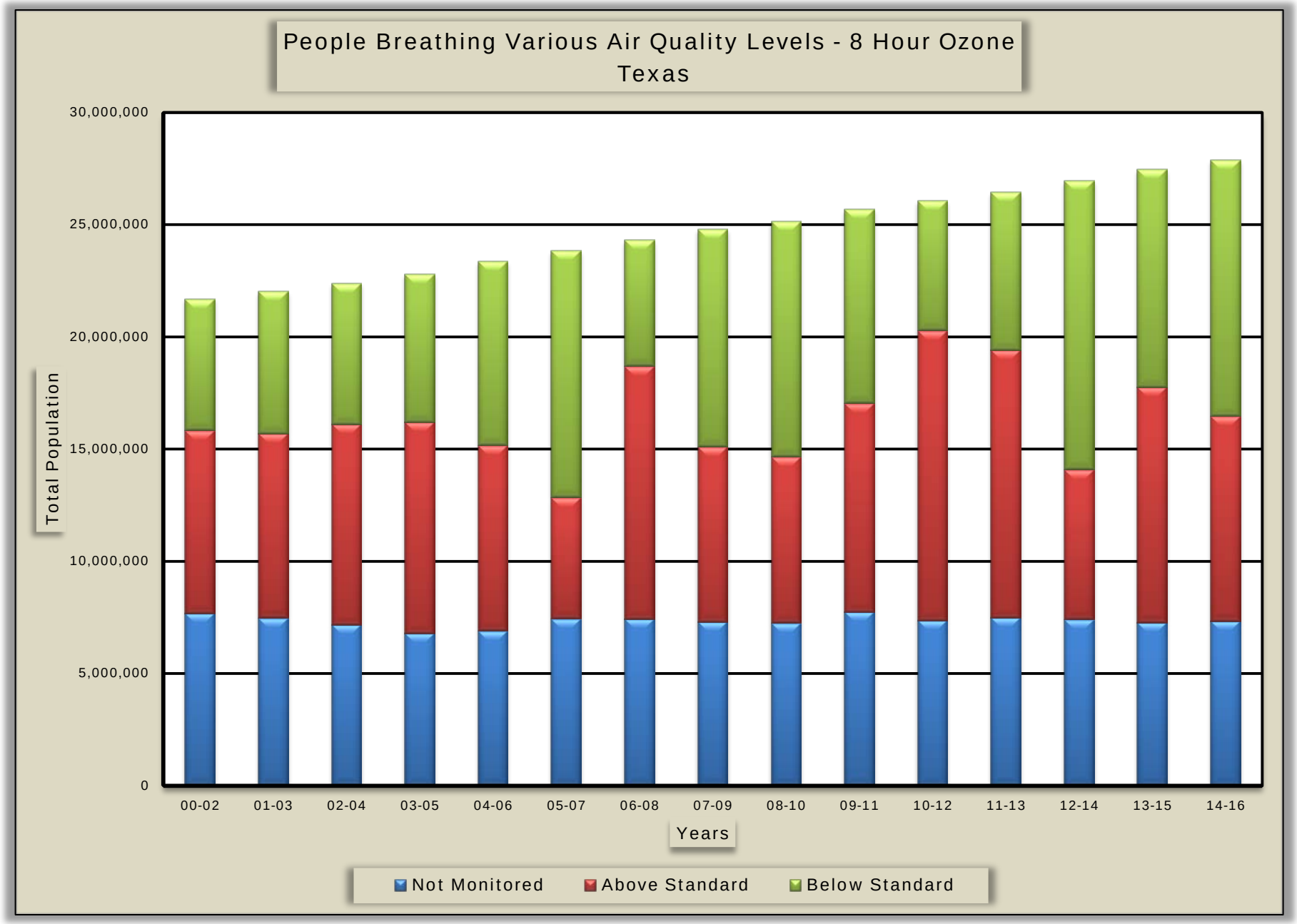

People Breathing Various Air Quality Levels - 8 Hour Ozone
Texas
30,000,000
25,000,000
20,000,000
15,000,000
10,000,000
5,000,000
0
Total Population
00-02
01-03
02-04
03-05
04-06
05-07
06-08
07-09
08-10
09-11
10-12
11-13
12-14
13-15
14-16
Years
Not Monitored
Above Standard
Below Standard

Figure TX-2

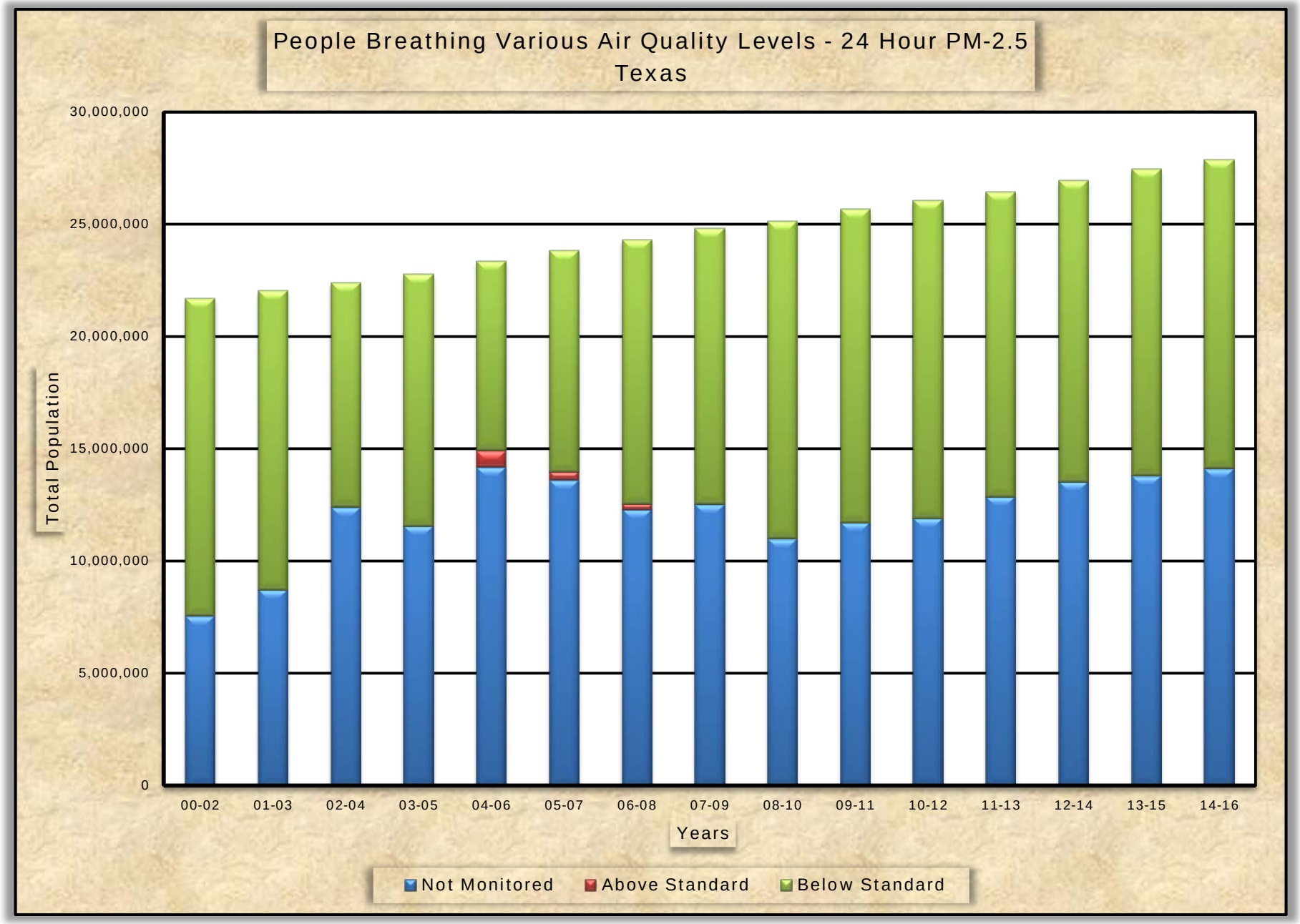
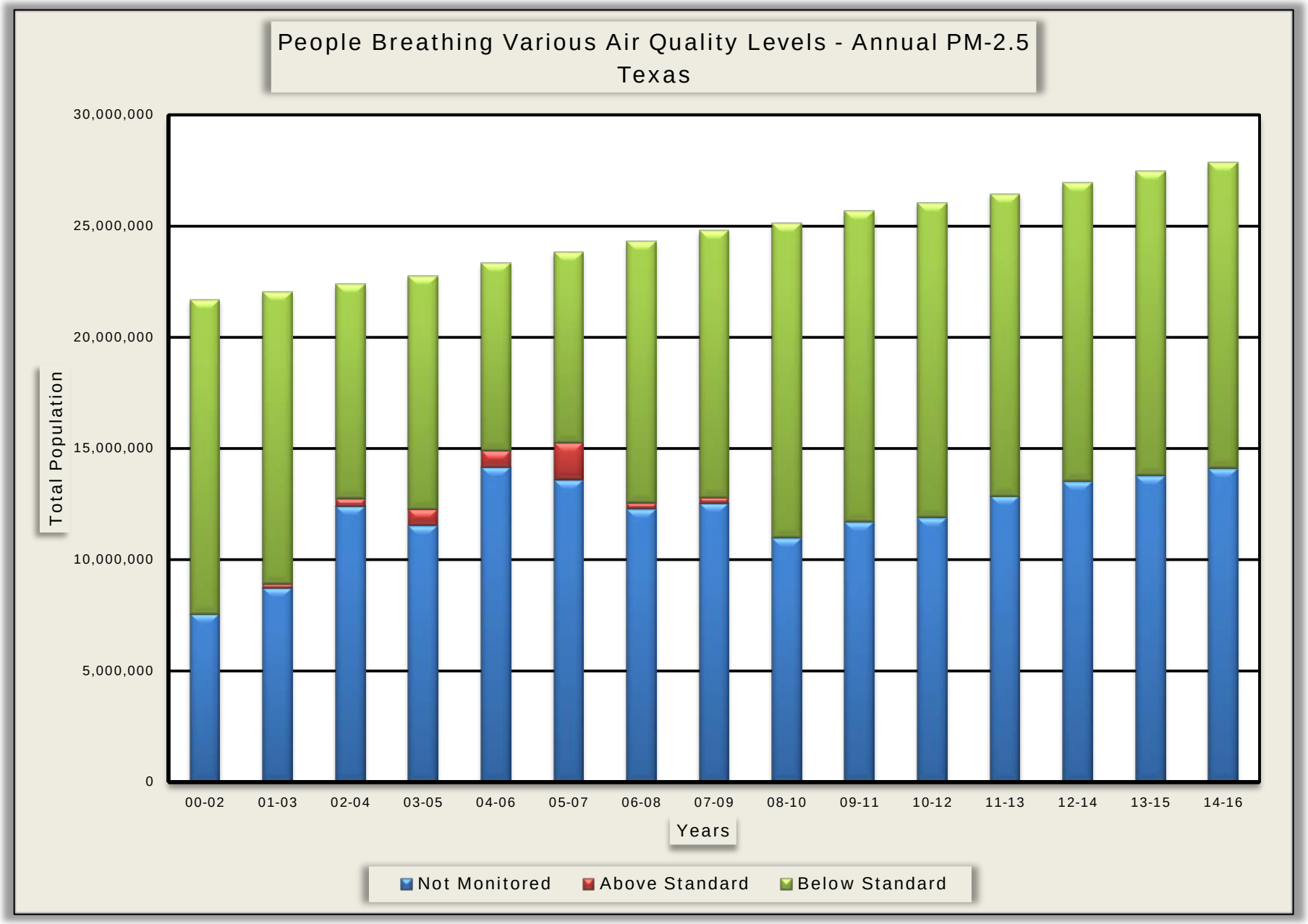

People Breathing Various Air Quality Levels - 24 Hour PM-2.5
Texas
30,000,000
25,000,000
20,000,000
15,000,000
10,000,000
5,000,000
0
Total Population
00-02
01-03
02-04
03-05
04-06
05-07
06-08
07-09
08-10
09-11
10-12
11-13
12-14
13-15
14-16
Years
Not Monitored
Above Standard
Below Standard

Figure TX-3


People Breathing Various Air Quality Levels - Annual PM-2.5
Texas
30,000,000
25,000,000
20,000,000
15,000,000
10,000,000
5,000,000
0
Total Population
00-02
01-03
02-04
03-05
04-06
05-07
06-08
07-09
08-10
09-11
10-12
11-13
12-14
13-15
14-16
Years
Not Monitored
Above Standard
Below Standard

UTAH

Ozone

In the 2000 – 2002 time period, 1.9 million people (80.7%) lived in counties that met the ozone standard. By 2014 – 2016 this had decreased to approximately 0.29 million people (9.4%). The ozone standard was lowered from 0.085 ppm to 0.070 ppm. Figure UT-1 shows the distribution of people by year. The population weighted ozone design value in 2000 – 2002 was 0.077 ppm. By 2014 – 2016 this had lowered to a value of 0.072 ppm, a reduction of 6.5 percent.

24-Hour PM-2.5

In the 2000 – 2002 time period, approximately 1.8 million people (78.0%) lived in counties where 24-hour PM-2.5 levels met the standard. By 2014 - 2016 this was approximately 1.0 million people (32.8%). The standard was lowered from 65 to 35 µg/m3. Figure UT-2 shows the distribution of people by year. The population weighted 24-hour PM-2.5 design value in 2000 – 2002 was 50 µg/m3. By 2014 – 2016 this had lowered to a value of 34 µg/m3, a reduction of 32.0 percent.

Annual PM-2.5

In the 2000 – 2002 time period, approximately 1.8 million people (78.0%) lived in counties where annual PM-2.5 levels met the standard. By 2014 – 2016 this had increased to approximately 2.1 million people (69.5%). The remainder of the population lived in counties where PM-2.5 was not measured. The standard was lowered from 15 to 12 µg/m3. Figure UT-3 shows the distribution of people by year. The population weighted annual PM-2.5 design value in 2000 – 2002 was 11.5 µg/m3. By 2014 – 2016 this had lowered to a value of 7.9 µg/m3, a reduction of 31.3 percent.

Table UT-1

2014 – 2016

		Ozone			Particle Pollution (PM-2.5)				
County	Population	Avg. DV	Grade	MM	Avg. 24-Hr DV	Grade	Avg. Ann DV	Grade	MM
Box Elder	53,139	0.063	C	Y	ND	ND	ND	ND	ND
Carbon	20,399	0.066	C	N	ND	ND	ND	ND	ND
Salt Lake	**1,121,354**	**0.075**	**D**	**N**	**41**	**F**	8.7	A	N
San Juan	16,895	0.064	C	N	ND	ND	ND	ND	ND
Uintah	36,373	0.068	C	N	ND	ND	ND	ND	ND
Utah	**592,299**	**0.072**	**D**	**Y**	29	B	7.6	A	Y
Washington	160,245	0.065	C	Y	11	A	3.9	A	N
Weber	**247,560**	**0.071**	**D**	**Y**	31	B	7.9	A	N

Design Value ND - No Data MM – Multiple Monitors

UTAH

Table UT-2
Population Weighted Design Values

Period	Ozone (ppm)	24-Hour PM-2.5 (µg/m3)	Annual PM-2.5 (µg/m3)
2000 – 2002	0.077	50	11.5
2001 – 2003	0.077	47	11.1
2002 – 2004	0.075	46	11.5
2003 – 2005	0.075	42	10.7
2004 – 2006	0.076	42	10.8
2005 – 2007	0.078	38	9.6
2006 – 2008	0.076	37	9.6
2007 – 2009	0.073	40	9.9
2008 – 2010	0.070	37	9.3
2009 – 2011	0.070	37	8.6
2010 – 2012	0.071	32	8.1
2011 – 2013	0.073	39	8.9
2012 – 2014	0.072	40	8.7
2013 – 2015	0.072	39	8.3
2014 – 2016	0.072	34	7.9

UTAH

Table UT-3
People Breathing Ozone

Grade	2000-2002	2002-2004	2004-2006	2006-2008	2008-2010	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016
A	0	98,854	101,236	0	0	0	0	0	0	0
B	806,531	952,162	741,047	0	170,232	134,764	116,909	138,618	0	26,570
C	1,070,687	664,381	1,351,926	848,773	2,320,001	2,426,610	1,967,990	2,498,607	369,742	260,482
D	0	0	0	1,515,030	0	11,508	539,861	38,814	1,926,164	1,961,213
F	0	0	0	0	0	23,016	35,555	18,434	37,928	0
Subtotal	1,877,218	1,715,397	2,194,209	2,363,803	2,490,232	2,595,898	2,660,314	2,694,472	2,333,834	2,248,264
NM	447,597	686,183	431,298	299,226	273,654	59,389	240,558	248,430	662,085	802,953
Total	2,324,815	2,401,580	2,525,507	2,663,029	2,763,885	2,855,287	2,900,872	2,942,902	2,995,919	3,051,217

People Breathing Short-term Particle Pollution (24-Hour PM-2.5)

Grade	2000-2002	2002-2004	2004-2006	2006-2008	2008-2010	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016
A	894,909	1,042,236	0	55,909	58,218	204,679	0	0	155,602	160,245
B	688,614	560,484	0	493,459	129,141	626,297	420,669	61,598	0	839,859
C	229,538	0	232,018	651,447	601,500	1,146,218	441,354	604,389	612,750	0
D	0	0	619,781	895,096	587,690	549,972	170,054	381,210	388,140	0
F	0	0	1,201,934	121,904	928,234	0	1,388,614	1,407,145	1,434,197	1,121,357
Subtotal	1,813,061	1,602,720	2,053,734	2,217,815	2,304,783	2,527,165	2,420,690	2,454,342	2,590,689	2,121,461
NM	511,754	798,860	471,773	450,214	459,102	328,122	480,182	446,530	405,230	929,756
Total	2,324,815	2,401,580	2,525,507	2,663,029	2,763,885	2,855,287	2,900,872	2,942,902	2,995,919	3,051,217

People Breathing Year Round Particle Pollution (Annual PM-2.5)

Grade	2000-2002	2002-2004	2004-2006	2006-2008	2008-2010	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016
A	249,676	786,143	1,630,232	2,217,815	2,304,783	2,527,165	1,824,615	2,090,428	2,590,689	2,121,461
B	1,333,847	629,749	262,369	0	0	0	596,076	363,914	0	0
C	229,538	186,808	161,133	0	0	0	0	0	0	0
D	0	0	0	0	0	0	0	0	0	0
F	0	0	0	0	0	0	0	0	0	0
Subtotal	1,813,061	1,602,720	2,053,734	2,217,815	2,304,783	2,527,165	2,420,690	2,454,342	2,590,689	2,121,461
NM	511,754	798,860	471,773	450,214	459,102	328,122	480,182	446,530	405,230	929,756
Total	2,324,815	2,401,580	2,525,507	2,663,029	2,763,885	2,855,287	2,900,872	2,942,902	2,995,919	3,051,217

NM – Not Monitored

Figure UT-1

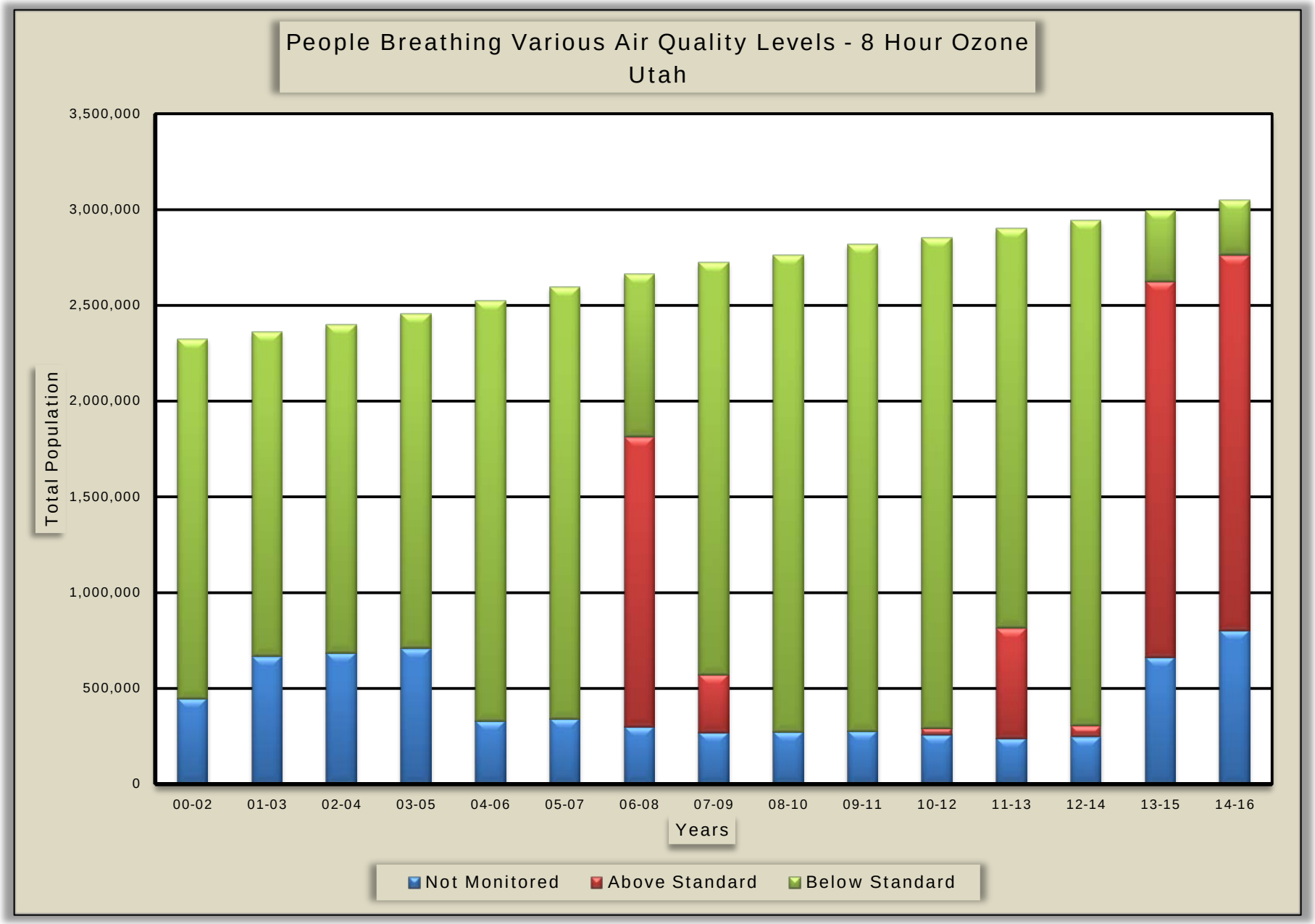

People Breathing Various Air Quality Levels - 8 Hour Ozone
Utah
Total Population
3,500,000
3,000,000
2,500,000
2,000,000
1,500,000
1,000,000
500,000
0
00-02
01-03
02-04
03-05
04-06
05-07
06-08
07-09
08-10
09-11
10-12
11-13
12-14
13-15
14-16
Years
Not Monitored
Above Standard
Below Standard

Figure UT-2

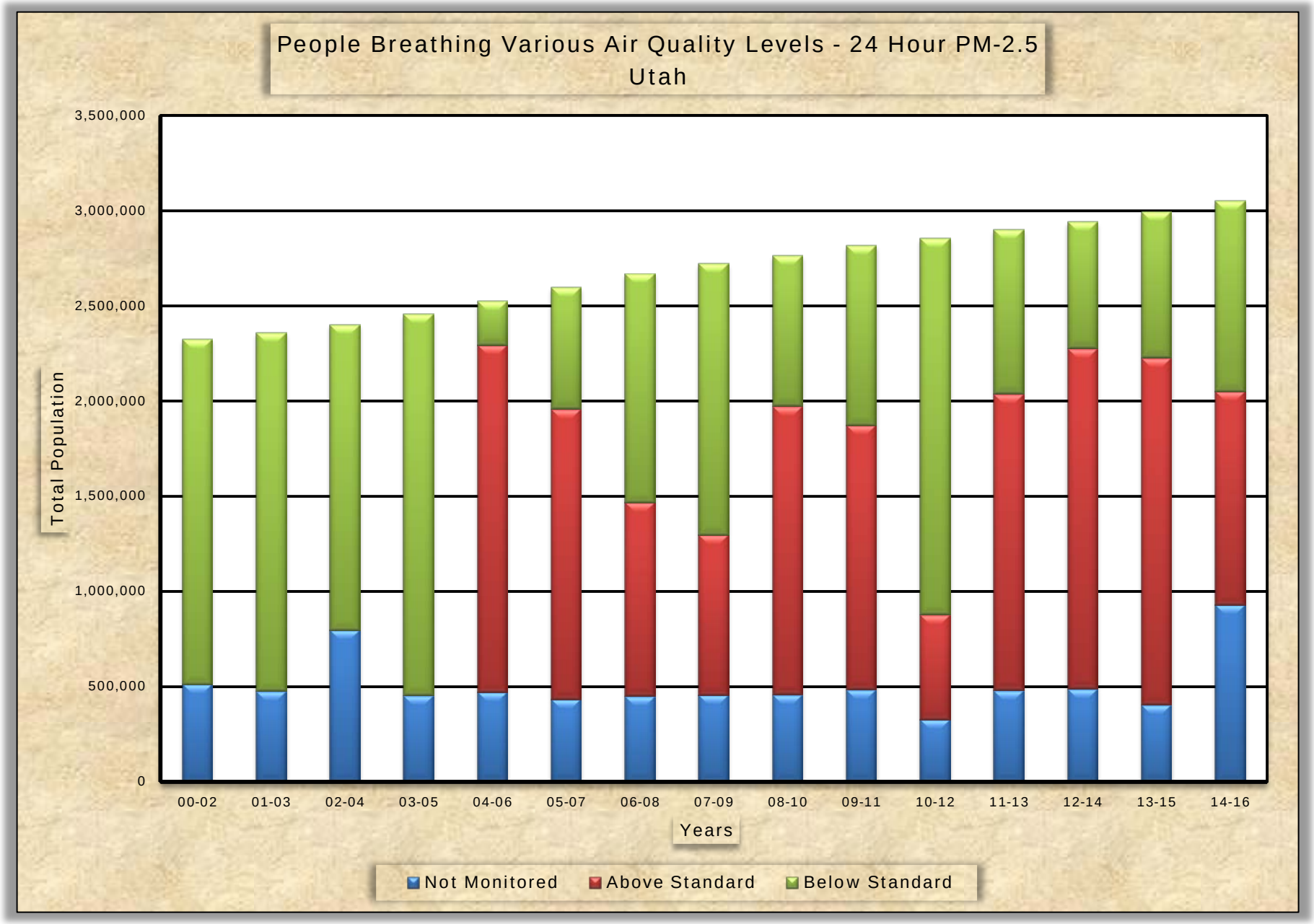
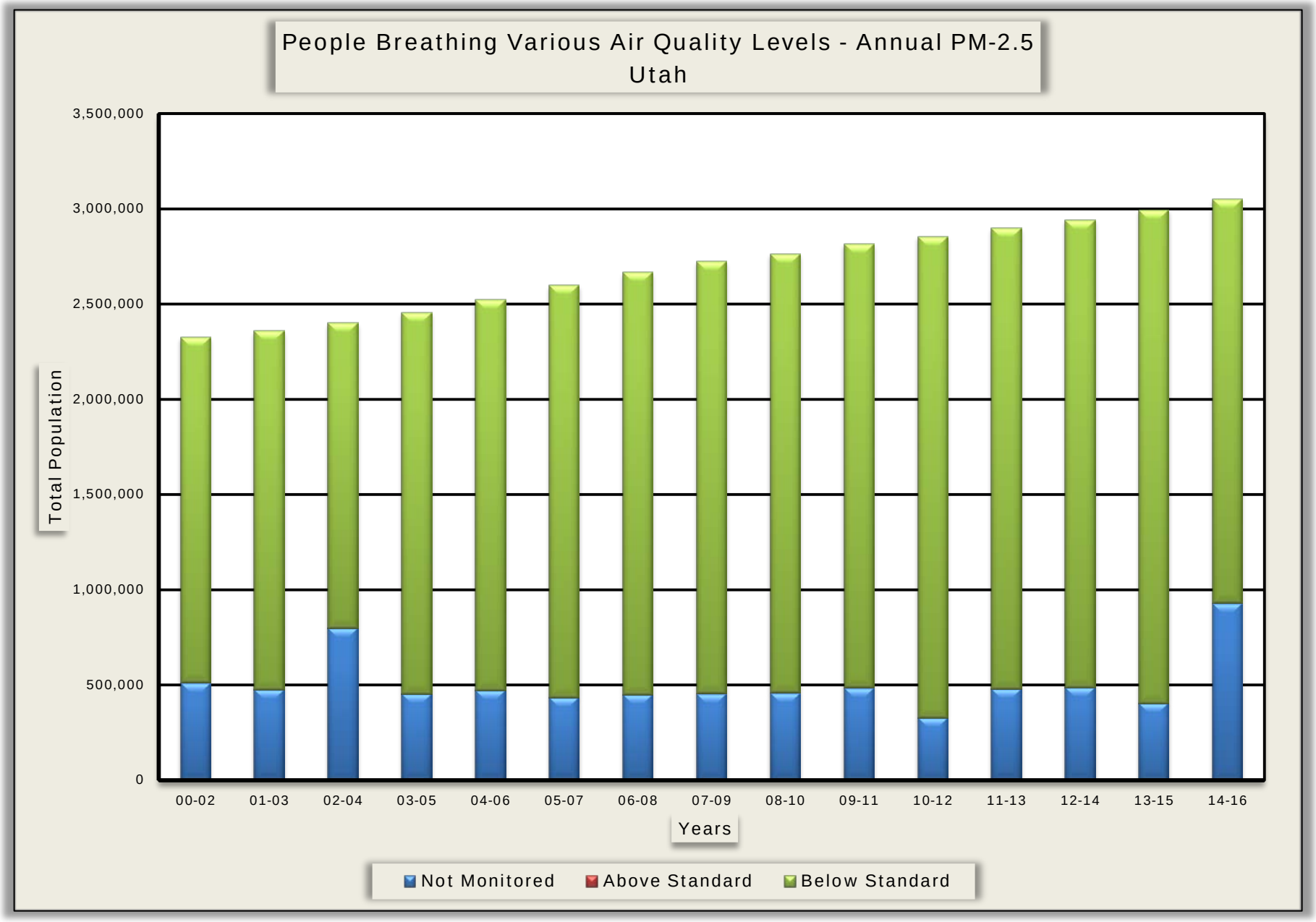

People Breathing Various Air Quality Levels - 24 Hour PM-2.5
Utah
Total Population
3,500,000
3,000,000
2,500,000
2,000,000
1,500,000
1,000,000
500,000
0
00-02
01-03
02-04
03-05
04-06
05-07
06-08
07-09
08-10
09-11
10-12
11-13
12-14
13-15
14-16
Years
Not Monitored
Above Standard
Below Standard

Figure UT-3


People Breathing Various Air Quality Levels - Annual PM-2.5
Utah
Total Population
3,500,000
3,000,000
2,500,000
2,000,000
1,500,000
1,000,000
500,000
0
00-02
01-03
02-04
03-05
04-06
05-07
06-08
07-09
08-10
09-11
10-12
11-13
12-14
13-15
14-16
Years
Not Monitored
Above Standard
Below Standard

VERMONT

Ozone

In the 2000 – 2002 time period, 0.19 million people (30.3%) lived in counties that met the ozone standard. By 2014 – 2016 this had increased to approximately 0.2 million people (31.7%). The remainder of the population lived in counties where ozone was not measured. The ozone standard was lowered from 0.085 ppm to 0.070 ppm. Figure VT-1 shows the distribution of people by year. The population weighted ozone design value in 2000 – 2002 was 0.078 ppm. By 2014 – 2016 this had lowered to a value of 0.061 ppm, a reduction of 21.8 percent.

24-Hour PM-2.5

In the 2000 – 2002 time period, approximately 0.31 million people (50.1%) lived in counties where 24-hour PM-2.5 levels met the standard. By 2014 - 2016 this was approximately 0.22 million people (35.4%). The standard was lowered from 65 to 35 µg/m3. Figure VT-2 shows the distribution of people by year. The population weighted 24-hour PM-2.5 design value in 2000 – 2002 was 29 µg/m3. By 2014 – 2016 this had lowered to a value of 16 µg/m3, a reduction of 44.8 percent.

Annual PM-2.5

In the 2000 – 2002 time period, approximately 0.31 million people (50.1%) lived in counties where annual PM-2.5 levels met the standard. By 2014 – 2016 this was approximately 0.22 million people (35.4%). The standard was lowered from 15 to 12 µg/m3. Figure VT-3 shows the distribution of people by year. The population weighted annual PM-2.5 design value in 2000 – 2002 was 9.7 µg/m3. By 2014 – 2016 this had lowered to a value of 6.0 µg/m3, a reduction of 38.1 percent.

Table VT-1

2014 – 2016

		Ozone			Particle Pollution (PM-2.5)				
County	Population	Avg. DV	Grade	MM	Avg. 24-Hr DV	Grade	Avg. Ann DV	Grade	MM
Bennington	36,191	0.063	C	N	10	A	3.0	A	N
Chittenden	161,531	0.061	B	N	14	A	5.9	A	N
Rutland	59,310	ND	ND	ND	27	A	8.1	A	N

DV – Design Value ND - No Data MM – Multiple Monitors

Table VT-2
Population Weighted Design Values

Period	Ozone (ppm)	24-Hour PM-2.5 (µg/m3)	Annual PM-2.5 (µg/m3)
2000 – 2002	0.078	29	9.7
2001 – 2003	0.078	32	10.2
2002 – 2004	0.076	32	10.1
2003 – 2005	0.071	29	9.4
2004 – 2006	0.069	30	9.5
2005 – 2007	0.070	29	8.8
2006 – 2008	0.070	26	8.8
2007 – 2009	0.069	22	7.8
2008 – 2010	0.065	23	7.9
2009 – 2011	0.061	22	7.3
2010 – 2012	0.062	21	7.1
2011 – 2013	0.061	19	6.9
2012 – 2014	0.062	17	6.7
2013 – 2015	0.062	ND	ND
2014 – 2016	0.061	16	6.0

VERMONT

Table VT-3
People Breathing Ozone

Grade	2000-2002	2002-2004	2004-2006	2006-2008	2008-2010	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016
A	0	0	0	0	0	0	0	0	0	0
B	0	151,445	189,988	0	156,545	195,201	196,174	196,976	197,699	161,531
C	186,744	37,062	0	191,827	37,125	0	0	0	0	36,191
D	0	0	0	0	0	0	0	0	0	0
F	0	0	0	0	0	0	0	0	0	0
Subtotal	186,744	188,507	189,988	191,827	193,670	195,201	196,174	196,976	197,699	197,722
NM	428,698	431,413	432,904	432,324	432,071	430,810	430,456	429,586	428,343	426,872
Total	615,442	619,920	622,861	624,151	625,741	626,911	626,630	626,562	626,042	624,594

People Breathing Short-term Particle Pollution (24-Hour PM-2.5)

Grade	2000-2002	2002-2004	2004-2006	2006-2008	2008-2010	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016
A	308,565	214,442	37,127	191,827	193,670	195,201	256,796	257,062	0	220,841
B	0	0	234,134	62,368	61,642	60,869	0	0	0	0
C	0	0	18,379	0	0	0	0	0	0	0
D	0	0	0	0	0	0	0	0	0	0
F	0	0	0	0	0	0	0	0	0	0
Subtotal	308,565	214,442	289,640	254,195	255,312	256,070	256,796	257,062	0	220,841
NM	306,877	405,478	333,252	369,956	370,429	369,941	396,834	369,500	626,042	403,753
Total	615,442	619,920	622,861	624,151	625,741	626,911	626,630	626,562	626,042	624,594

People Breathing Year Round Particle Pollution (Annual PM-2.5)

Grade	2000-2002	2002-2004	2004-2006	2006-2008	2008-2010	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016
A	308,565	214,442	289,640	254,195	255,312	256,070	256,796	257,062	0	220,841
B	0	0	0	0	0	0	0	0	0	0
C	0	0	0	0	0	0	0	0	0	0
D	0	0	0	0	0	0	0	0	0	0
F	0	0	0	0	0	0	0	0	0	0
Subtotal	308,565	214,442	289,640	254,195	255,312	256,070	256,796	257,062	0	220,841
NM	306,877	405,478	333,252	369,956	370,429	369,941	369,834	369,500	626,042	403,753
Total	615,442	619,920	622,861	624,151	625,741	626,911	626,630	626,562	626,042	624,594

NM – Not Monitored

Figure VT-1

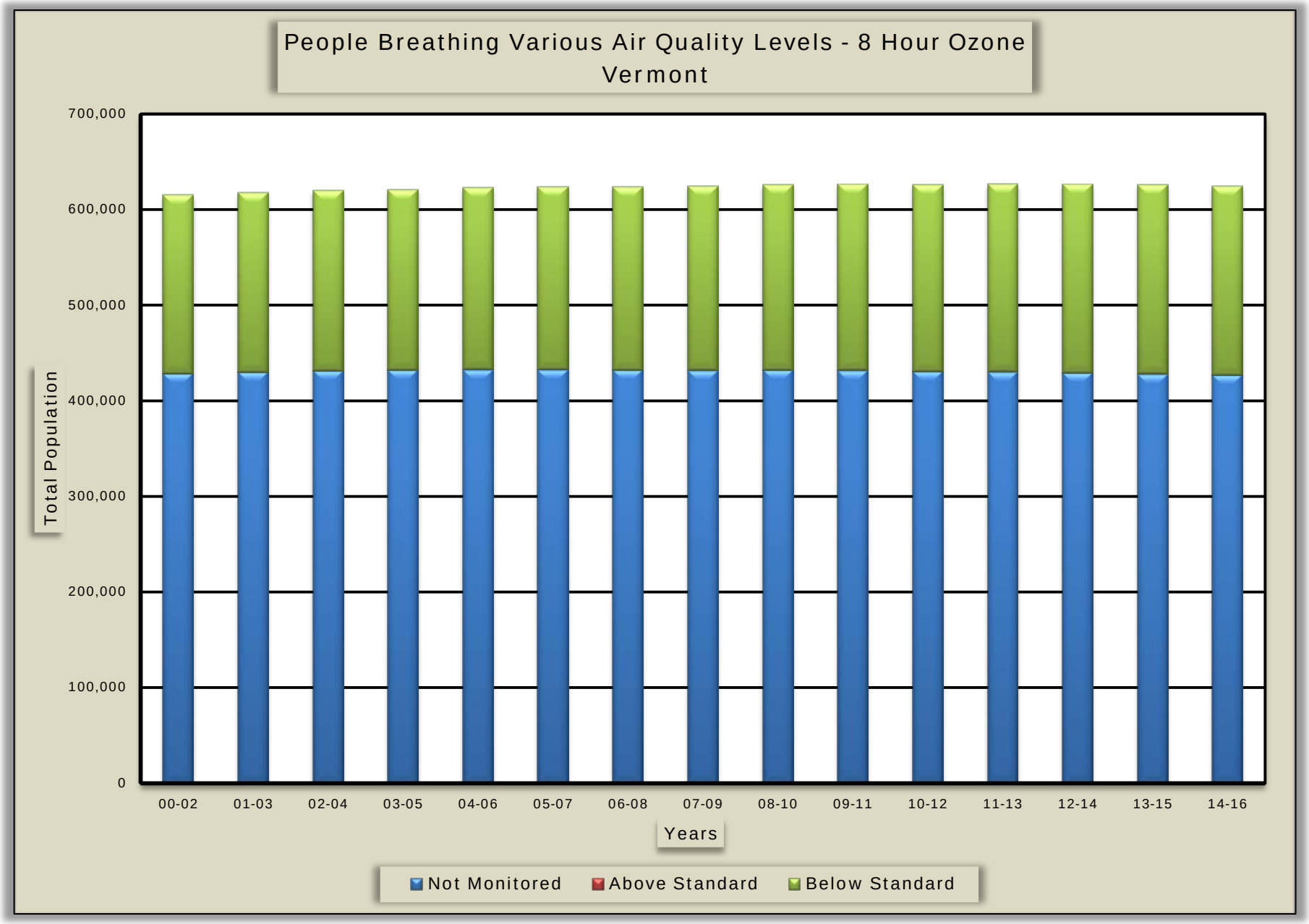

People Breathing Various Air Quality Levels - 8 Hour Ozone
Vermont
700,000
600,000
500,000
400,000
300,000
200,000
100,000
0
Total Population
00-02
01-03
02-04
03-05
04-06
05-07
06-08
07-09
08-10
09-11
10-12
11-13
12-14
13-15
14-16
Years
Not Monitored
Above Standard
Below Standard

Figure VT-2

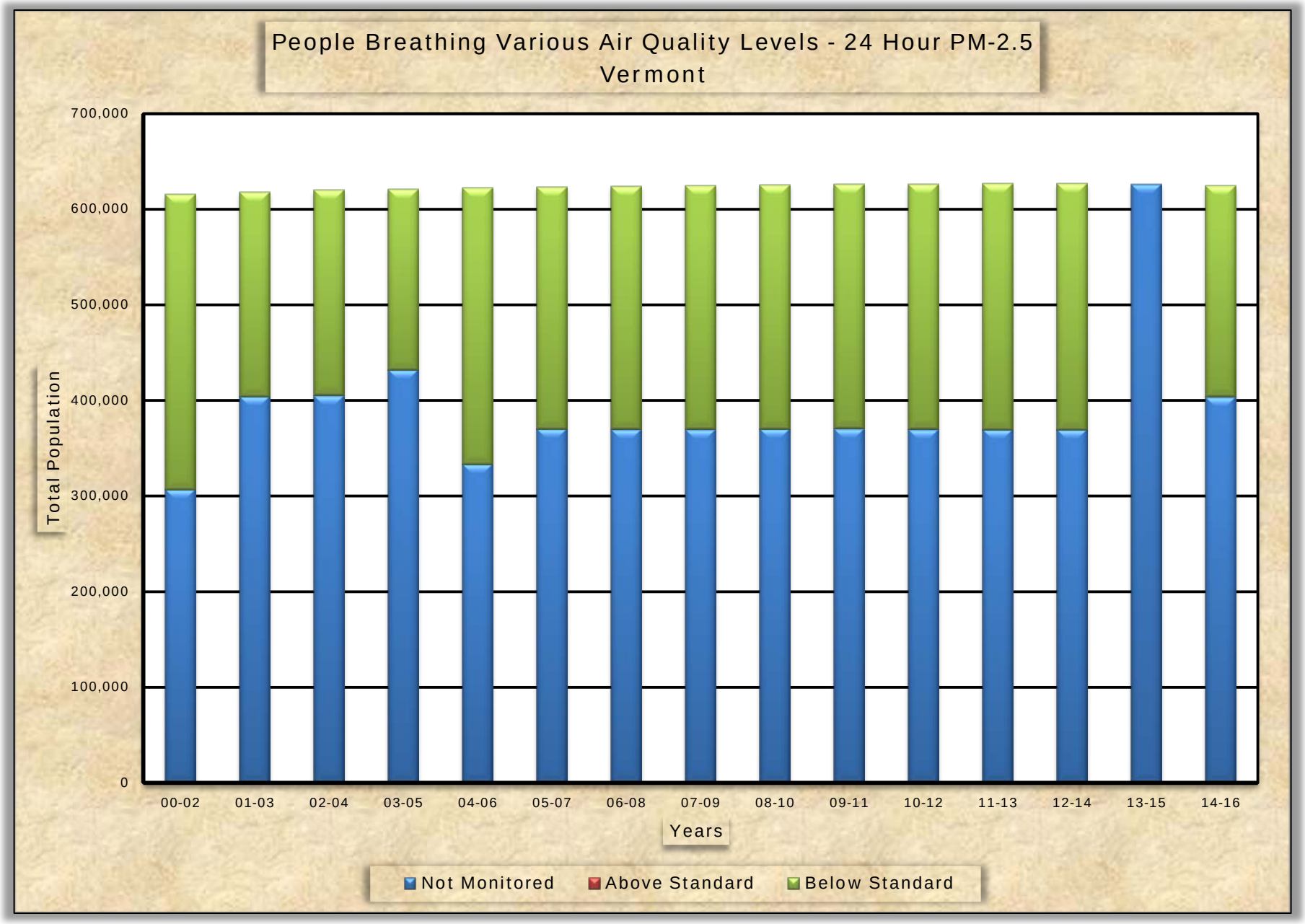
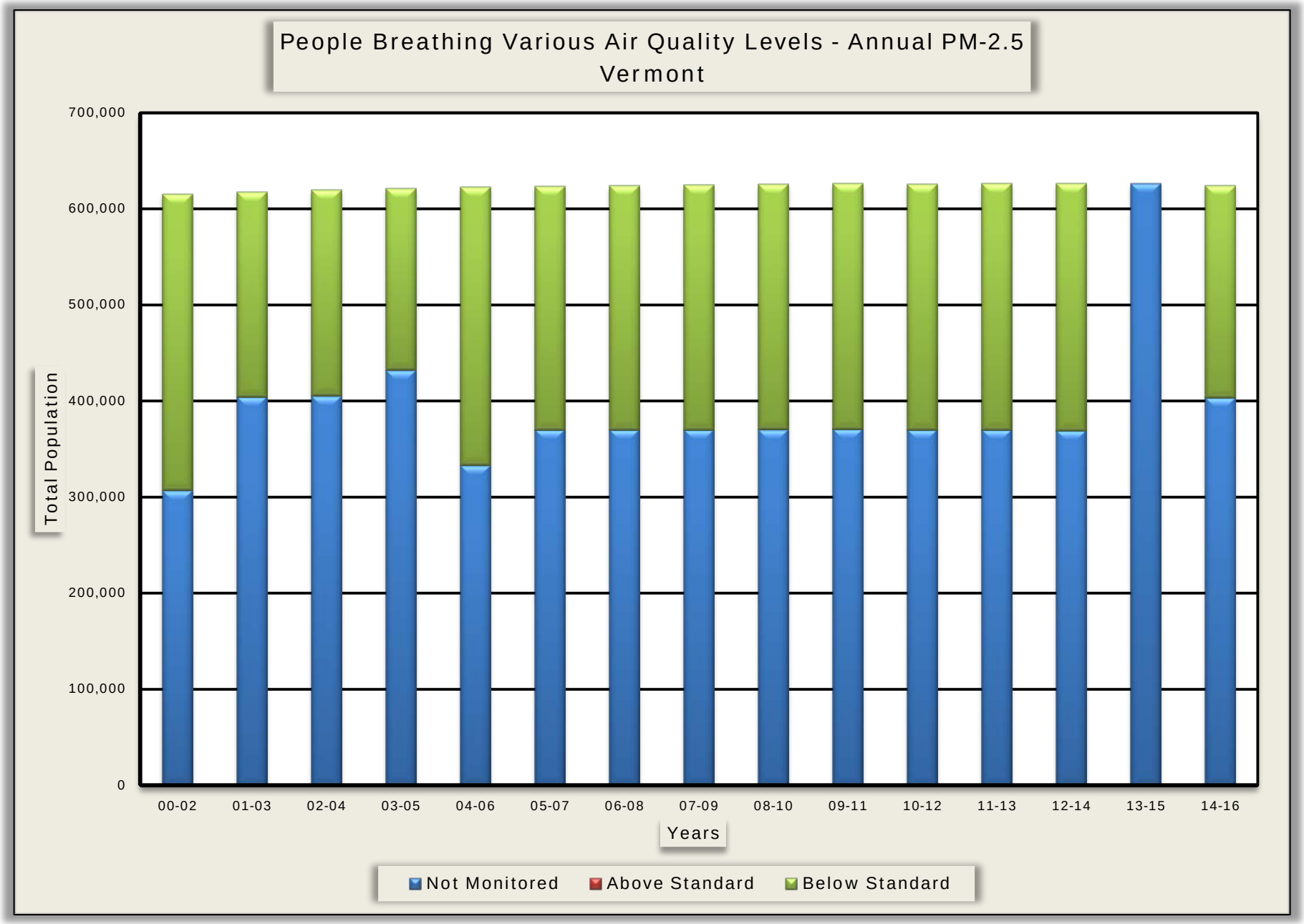

People Breathing Various Air Quality Levels - 24 Hour PM-2.5
Vermont
Total Population
700,000
600,000
500,000
400,000
300,000
200,000
100,000
0
00-02
01-03
02-04
03-05
04-06
05-07
06-08
07-09
08-10
09-11
10-12
11-13
12-14
13-15
14-16
Years
Not Monitored
Above Standard
Below Standard

Figure VT-3


People Breathing Various Air Quality Levels - Annual PM-2.5
Vermont
Total Population
700,000
600,000
500,000
400,000
300,000
200,000
100,000
0
00-02
01-03
02-04
03-05
04-06
05-07
06-08
07-09
08-10
09-11
10-12
11-13
12-14
13-15
14-16
Years
Not Monitored
Above Standard
Below Standard

VIRGINIA

Ozone

In the 2000 – 2002 time period, 0.57 million people (7.8%) lived in counties that met the ozone standard. By 2014 – 2016 this had increased to approximately 3.3 million people (38.7%). The ozone standard was lowered from 0.085 ppm to 0.070 ppm. Figure VA-1 shows the distribution of people by year. The population weighted ozone design value in 2000 – 2002 was 0.089 ppm. By 2014 – 2016 this had lowered to a value of 0.066 ppm, a reduction of 25.8 percent.

24-Hour PM-2.5

In the 2000 – 2002 time period, approximately 3.1 million people (42.9%) lived in counties where 24-hour PM-2.5 levels met the standard. By 2014 - 2016 this was approximately 4.0 million people (47.2%). The remainder of the population lived in counties where PM-2.5 was not measured. The standard was lowered from 65 to 35 µg/m3. Figure VA-2 shows the distribution of people by year. The population weighted 24-hour PM-2.5 design value in 2000 – 2002 was 33 µg/m3. By 2014 – 2016 this had lowered to a value of 18 µg/m3, a reduction of 45.5 percent.

Annual PM-2.5

In the 2000 – 2002 time period, approximately 3.1 million people (42.3%) lived in counties where annual PM-2.5 levels met the standard. By 2014 – 2016 this was approximately 4.0 million people (47.2%). The remainder of the population lived in counties where PM-2.5 was not measured. The standard was lowered from 15 to 12 µg/m3. Figure VA-3 shows the distribution of people by year. The population weighted annual PM-2.5 design value in 2000 – 2002 was 13.6 µg/m3. By 2014 – 2016 this had lowered to a value of 7.8 µg/m3, a reduction of 42.6 percent.

VIRGINIA

Table VA-1
2014 – 2016

		Ozone			Particle Pollution (PM-2.5)				
County	Population	Avg. DV	Grade	MM	Avg. 24-Hr DV	Grade	Avg. Ann DV	Grade	MM
Albemarle	106,878	ND	ND	ND	16	A	7.0	A	N
Arlington	230,050	0.071	D	N	20	A	8.4	A	N
Caroline	30,178	0.061	B	N	ND	ND	ND	ND	ND
Charles City	7,071	0.063	C	N	16	A	7.3	A	N
Chesterfield	339,009	0.062	B	N	16	A	8.0	A	N
Fairfax	1,138,652	0.070	C	N	18	A	7.6	A	N
Fauquier	69,069	0.059	B	N	ND	ND	ND	ND	ND
Frederick	84,421	0.061	B	N	22	A	8.5	A	N
Giles	16,857	0.062	B	N	ND	ND	ND	ND	ND
Hanover	104,392	0.062	B	N	ND	ND	ND	ND	ND
Henrico	326,501	ND	ND	ND	16	A	7.6	A	Y
Loudoun	385,945	0.067	C	N	19	A	8.2	A	N
Madison	13,078	0.063	C	N	ND	ND	ND	ND	ND
Prince Edward	23,142	0.060	B	N	ND	ND	ND	ND	ND
Prince William	455,210	0.065	C	N	ND	ND	ND	ND	ND
Roanoke	94,031	0.062	B	N	17	A	7.5	A	N
Rockbridge	22,392	0.056	B	N	ND	ND	ND	ND	ND
Rockingham	797,744	ND	ND	ND	21	A	8.1	A	N
Stafford	144,361	0.063	C	N	ND	ND	ND	ND	ND
Wythe	29,016	0.061	B	N	ND	ND	ND	ND	ND
Bristol City	16,960	ND	ND	ND	18	A	8.0	A	N
Hampton City	135,410	0.064	C	N	15	A	7.0	A	N
Lynchburg City	80,212	ND	ND	ND	15	A	7.2	A	N
Norfolk City	245,115	ND	ND	ND	18	A	8.2	A	N
Richmond City	223,170	ND	ND	ND	19	A	9.1	A	N
Salem City	25,549	ND	ND	ND	17	A	8.2	A	N
Suffolk City	89,273	0.060	B	Y	ND	ND	ND	ND	ND
Virginia Beach	452,602	ND	ND	ND	18	A	7.5	A	N

DV – Design Value ND - No Data MM – Multiple Monitors

VIRGINIA

Table VA-2
Population Weighted Design Values

Period	Ozone (ppm)	24-Hour PM-2.5 (µg/m3)	Annual PM-2.5 (µg/m3)
2000 – 2002	0.089	33	13.6
2001 – 2003	0.090	33	13.4
2002 – 2004	0.087	32	13.3
2003 – 2005	0.081	33	13.5
2004 – 2006	0.081	32	13.3
2005 – 2007	0.081	32	13.1
2006 – 2008	0.080	29	12.1
2007 – 2009	0.075	25	11.1
2008 – 2010	0.075	22	10.2
2009 – 2011	0.075	22	9.6
2010 – 2012	0.078	22	9.4
2011 – 2013	0.073	21	8.7
2012 – 2014	0.068	20	8.4
2013 – 2015	0.065	19	8.2
2014 – 2016	0.066	18	7.8

VIRGINIA

Table VA-3
People Breathing Ozone

Grade	2000-2002	2002-2004	2004-2006	2006-2008	2008-2010	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016
A	0	0	0	0	0	0	0	0	0	0
B	0	21,432	820,936	22,368	217,101	118,187	537,990	437,766	1,278,432	979,209
C	570,834	1,569,757	1,450,998	479,244	2,109,619	1,595,151	1,944,788	1,936,969	5,496,516	2,279,727
D	2,455,734	839,744	799,565	1,326,669	1,289,353	693,945	1,355,830	1,364,446	0	230,050
F	54,911	794,464	0	1,624,415	0	1,339,647	0	0	0	0
Subtotal	3,081,479	3,255,396	3,071,489	3,452,696	3,616,073	3,746,930	3,838,608	3,739,181	3,774,948	3,488,986
NM	4,201,894	4,250,279	4,602,237	4,380,800	4,384,951	4,438,937	4,421,797	4,587,100	4,608,045	4,922,822
Total	7,286,873	7,475,576	7,673,725	7,833,496	8,001,024	8,186,867	8,260,405	8,326,269	8,382,993	8,411,808

People Breathing Short-term Particle Pollution (24-Hour PM-2.5)

Grade	2000-2002	2002-2004	2004-2006	2006-2008	2008-2010	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016
A	3,127,068	2,987,810	0	363,074	3,380,954	3,653,197	3,617,571	3,500,700	3,531,610	3,971,320
B	0	0	1,531,744	2,812,405	0	0	0	0	0	0
C	0	0	1,568,598	0	0	0	0	0	0	0
D	0	0	0	0	0	0	0	0	0	0
F	0	0	0	0	0	0	0	0	0	0
Subtotal	3,127,068	2,987,810	3,100,342	3,175,479	3,380,954	3,653,197	3,617,571	3,500,700	3,531,610	3,971,320
NM	4,159,805	4,487,765	4,573,383	4,658,017	4,620,070	4,532,670	4,642,834	4,825,589	4,851,383	4,440,488
Total	7,286,873	7,475,576	7,673,725	7,833,496	8,001,024	8,186,867	8,260,405	8,326,269	8,382,993	8,411,808

People Breathing Year Round Particle Pollution (Annual PM-2.5)

Grade	2000-2002	2002-2004	2004-2006	2006-2008	2008-2010	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016
A	135,304	0	0	1,069,046	3,380,954	3,653,197	3,505,118	3,500,700	3,531,610	3,971,320
B	700,874	1,780,751	1,853,720	2,106,433	0	0	112,453	0	0	0
C	2,249,249	1,207,059	1,246,622	0	0	0	0	0	0	0
D	41,641	0	0	0	0	0	0	0	0	0
F	0	0	0	0	0	0	0	0	0	0
Subtotal	3,127,068	2,987,810	3,100,342	3,175,479	3,380,954	3,653,197	3,617,571	3,500,700	3,531,610	3,971,320
NM	4,159,805	4,487,765	4,573,383	4,658,017	4,620,070	4,532,670	4,642,834	4,825,589	4,851,383	4,440,488
Total	7,286,873	7,475,576	7,673,725	7,833,496	8,001,024	8,186,867	8,260,405	8,326,269	8,382,993	8,411,808

NM – Not Monitored

Figure VA-1

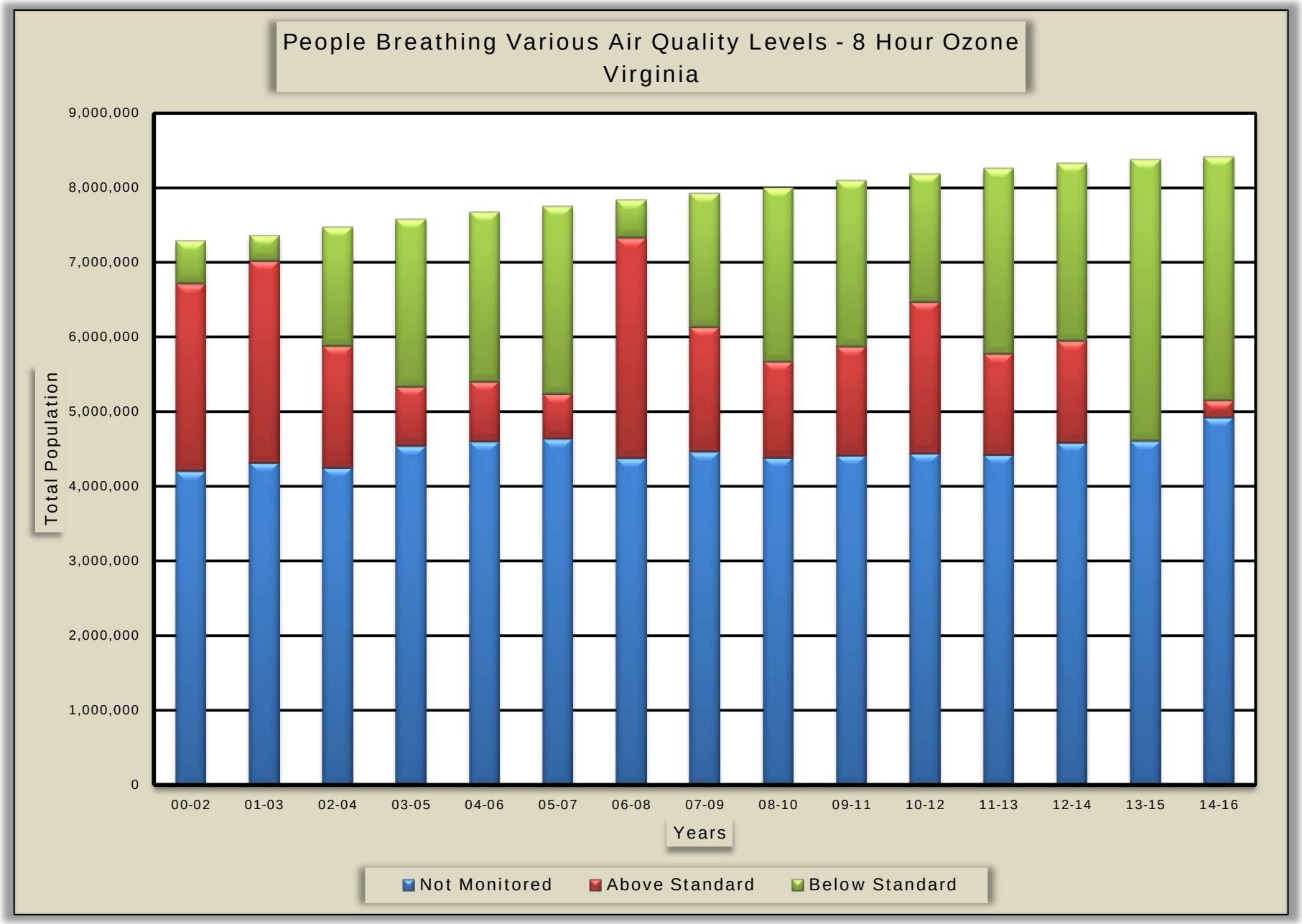

People Breathing Various Air Quality Levels - 8 Hour Ozone
Virginia
Total Population
9,000,000
8,000,000
7,000,000
6,000,000
5,000,000
4,000,000
3,000,000
2,000,000
1,000,000
0
00-02
01-03
02-04
03-05
04-06
05-07
06-08
07-09
08-10
09-11
10-12
11-13
12-14
13-15
14-16
Years
Not Monitored
Above Standard
Below Standard

Figure VA-2

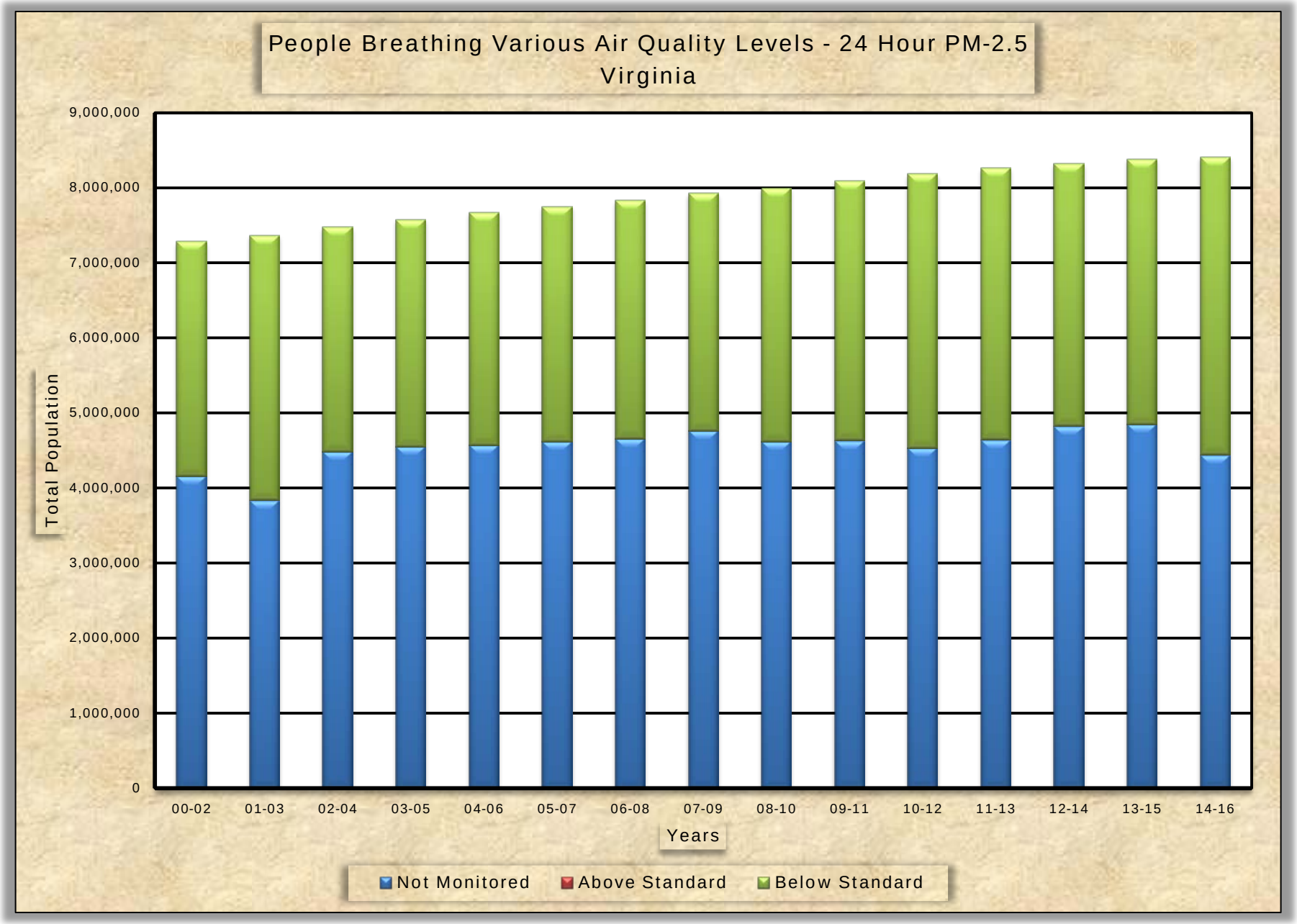
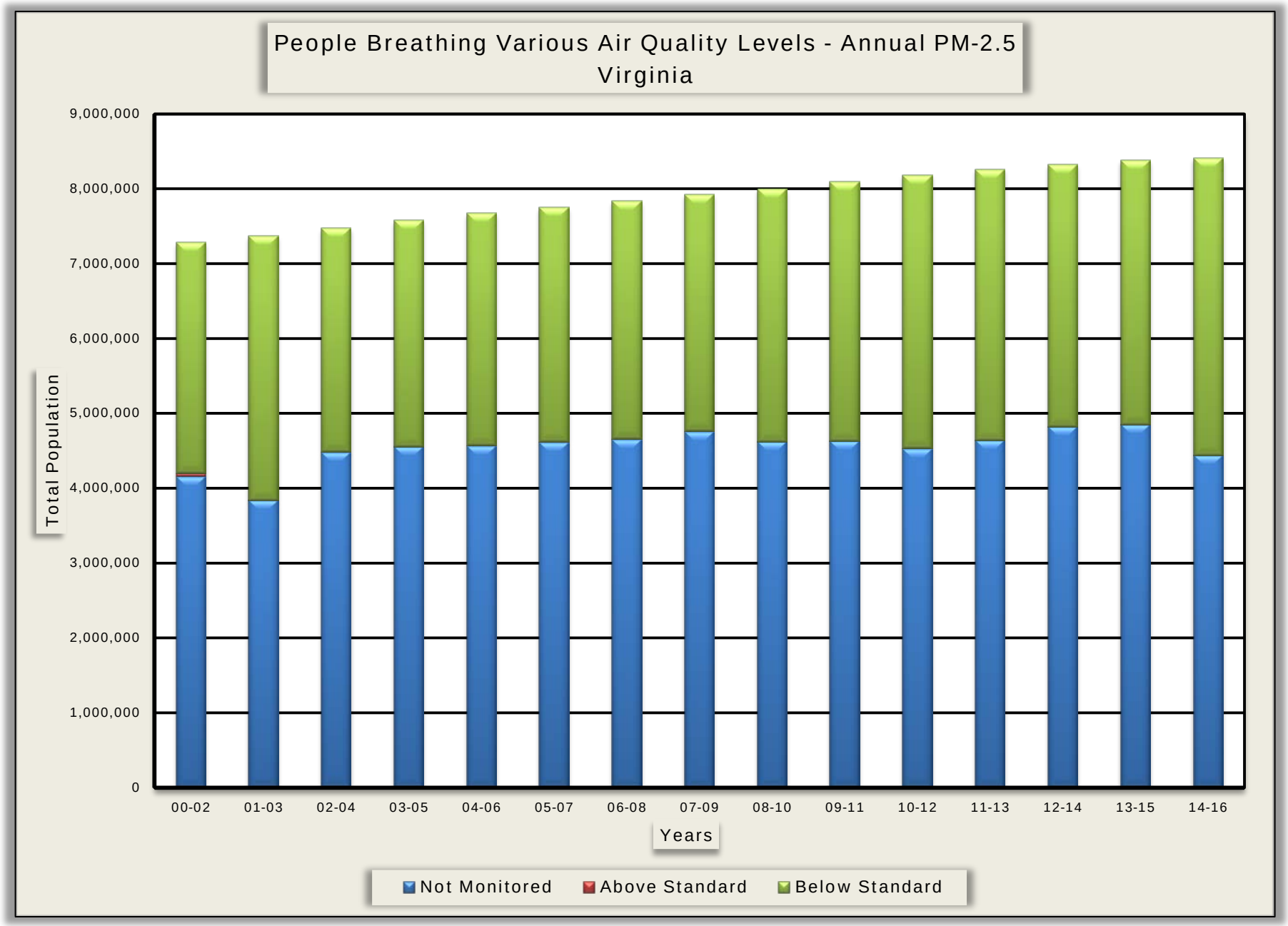

People Breathing Various Air Quality Levels - 24 Hour PM-2.5
Virginia
Total Population
9,000,000
8,000,000
7,000,000
6,000,000
5,000,000
4,000,000
3,000,000
2,000,000
1,000,000
0
00-02
01-03
02-04
03-05
04-06
05-07
06-08
07-09
08-10
09-11
10-12
11-13
12-14
13-15
14-16
Years
Not Monitored
Above Standard
Below Standard

Figure VA-3


People Breathing Various Air Quality Levels - Annual PM-2.5
Virginia
Total Population
9,000,000
8,000,000
7,000,000
6,000,000
5,000,000
4,000,000
3,000,000
2,000,000
1,000,000
0
00-02
01-03
02-04
03-05
04-06
05-07
06-08
07-09
08-10
09-11
10-12
11-13
12-14
13-15
14-16
Years
Not Monitored
Above Standard
Below Standard

WASHINGTON

Ozone

In the 2000 – 2002 time period, approximately 3.9 million people (63.8%) lived in counties that met the ozone standard. In 2014 – 2016 this value was 4.7 million people (64.0%). The remainder of the population lived in counties where ozone was not measured. The ozone standard was lowered from 0.085 ppm to 0.070 ppm. Figure WA-1 shows the distribution of people by year. The population weighted ozone design value in 2000 – 2002 was 0.058 ppm. By 2014 – 2016 this had lowered to a value of 0.057 ppm, a reduction of 1.7 percent.

24-Hour PM-2.5

In the 2000 – 2002 time period, approximately 4.7 million people (77.5%) lived in counties where 24-hour PM-2.5 levels met the standard. By 2014 - 2016 this was approximately 4.5 million people (62.2%). The remainder of the population lived in counties where PM-2.5 was not measured. The standard was lowered from 65 to 35 µg/m3. Figure WA-2 shows the distribution of people by year. The population weighted 24-hour PM-2.5 in 2000 - 2002 was 32 µg/m3. By 2014 – 2016 this had lowered to a value of 21 µg/m3, a reduction of 34.4 percent.

Annual PM-2.5

In the 2000 – 2002 time period, approximately 4.7 million people (77.5%) lived in counties where annual PM-2.5 levels met the standard. By 2014 – 2016 this was approximately 4.5 million people (62.2%). The remainder of the population lived in counties where PM-2.5 was not measured. The standard was lowered from 15 to 12 µg/m3. Figure WA-3 shows the distribution of people by year. The population weighted annual PM-2.5 in 2000 – 2002 was 9.8 µg/m3. By 2014 – 2016 this had lowered to a value of 6.8 µg/m3, a reduction of 30.6 percent.

WASHINGTON

Table WA-1

2014 – 2016

		Ozone			Particle Pollution (PM-2.5)				
County	Population	Avg. DV	Grade	MM	Avg. 24-Hr DV	Grade	Avg. Ann DV	Grade	MM
Clallam	74,570	0.052	A	N	ND	ND	ND	ND	ND
Clark	467,018	0.059	B	N	ND	ND	ND	ND	ND
King	2,149,970	0.056	B	Y	19	A	7.0	A	Y
Kitsap	264,811	ND	ND	ND	12	A	4.6	A	N
Pierce	861,312	0.060	B	N	25	A	7.1	A	N
Skagit	123,681	0.048	A	Y	ND	ND	ND	ND	ND
Snohomish	787,620	ND	ND	ND	26	A	6.2	A	Y
Spokane	499,072	0.059	B	Y	ND	ND	ND	ND	ND
Thurston	275,222	0.057	B	N	ND	ND	ND	ND	ND
Whatcom	216,800	0.046	A	N	16	A	6.3	A	N
Yakima	249,636	ND	ND	ND	29	B	8.0	A	N

DV – Design Value ND - No Data MM – Multiple Monitors

Table WA-2

Population Weighted Design Values

Period	Ozone (ppm)	24-Hour PM-2.5 (µg/m3)	Annual PM-2.5 (µg/m3)
2000 – 2002	0.058	32	9.8
2001 – 2003	0.062	31	9.3
2002 – 2004	0.063	32	9.5
2003 – 2005	0.062	31	9.8
2004 – 2006	0.064	31	9.5
2005 – 2007	0.060	34	9.4
2006 – 2008	0.060	36	9.3
2007 – 2009	0.059	32	9.3
2008 – 2010	0.059	33	8.5
2009 – 2011	0.060	24	7.1
2010 – 2012	0.055	19	6.5
2011 – 2013	0.054	24	7.7
2012 – 2014	0.056	23	7.0
2013 – 2015	0.056	23	6.8
2014 – 2016	0.057	21	6.8

WASHINGTON

Table WA-3
People Breathing Ozone

Grade	2000-2002	2002-2004	2004-2006	2006-2008	2008-2010	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016
A	3,208,680	2,391,159	2,776,408	1,048,032	2,583,489	3,063,089	2,940,658	2,605,550	1,735,715	1,490,036
B	653,225	1,598,707	1,213,118	2,059,387	780,425	251,860	990,510	1,836,238	2,323,675	2,640,116
C	0	0	0	392,700	482,812	0	0	0	529,281	537,493
D	0	0	0	468,755	0	0	0	0	0	0
F	0	0	0	0	0	0	0	0	0	0
Subtotal	3,861,905	3,989,866	3,989,526	3,968,874	3,946,726	3,314,949	3,931,168	4,441,788	4,588,671	4,667,645
NM	2,190,444	2,188,779	2,881,227	2,593,357	2,777,814	3,672,063	3,040,238	2,619,742	2,581,680	2,620,355
Total	6,052,349	6,178,645	6,370,753	6,562,231	6,724,540	6,987,012	6,971,406	7,061,530	7,170,351	7,288,000

People Breathing Short-term Particle Pollution (24-Hour PM-2.5)

Grade	2000-2002	2002-2004	2004-2006	2006-2008	2008-2010	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016
A	4,691,483	4,362,635	911,484	0	0	2,130,929	2,541,724	3,323,868	3,459,831	3,755,433
B	0	0	1,359,001	462,263	1,138,698	935,170	905,553	831,928	1,607,785	774,716
C	0	0	670,706	694,622	0	0	409,872	247,687	0	0
D	0	0	0	0	1,038,456	0	0	0	0	0
F	0	0	763,408	785,400	0	0	0	0	0	0
Subtotal	4,691,483	4,362,635	3,704,598	1,942,285	2,177,154	3,066,098	3,857,149	4,403,483	5,067,616	4,530,149
NM	1,360,866	1,816,010	2,666,160	4,619,946	4,547,386	3,920,914	3,114,257	2,658,047	2,102,735	2,757,851
Total	6,052,349	6,178,645	6,370,753	6,562,231	6,724,540	6,987,012	6,971,406	7,061,530	7,170,351	7,288,000

People Breathing Year Round Particle Pollution (Annual PM-2.5)

Grade	2000-2002	2002-2004	2004-2006	2006-2008	2008-2010	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016
A	4,691,483	4,362,635	3,704,598	1,942,285	2,177,154	3,066,098	3,175,666	4,403,483	5,067,616	4,530,149
B	0	0	0	0	0	0	681,483	0	0	0
C	0	0	0	0	0	0	0	0	0	0
D	0	0	0	0	0	0	0	0	0	0
F	0	0	0	0	0	0	0	0	0	0
Subtotal	4,691,483	4,362,635	3,704,598	1,942,285	2,177,154	3,066,098	3,857,149	4,403,483	5,067,616	4,530,149
NM	1,360,866	1,816,010	2,666,160	4,619,946	4,547,386	3,920,914	2,114,257	2,658,047	2,102,735	2,757,851
Total	6,052,349	6,178,645	6,370,753	6,562,631	6,724,540	6,987,012	6,971,406	7,061,530	7,170,351	7,288,000

NM – Not Monitored

Figure WA-1

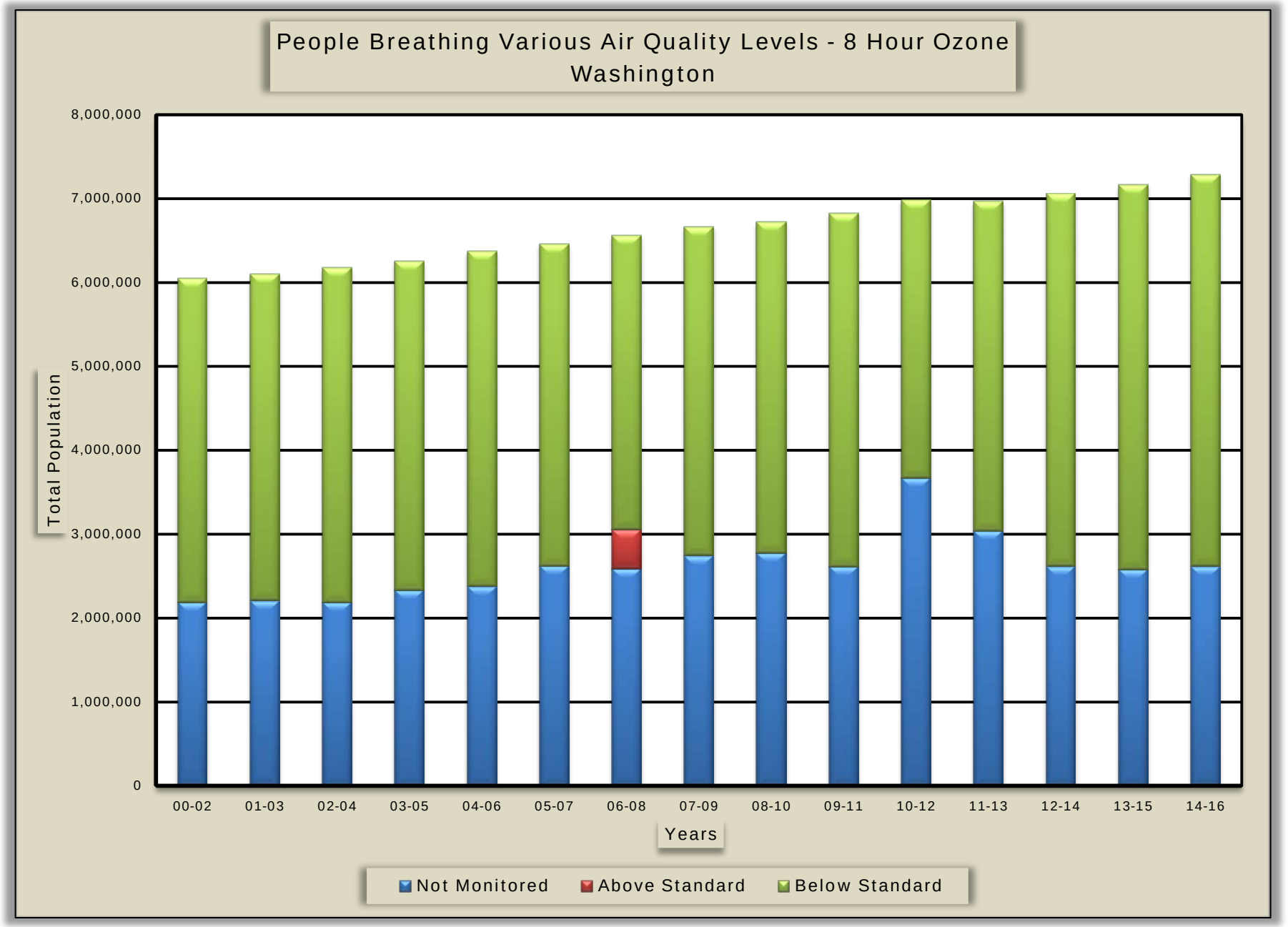

People Breathing Various Air Quality Levels - 8 Hour Ozone
Washington
8,000,000
7,000,000
6,000,000
5,000,000
4,000,000
3,000,000
2,000,000
1,000,000
0
Total Population
00-02
01-03
02-04
03-05
04-06
05-07
06-08
07-09
08-10
09-11
10-12
11-13
12-14
13-15
14-16
Years
Not Monitored
Above Standard
Below Standard

Figure WA-2

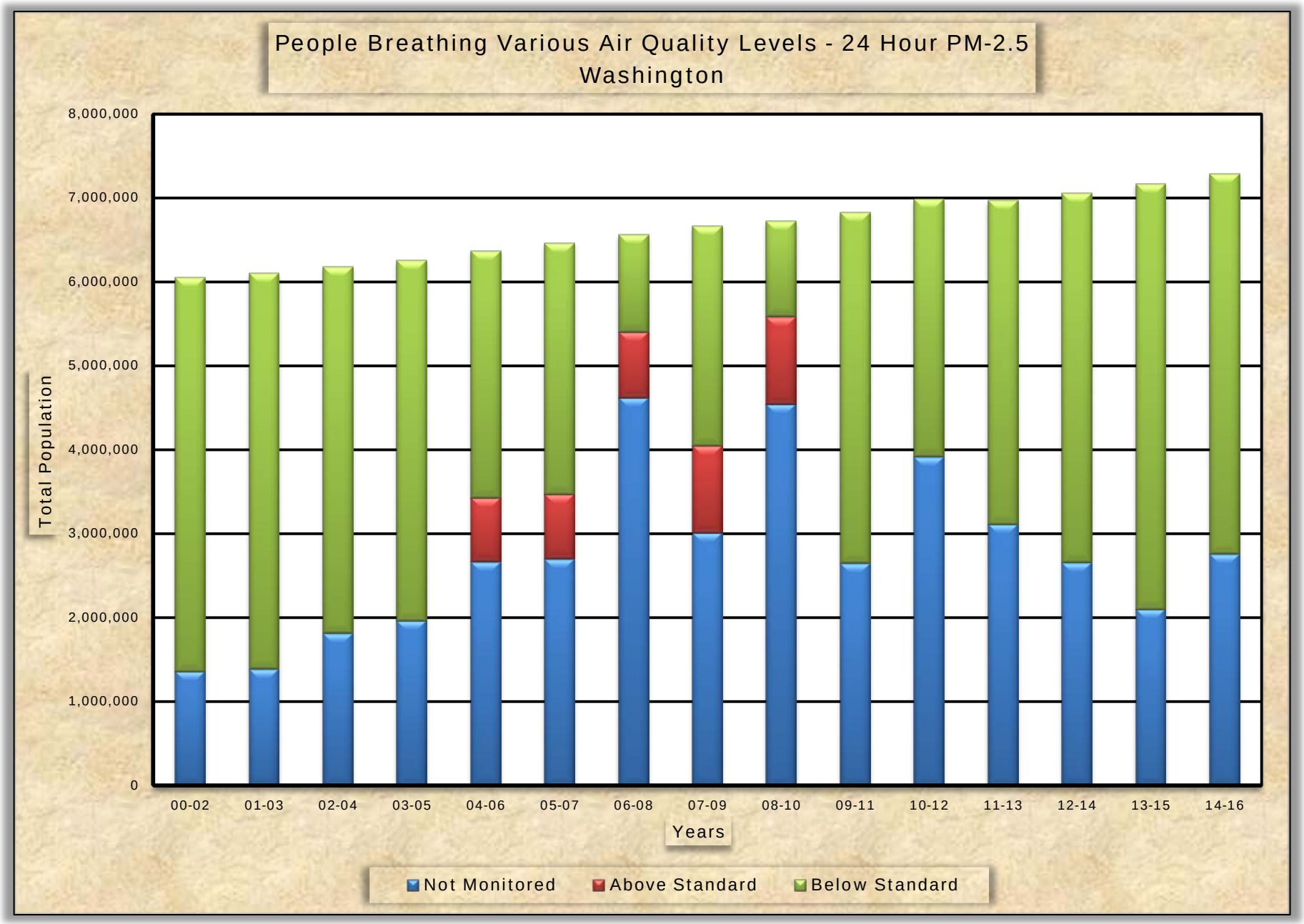
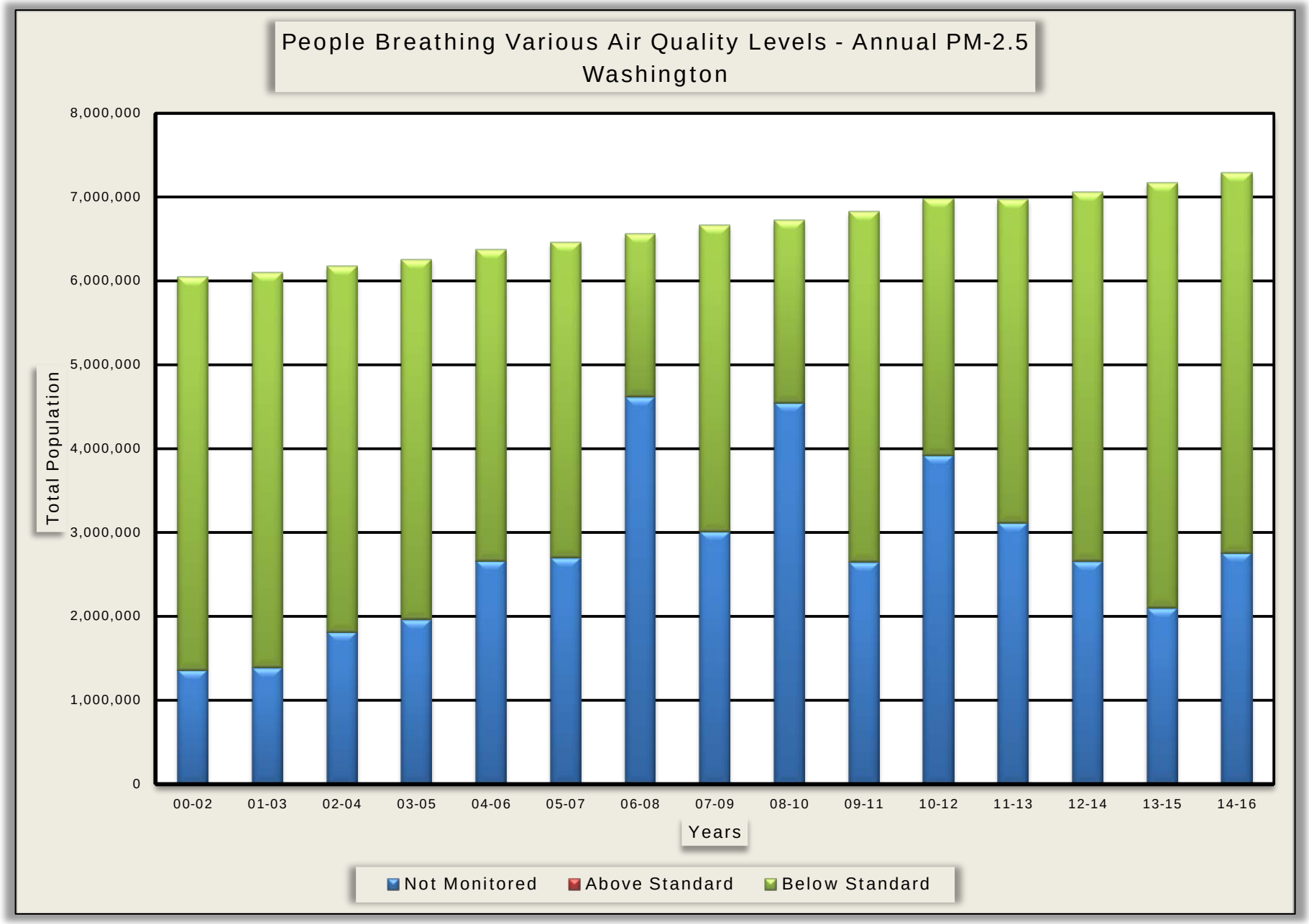

People Breathing Various Air Quality Levels - 24 Hour PM-2.5
Washington
Total Population
8,000,000
7,000,000
6,000,000
5,000,000
4,000,000
3,000,000
2,000,000
1,000,000
0
00-02
01-03
02-04
03-05
04-06
05-07
06-08
07-09
08-10
09-11
10-12
11-13
12-14
13-15
14-16
Years
Not Monitored
Above Standard
Below Standard

Figure WA-3


People Breathing Various Air Quality Levels - Annual PM-2.5
Washington
Total Population
8,000,000
7,000,000
6,000,000
5,000,000
4,000,000
3,000,000
2,000,000
1,000,000
0
00-02
01-03
02-04
03-05
04-06
05-07
06-08
07-09
08-10
09-11
10-12
11-13
12-14
13-15
14-16
Years
Not Monitored
Above Standard
Below Standard

WEST VIRGINIA

Ozone

In the 2000 – 2002 time period, 0.39 million people (21.8%) lived in counties that met the ozone standard. By 2014 – 2016 this had increased to approximately 0.68 million people (37.1%). The remainder of the population lived in counties where ozone was not measured. The ozone standard was lowered from 0.085 ppm to 0.070 ppm. Figure WV-1 shows the distribution of people by year. The population weighted ozone design value in 2000 – 2002 was 0.085 ppm. By 2014 – 2016 this had lowered to a value of 0.065 ppm, a reduction of 23.5 percent.

24-Hour PM-2.5

In the 2000 – 2002 time period, approximately 1.0 million people (53.3%) lived in counties where 24-hour PM-2.5 levels met the standard. By 2014 - 2016 this was approximately 0.8 million people (44.1%). The remainder of the population lived in counties where PM-2.5 was not measured. The standard was lowered from 65 to 35 µg/m3. Figure WV-2 shows the distribution of people by year. The population weighted 24-hour PM-2.5 design value in 2000 – 2002 was 39 µg/m3. By 2014 – 2016 this had lowered to a value of 20 µg/m3, a reduction of 48.7 percent.

Annual PM-2.5

In the 2000 – 2002 time period, approximately 0.3 million people (17.0%) lived in counties where annual PM-2.5 levels met the standard. By 2014 – 2016 this had increased to approximately 0.8 million people (44.1%). The remainder of the population lived in counties where PM-2.5 was not measured. The standard was lowered from 15 to 12 µg/m3. Figure WV-3 shows the distribution of people by year. The population weighted annual PM-2.5 design value in 2000 – 2002 was 15.9 µg/m3. By 2014 – 2016 this had lowered to a value of 8.9 µg/m3, a reduction of 44.8 percent.

Table WV-1

2014 – 2016

		Ozone			Particle Pollution (PM-2.5)				
County	Population	Avg. DV	Grade	MM	Avg. 24-Hr DV	Grade	Avg. Ann DV	Grade	MM
Berkeley	113,525	0.063	C	N	27	A	9.9	B	N
Brooke	22,977	ND	ND	ND	23	A	10.1	B	Y
Cabell	95,987	0.064	C	N	20	A	8.7	A	N
Gilmer	8,249	0.059	B	N	ND	ND	ND	ND	ND
Greenbrier	35,279	0.060	B	N	ND	ND	ND	ND	ND
Harrison	68,400	ND	ND	ND	18	A	8.4	A	N
Kanawha	186,241	0.067	C	N	18	A	8.6	A	Y
Marion	56,538	ND	ND	ND	18	A	8.6	A	N
Marshall	31,793	ND	ND	ND	23	A	10.2	B	N
Monongalia	104,622	0.064	C	N	18	A	8.1	A	N
Ohio	42,516	0.068	C	N	20	A	9.6	B	N
Tucker	6,926	0.061	B	N	ND	ND	ND	ND	ND
Wood	85,643	0.068	C	N	19	A	8.9	A	N

DV – Design Value ND - No Data MM – Multiple Monitors

Table WV-2
Population Weighted Design Values

Period	Ozone (ppm)	24-Hour PM-2.5 (µg/m3)	Annual PM-2.5 (µg/m3)
2000 – 2002	0.085	39	15.9
2001 – 2003	0.085	38	15.3
2002 – 2004	0.080	36	14.8
2003 – 2005	0.076	35	15.3
2004 – 2006	0.075	34	14.8
2005 – 2007	0.079	35	15.3
2006 – 2008	0.077	33	14.3
2007 – 2009	0.072	29	13.3
2008 – 2010	0.069	27	12.4
2009 – 2011	0.069	26	11.7
2010 – 2012	0.072	25	11.2
2011 – 2013	0.069	22	10.1
2012 – 2014	0.067	21	9.7
2013 – 2015	0.065	21	9.4
2014 – 2016	0.065	20	8.9

WEST VIRGINIA

Table WV-3
People Breathing Ozone

Grade	2000-2002	2002-2004	2004-2006	2006-2008	2008-2010	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016
A	0	0	0	0	0	0	0	8,618	0	0
B	0	122,039	540,333	0	131,799	35,820	159,990	396,774	147,844	50,454
C	393,703	542,777	131,477	229,286	555,496	657,664	551,269	306,576	533,987	628,534
D	183,349	0	0	449,677	0	0	0	0	0	0
F	0	0	0	0	0	0	0	0	0	0
Subtotal	577,052	664,816	671,810	678,963	687,295	693,484	711,259	711,964	681,831	678,988
NM	1,228,362	1,151,622	1,156,102	1,161,347	1,165,699	1,161,929	1,143,045	1,138,362	1,162,297	1,152,114
Total	1,806,414	1,816,438	1,827,912	1,840,310	1,852,994	1,855,413	1,854,304	1,850,326	1,844,128	1,831,102

People Breathing Short-term Particle Pollution (24-Hour PM-2.5)

Grade	2000-2002	2002-2004	2004-2006	2006-2008	2008-2010	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016
A	962,003	966,242	0	0	537,859	710,118	920,844	842,479	811,798	808,242
B	0	0	123,103	292,918	375,509	139,772	0	0	0	0
C	0	0	654,344	459,788	0	0	0	0	0	0
D	0	0	64,318	139,093	0	0	0	0	0	0
F	0	0	55,665	12,084	0	0	0	0	0	0
Subtotal	962,003	966,242	897,430	903,883	913,367	849,890	920,844	842,479	811,798	808,242
NM	843,411	850,246	930,482	936,427	939,627	1,005,523	933,460	1,007,847	1,032,330	1,022,860
Total	1,806,414	1,816,438	1,827,912	1,840,310	1,852,994	1,855,413	1,854,304	1,850,326	1,844,128	1,831,102

People Breathing Year Round Particle Pollution (Annual PM-2.5)

Grade	2000-2002	2002-2004	2004-2006	2006-2008	2008-2010	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016
A	14,123	13,997	0	0	340,679	793,363	250,097	172,224	507,337	597,431
B	62,016	140,122	142,496	146,820	560,654	56,527	518,932	626,074	292,786	210,811
C	230,738	354,064	357,138	553,563	12,035	0	151,834	44,181	11,675	0
D	230,599	426,459	397,796	203,500	0	0	0	0	0	0
F	424,527	31,600	0	0	0	0	0	0	0	0
Subtotal	962,003	966,242	897,430	903,883	913,367	849,890	920,844	842,479	811,798	808,242
NM	843,411	850,246	930,482	936,427	939,627	1,005,523	933,460	1,007,847	1,032,330	1,022,860
Total	1,803,414	1,816,438	1,827,912	1,840,310	1,852,994	1,855,413	1,854,304	1,850,326	1,844,128	1,831,102

NM – Not Monitored

Figure WV-1

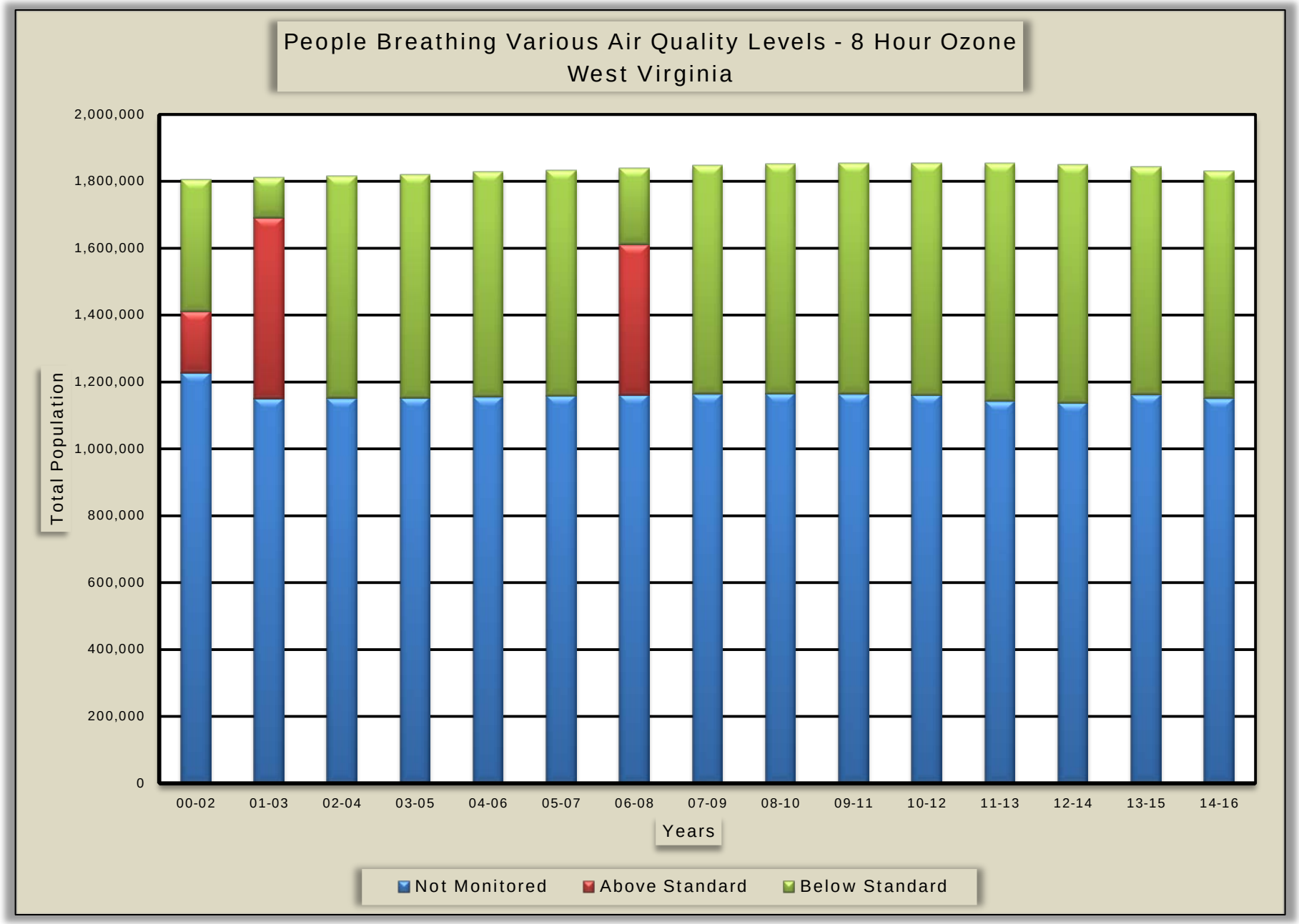

People Breathing Various Air Quality Levels - 8 Hour Ozone
West Virginia
Total Population
2,000,000
1,800,000
1,600,000
1,400,000
1,200,000
1,000,000
800,000
600,000
400,000
200,000
0
00-02
01-03
02-04
03-05
04-06
05-07
06-08
07-09
08-10
09-11
10-12
11-13
12-14
13-15
14-16
Years
Not Monitored
Above Standard
Below Standard

Figure WV-2

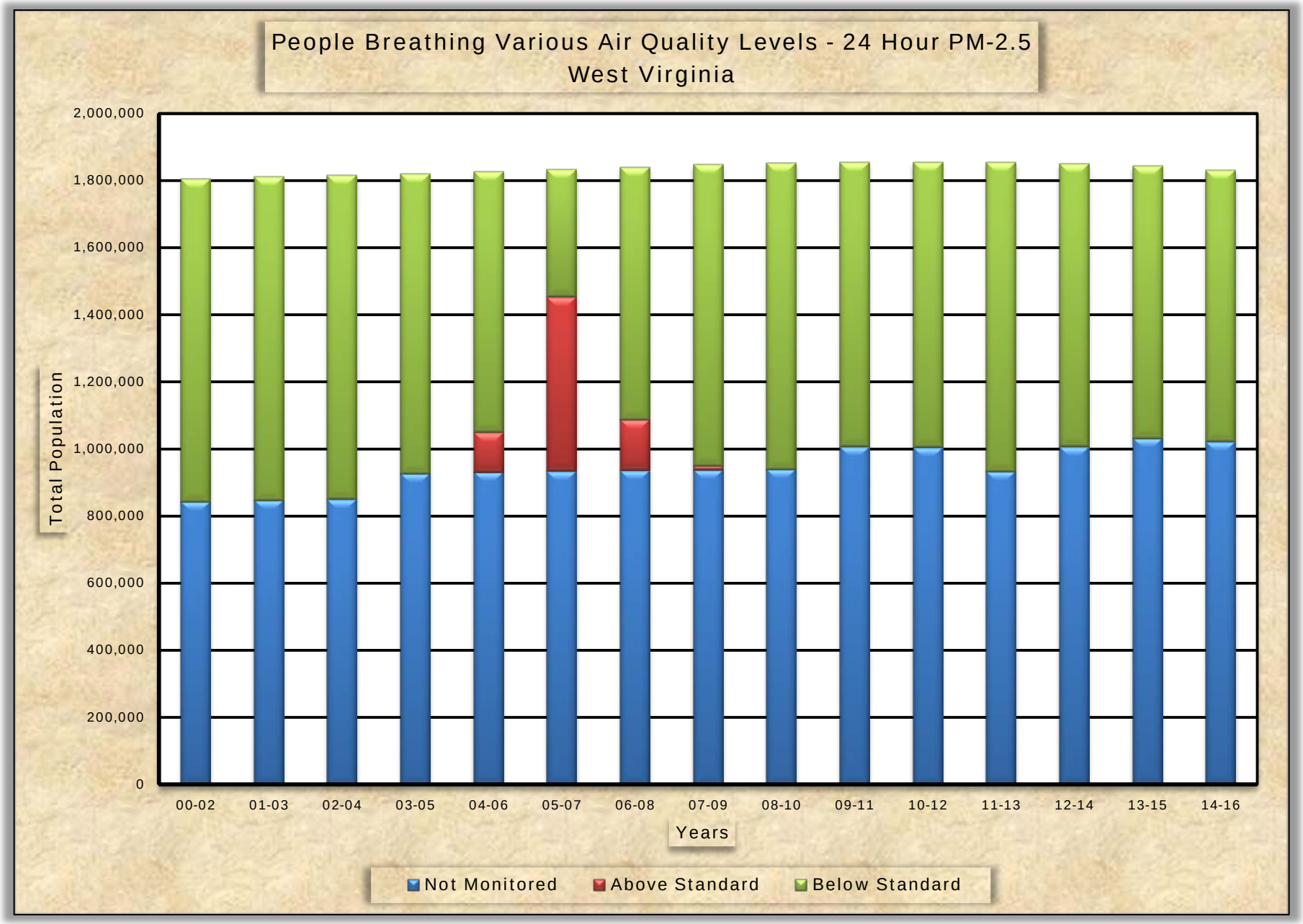
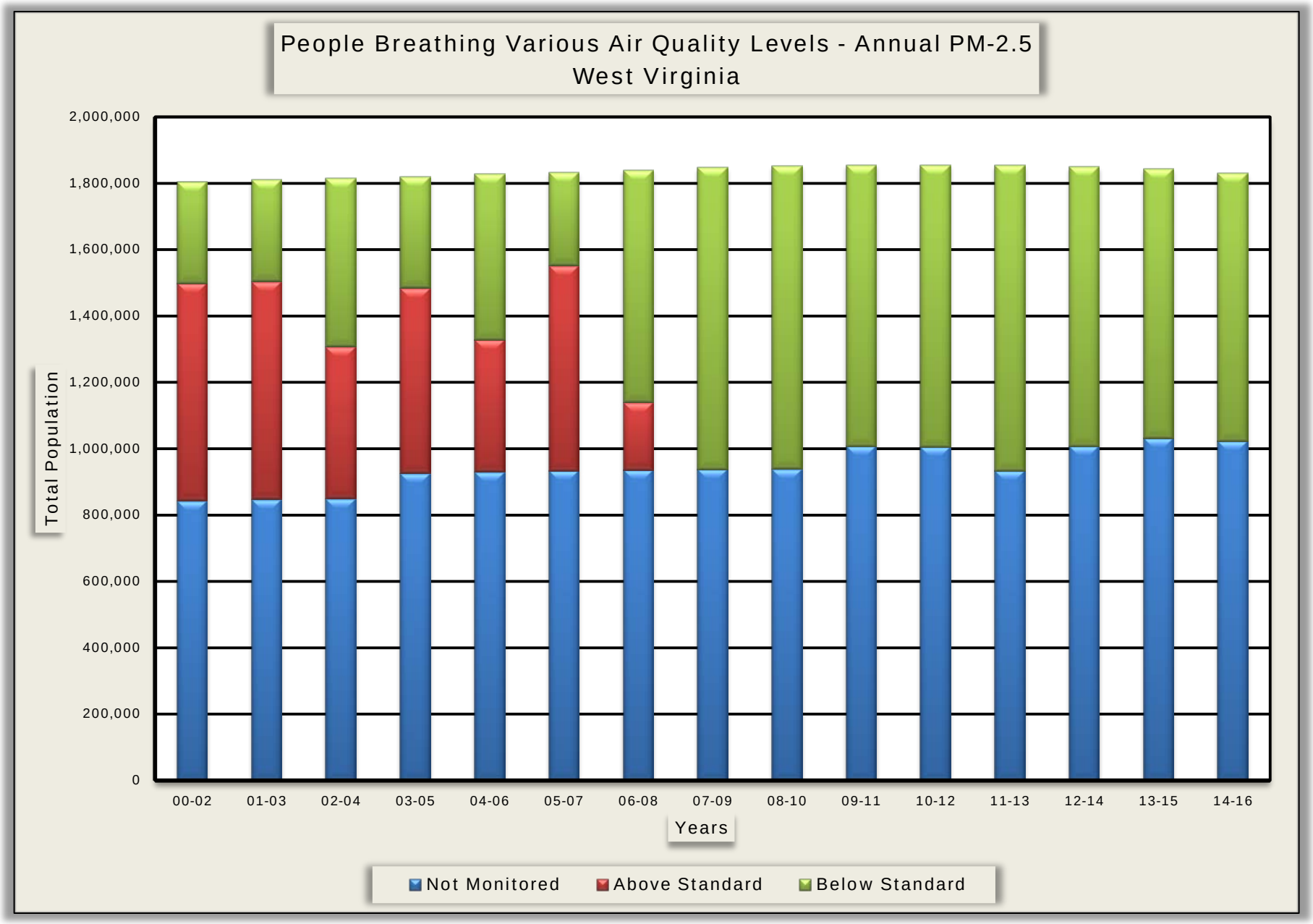

People Breathing Various Air Quality Levels - 24 Hour PM-2.5
West Virginia
Total Population
2,000,000
1,800,000
1,600,000
1,400,000
1,200,000
1,000,000
800,000
600,000
400,000
200,000
0
00-02
01-03
02-04
03-05
04-06
05-07
06-08
07-09
08-10
09-11
10-12
11-13
12-14
13-15
14-16
Years
Not Monitored
Above Standard
Below Standard

Figure WV-3


People Breathing Various Air Quality Levels - Annual PM-2.5
West Virginia
Total Population
2,000,000
1,800,000
1,600,000
1,400,000
1,200,000
1,000,000
800,000
600,000
400,000
200,000
0
00-02
01-03
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03-05
04-06
05-07
06-08
07-09
08-10
09-11
10-12
11-13
12-14
13-15
14-16
Years
Not Monitored
Above Standard
Below Standard

WISCONSIN

Ozone

In the 2000 – 2002 time period, approximately 3.0 million people (54.9%) lived in counties that met the ozone standard. By 2014 – 2016 this had increased to approximately 3.1 million people (53.9%). The ozone standard was lowered from 0.085 ppm to 0.070 ppm. Figure WI-1 shows the distribution of people by year. The population weighted ozone design value in 2000 – 2002 was 0.081 ppm. By 2014 – 2016 this had lowered to a value of 0.067 ppm, a reduction of 17.3 percent.

24-Hour PM-2.5

In the 2000 – 2002 time period, approximately 2.8 million people (51.0%) lived in counties where 24-hour PM-2.5 levels met the standard. By 2014 - 2016 this was approximately 3.1 million people (53.0%). The remainder of the population lived in counties where PM-2.5 was not measured. The standard was lowered from 65 to 35 µg/m3. Figure WI-2 shows the distribution of people by year. The population weighted 24-hour PM-2.5 design value in 2000 – 2002 was 33 µg/m3. By 2014 – 2016 this had lowered to a value of 22 µg/m3, a reduction of 33.3 percent.

Annual PM-2.5

In the 2000 – 2002 time period, approximately 2.8 million people (51.0%) lived in counties where annual PM-2.5 levels met the standard. By 2014 – 2016 this had increased to approximately 3.1 million people (53.0%). The remainder of the population lived in counties where PM-2.5 was not measured. The standard was lowered from 15 to 12 µg/m3. Figure WI-3 shows the distribution of people by year. The population weighted annual PM-2.5 design value in 2000 – 2002 was 12.0 µg/m3. By 2014 – 2016 this had lowered to a value of 8.3 µg/m3, a reduction of 30.8 percent.

WISCONSIN

Table WI-1

2014 – 2016

		Ozone			Particle Pollution (PM-2.5)				
County	Population	Avg. DV	Grade	MM	Avg. 24-Hr DV	Grade	Avg. Ann DV	Grade	MM
Ashland	15,714	0.058	B	N	15	A	4.8	A	N
Brown	260,401	0.066	C	N	22	A	8.0	A	N
Columbia	56,927	0.067	C	N	ND	ND	ND	ND	ND
Dane	531,273	0.065	C	N	21	A	6.4	A	Y
Dodge	88,068	0.068	C	N	22	A	7.7	A	N
Door	**27,587**	**0.072**	**D**	**N**	ND	ND	ND	ND	ND
Eau Claire	102,965	0.061	B	N	18	A	7.1	A	N
Fond du Lac	102,144	0.066	C	N	ND	ND	ND	ND	ND
Forest	9,064	0.063	C	N	ND	ND	ND	ND	ND
Grant	57,214	ND	ND	ND	22	A	7.6	A	N
Jefferson	84,625	0.069	C	N	ND	ND	ND	ND	ND
Kenosha	**168,183**	**0.077**	**D**	N	21	A	8.1	A	N
Kewaunee	20,405	0.069	C	N	ND	ND	ND	ND	ND
La Crosse	118,122	0.062	B	N	20	A	7.3	A	N
Manitowoc	**79,536**	**0.072**	**D**	**N**	ND	ND	ND	ND	ND
Marathon	135,603	0.065	C	N	ND	ND	ND	ND	ND
Milwaukee	951,448	0.067	C	Y	23	A	6.9	A	N
Outagamie	184,526	0.067	C	N	22	A	7.6	A	N
Ozaukee	**88,314**	**0.072**	**D**	**Y**	19	A	7.5	A	N
Rock	161,620	0.069	C	N	ND	ND	ND	ND	ND
Sauk	63,949	0.064	C	N	19	A	7.0	A	N
Sheboygan	**115,427**	**0.079**	**F**	**N**	ND	ND	ND	ND	ND
Taylor	20,439	0.061	B	N	15	A	6.1	A	N
Vilas	21,435	0.061	B	N	15	A	4.9	A	N
Walworth	102,959	0.070	C	N	ND	ND	ND	ND	ND
Waukegan	398,424	0.066	C	N	22	A	9.1	A	N

DV – Design Value ND - No Data MM – Multiple Monitors

WISCONSIN

Table WI-2
Population Weighted Design Values

Period	Ozone (ppm)	24-Hour PM-2.5 (µg/m3)	Annual PM-2.5 (µg/m3)
2000 – 2002	0.081	33	12.0
2001 – 2003	0.083	34	12.3
2002 – 2004	0.077	33	11.7
2003 – 2005	0.078	34	12.0
2004 – 2006	0.074	35	12.2
2005 – 2007	0.076	36	12.9
2006 – 2008	0.070	33	12.7
2007 – 2009	0.069	33	12.2
2008 – 2010	0.065	32	11.2
2009 – 2011	0.067	30	10.6
2010 – 2012	0.072	27	10.1
2011 – 2013	0.071	24	9.6
2012 – 2014	0.071	24	9.0
2013 – 2015	0.066	23	8.8
2014 – 2016	0.067	22	8.3

WISCONSIN

Table WI-3
People Breathing Ozone

Grade	2000-2002	2002-2004	2004-2006	2006-2008	2008-2010	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016
A	0	63,994	106,646	0	0	0	0	16,103	0	0
B	1,508,012	2,583,456	2,476,783	1,216,721	2,899,278	838,654	852,550	864,917	606,304	380,819
C	1,490,921	906,402	1,163,683	2,476,918	1,051,898	2,285,314	2,338,726	2,199,539	2,750,445	2,732,143
D	884,519	865,407	142,942	308,311	115,507	410,732	486,979	645,895	363,812	680,769
F	159,229	157,968	0	0	0	282,945	114,922	0	0	115,427
Subtotal	4,042,680	4,577,226	3,890,050	4,001,950	4,066,682	3,817,645	3,793,177	3,726,454	3,720,561	3,909,158
NM	1,402,482	936,800	1,687,605	1,639,046	2,620,304	1,908,753	1,949,536	2,031,110	2,050,776	1,869,550
Total	5,445,162	5,514,026	5,577,655	5,640,996	5,686,986	5,726,398	5,742,713	5,757,564	5,771,337	5,778,708

People Breathing Short-term Particle Pollution 24-Hour PM-2.5

Grade	2000-2002	2002-2004	2004-2006	2006-2008	2008-2010	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016
A	2,778,717	2,571,370	58,866	259,427	25,461	1,193,057	2,635,375	3,002,022	2,958,332	3,065,475
B	0	0	226,811	761,363	1,125,414	1,412,884	0	0	0	0
C	0	0	1,123,364	1,333,691	1,813,536	0	0	0	0	0
D	0	0	993,095	560,851	0	0	0	0	0	0
F	0	0	372,105	0	0	0	0	0	0	0
Subtotal	2,778,717	2,571,370	2,774,241	2,915,332	2,964,411	2,608,940	2,635,375	3,002,022	2,958,332	3,065,475
NM	2,667,445	2,942,656	2,803,414	2,725,664	2,722,575	3,117,458	3,107,338	2,755,542	2,813,005	2,713,233
Total	5,445,162	5,514,026	5,577,655	5,640,996	5,686,986	5,726,398	5,742,713	5,757,564	5,771,337	5,778,708

People Breathing Year Round Particle Pollution Annual PM-2.5

Grade	2000-2002	2002-2004	2004-2006	2006-2008	2007-2009	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016
A	1,461,454	1,445,596	998,161	440,718	556,298	2,608,940	1,094,244	1,889,600	2,322,410	3,065,475
B	914,469	1,125,774	1,590,027	1,340,121	1,905,953	0	1,147,288	1,112,423	635,922	0
C	402,795	0	186,053	1,134,493	577,491	0	393,843	0	0	0
D	0	0	0	0	0	0	0	0	0	0
F	0	0	0	0	0	0	0	0	0	0
Subtotal	2,778,717	2,571,370	2,774,241	2,915,332	3,039,742	2,608,740	2,635,375	3,002,022	2,958,332	3,065,475
NM	2,667,445	2,942,656	2,803,414	2,725,664	2,629,522	3,117,458	3,107,338	2,755,542	2,813,005	2,713,233
Total	5,445,162	5,514,026	5,577,655	5,640,996	5,669,264	5,726,398	5,742,713	5,757,564	5,771,337	5,778,708

NM – Not Monitored

Figure WI-1

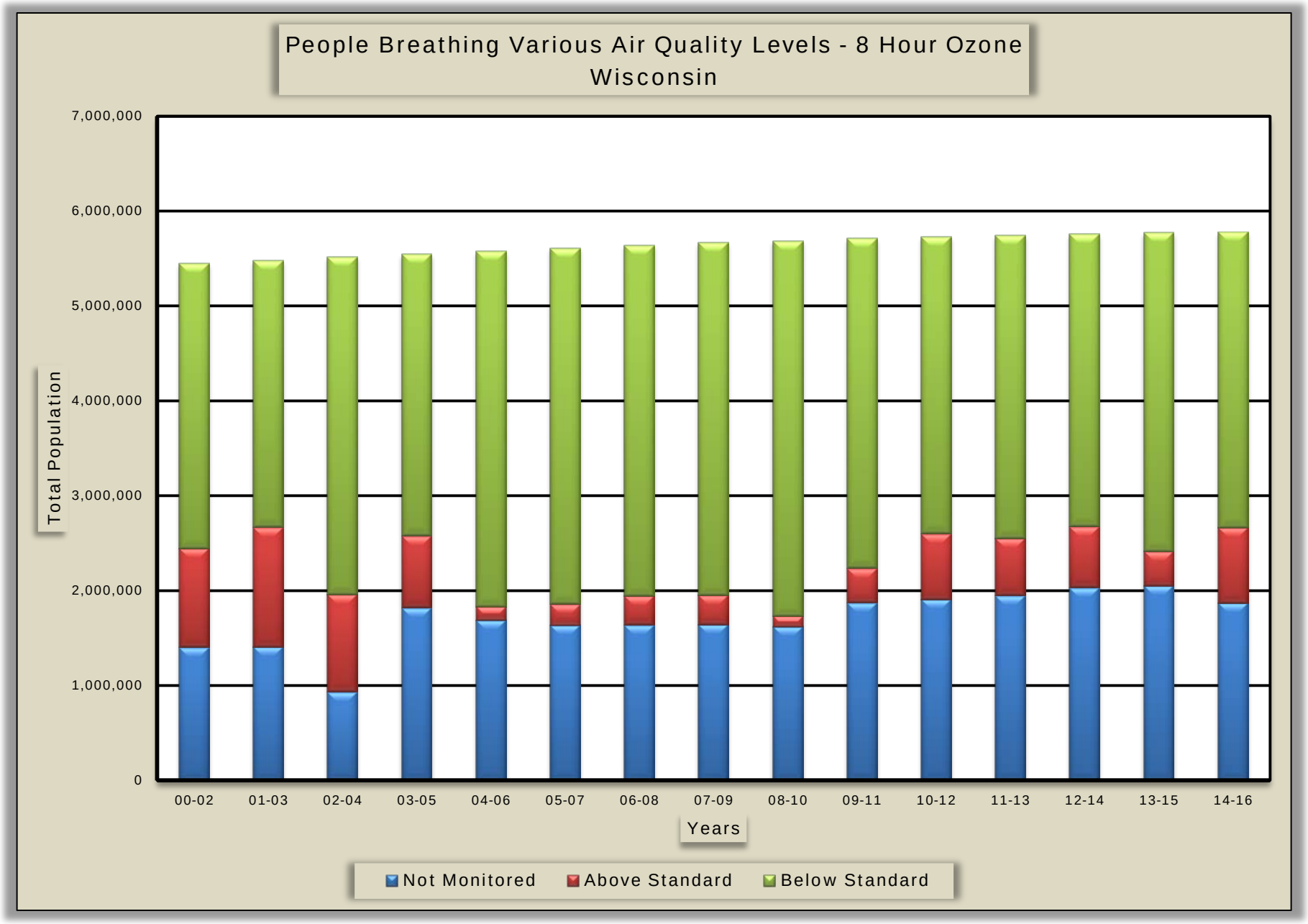

People Breathing Various Air Quality Levels - 8 Hour Ozone
Wisconsin
Total Population
7,000,000
6,000,000
5,000,000
4,000,000
3,000,000
2,000,000
1,000,000
0
00-02
01-03
02-04
03-05
04-06
05-07
06-08
07-09
08-10
09-11
10-12
11-13
12-14
13-15
14-16
Years
Not Monitored
Above Standard
Below Standard

Figure WI-2

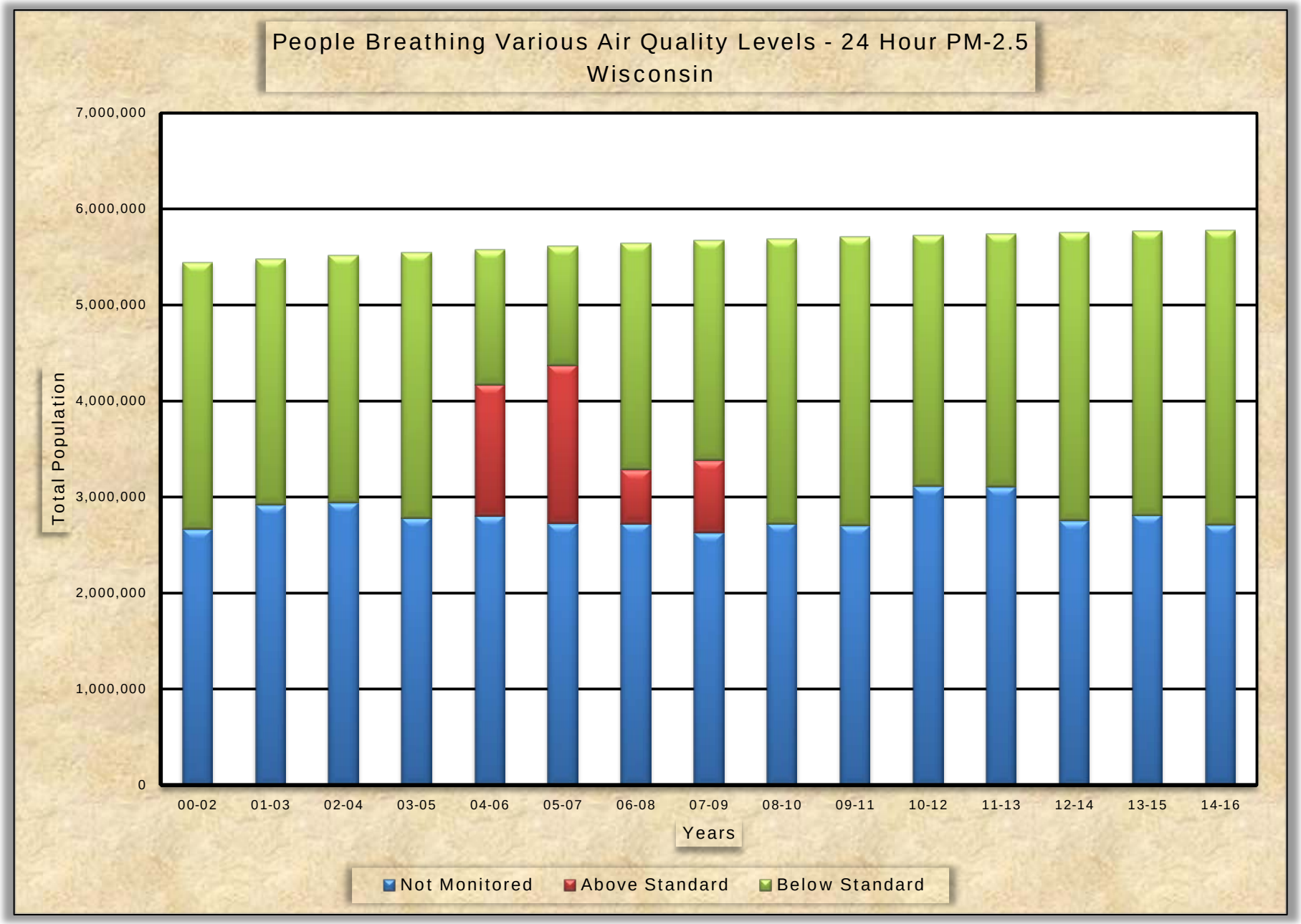
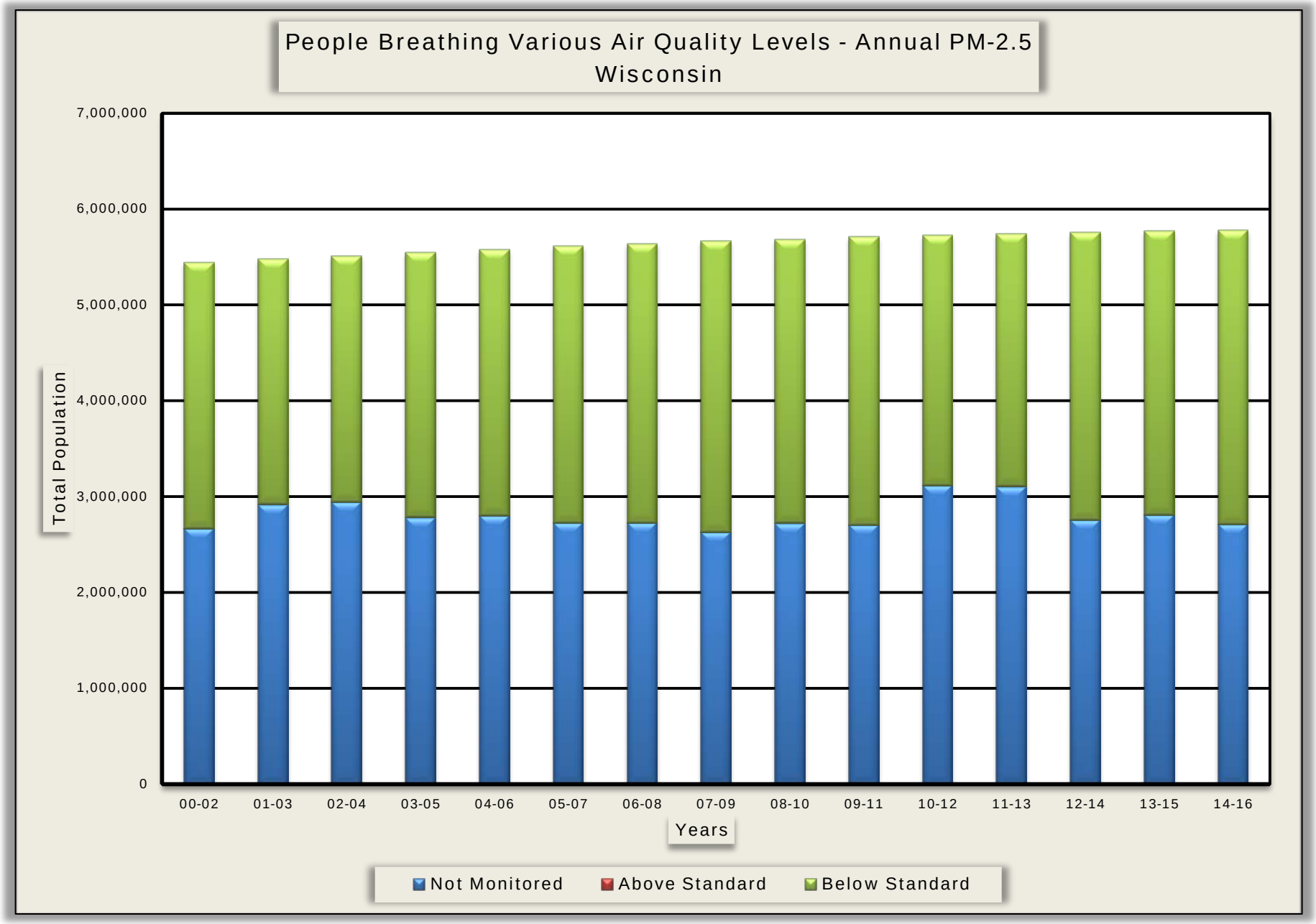

People Breathing Various Air Quality Levels - 24 Hour PM-2.5
Wisconsin
Total Population
7,000,000
6,000,000
5,000,000
4,000,000
3,000,000
2,000,000
1,000,000
0
00-02
01-03
02-04
03-05
04-06
05-07
06-08
07-09
08-10
09-11
10-12
11-13
12-14
13-15
14-16
Years
Not Monitored
Above Standard
Below Standard

Figure WI-3


People Breathing Various Air Quality Levels - Annual PM-2.5
Wisconsin
Total Population
7,000,000
6,000,000
5,000,000
4,000,000
3,000,000
2,000,000
1,000,000
0
00-02
01-03
02-04
03-05
04-06
05-07
06-08
07-09
08-10
09-11
10-12
11-13
12-14
13-15
14-16
Years
Not Monitored
Above Standard
Below Standard

WYOMING

Ozone

In the 2000 – 2002 time period, approximately 19 thousand people (3.8%) lived in counties that met the ozone standard. By 2014 – 2016 this had increased to approximately 0.44 million people (74.7%). The ozone standard was lowered from 0.085 ppm to 0.070 ppm. Figure WY-1 shows the distribution of people by year. The population weighted ozone design value in 2000 – 2002 was 0.065 ppm. By 2014 – 2016 this had lowered to a value of 0.061 ppm, a reduction of 6.2 percent.

24-Hour PM-2.5

In the 2000 – 2002 time period, approximately 0.15 million people (29.3%) lived in counties where 24-hour PM-2.5 levels met the standard. By 2014 - 2016 this was approximately 0.4 million people (68.1%). The remainder of the population lived in counties where PM-2.5 was not measured. The standard was lowered from 65 to 35 µg/m3. Figure WY-2 shows the distribution of people by year. The population weighted 24-hour PM-2.5 design value in 2000 – 2002 was 18 µg/m3. By 2014 – 2016 this had lowered to a value of 16 µg/m3, a reduction of 11.1 percent.

Annual PM-2.5

In the 2000 – 2002 time period, approximately 0.15 million people (29.3%) lived in counties where annual PM-2.5 levels met the standard. By 2014 – 2016 this had increased to approximately 0.4 million people (68.1%). The remainder of the population lived in counties where PM-2.5 was not measured. The standard was lowered from 15 to 12 µg/m3. Figure WY-3 shows the distribution of people by year. The population weighted annual PM-2.5 design value in 2000 – 2002 was 6.4 µg/m3. By 2014 – 2016 this had lowered to a value of 4.5 µg/m3, a reduction of 29.7 percent.

Table WY-1

2013 – 2015

		Ozone			Particle Pollution (PM-2.5)				
County	Population	Avg. DV	Grade	MM	Avg. 24-Hr DV	Grade	Avg. Ann DV	Grade	MM
Albany	38,256	0.065	C	N	14	A	4.2	A	N
Campbell	48,803	0.059	B	Y	13	A	4.1	A	Y
Carbon	15,618	0.060	B	N	ND	ND	ND	ND	ND
Converse	14,191	0.059	B	N	ND	ND	ND	ND	ND
Fremont	40,242	0.062	B	Y	15	A	4.6	A	Y
Laramie	96,136	0.063	C	N	13	A	4.1	A	Y
Natrona	81,039	0.058	B	Y	18	A	4.9	A	N
Park	29,353	ND	ND	ND	21	A	4.1	A	N
Sheridan	30,200	ND	ND	ND	20	A	6.0	A	Y
Sublette	9,769	0.060	B	Y	13	A	5.0	A	N
Sweetwater	44,165	0.060	B	Y	ND	ND	ND	ND	ND
Teton	23,191	0.060	B	Y	15	A	4.7	A	N
Uinta	20,773	0.061	B	N	ND	ND	ND	ND	ND
Weston	7,236	0.060	B	N	ND	ND	ND	ND	ND

DV – Design Value ND - No Data MM – Multiple Monitors

WYOMING

Table WY-2
Population Weighted Design Values

Period	Ozone (ppm)	24-Hour PM-2.5 (µg/m3)	Annual PM-2.5 (µg/m3)
2000 – 2002	0.065	18	6.4
2001 – 2003	0.069	18	6.2
2002 – 2004	0.068	20	6.4
2003 – 2005	0.065	20	6.2
2004 – 2006	0.064	19	6.1
2005 – 2007	0.067	17	5.8
2006 – 2008	0.067	15	5.5
2007 – 2009	0.065	15	5.5
2008 – 2010	0.064	17	6.1
2009 – 2011	0.063	14	5.2
2010 – 2012	0.065	15	5.5
2011 – 2013	0.065	15	5.3
2012 – 2014	0.064	15	5.1
2013 – 2015	0.063	15	4.6
2014 – 2016	0.061	16	4.5

WYOMING

Table WY-3
People Breathing Ozone

Grade	2000-2002	2002-2004	2004-2006	2006-2008	2008-2010	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016
A	18,837	19,467	59,511	0	0	11,794	11,994	13,941	0	14,722
B	0	36,907	0	84,769	179,305	287,100	196,840	298,156	247,495	253,834
C	0	0	0	26,160	0	7,776	100,830	37,811	192,582	170,863
D	0	0	0	4,737	3,416	2,592	1,674	0	0	0
F	0	0	0	0	0	0	0	0	0	0
Subtotal	18,837	56,374	59,511	115,666	182,721	309,262	311,337	349,908	440,077	439,419
NM	481,180	452,732	463,156	460,377	380,905	267,150	271,321	234,245	149,030	146,082
Total	500,017	509,106	522,667	546,043	563,626	576,412	582,658	584,153	589,107	585,501

People Breathing Short-term Particle Pollution (24-Hour PM-2.5)

Grade	2000-2002	2002-2004	2004-2006	2006-2008	2008-2010	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016
A	146,258	197,009	223,961	243,243	178,801	345,988	391,799	441,865	443,677	398,989
B	0	0	0	0	40,123	41,110	0	0	0	0
C	0	0	0	0	0	0	0	0	0	0
D	0	0	0	0	0	0	0	0	0	0
F	0	0	0	0	0	0	0	0	0	0
Subtotal	146,258	197,009	223,961	243,243	218,924	387,098	391,799	441,865	443,677	398,989
NM	353,759	312,097	298,706	302,800	344,702	189,314	190,859	142,288	142,430	186,512
Total	500,017	509,106	522,667	546,043	563,626	576,412	582,658	584,153	586,107	585,501

People Breathing Year Round Particle Pollution (Annual PM-2.5)

Grade	2000-2002	2002-2004	2004-2006	2006-2008	2008-2010	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016
A	146,258	197,009	223,961	243,243	218,924	387,098	391,799	441,865	443,677	398,989
B	0	0	0	0	0	0	0	0	0	0
C	0	0	0	0	0	0	0	0	0	0
D	0	0	0	0	0	0	0	0	0	0
F	0	0	0	0	0	0	0	0	0	0
Subtotal	146,258	197,009	223,961	243,243	218,924	387,098	391,799	441,865	443,677	398,989
NM	353,759	312,097	298,706	302,800	344,702	189,314	190,859	142,288	142,430	186,512
Total	500,017	509,106	522,667	546,043	563,626	576,412	582,658	584,153	586,107	585,501

NM – Not Monitored

Figure WY-1

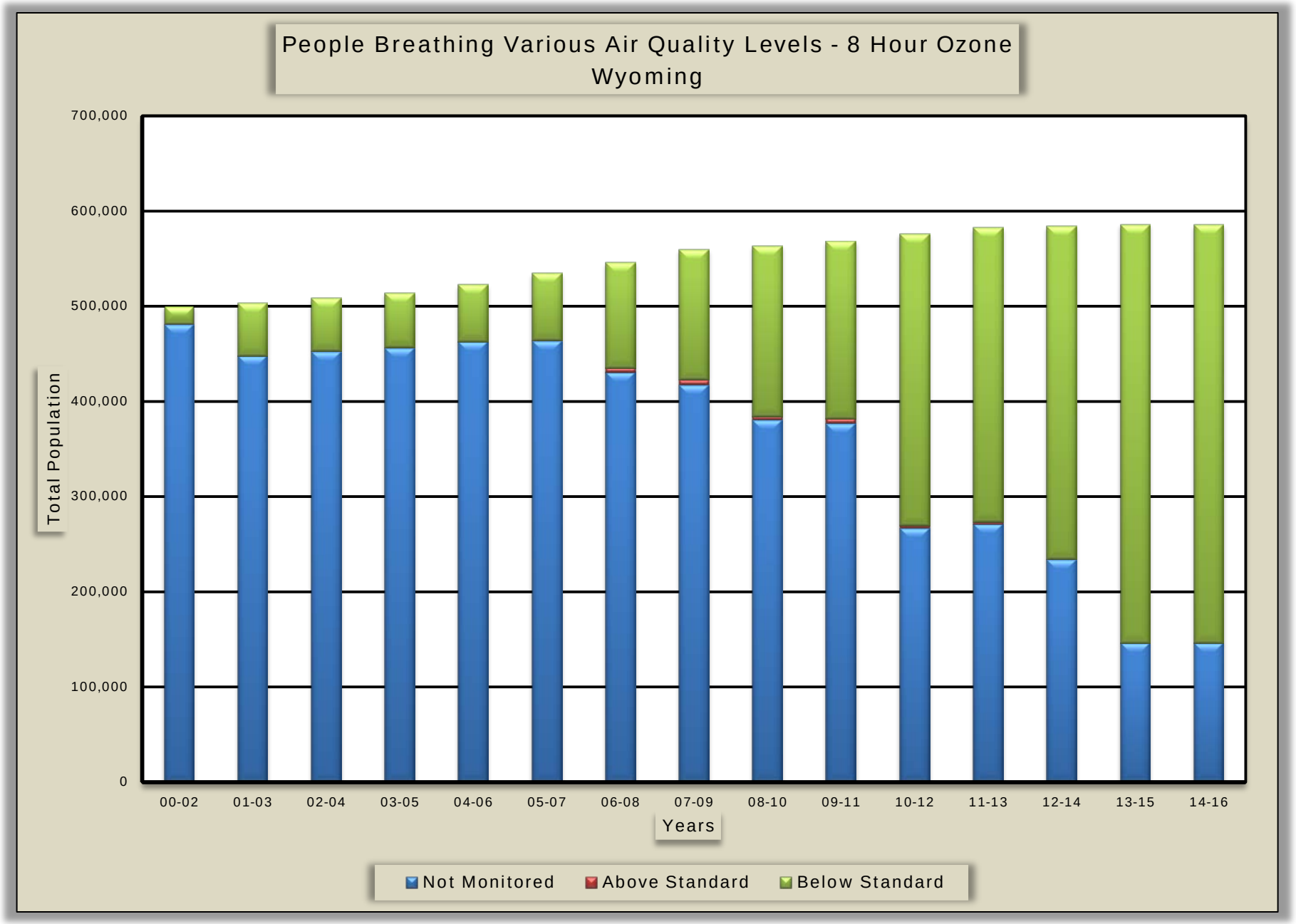

People Breathing Various Air Quality Levels - 8 Hour Ozone
Wyoming
Total Population
700,000
600,000
500,000
400,000
300,000
200,000
100,000
0
00-02
01-03
02-04
03-05
04-06
05-07
06-08
07-09
08-10
09-11
10-12
11-13
12-14
13-15
14-16
Years
Not Monitored
Above Standard
Below Standard

Figure WY-2

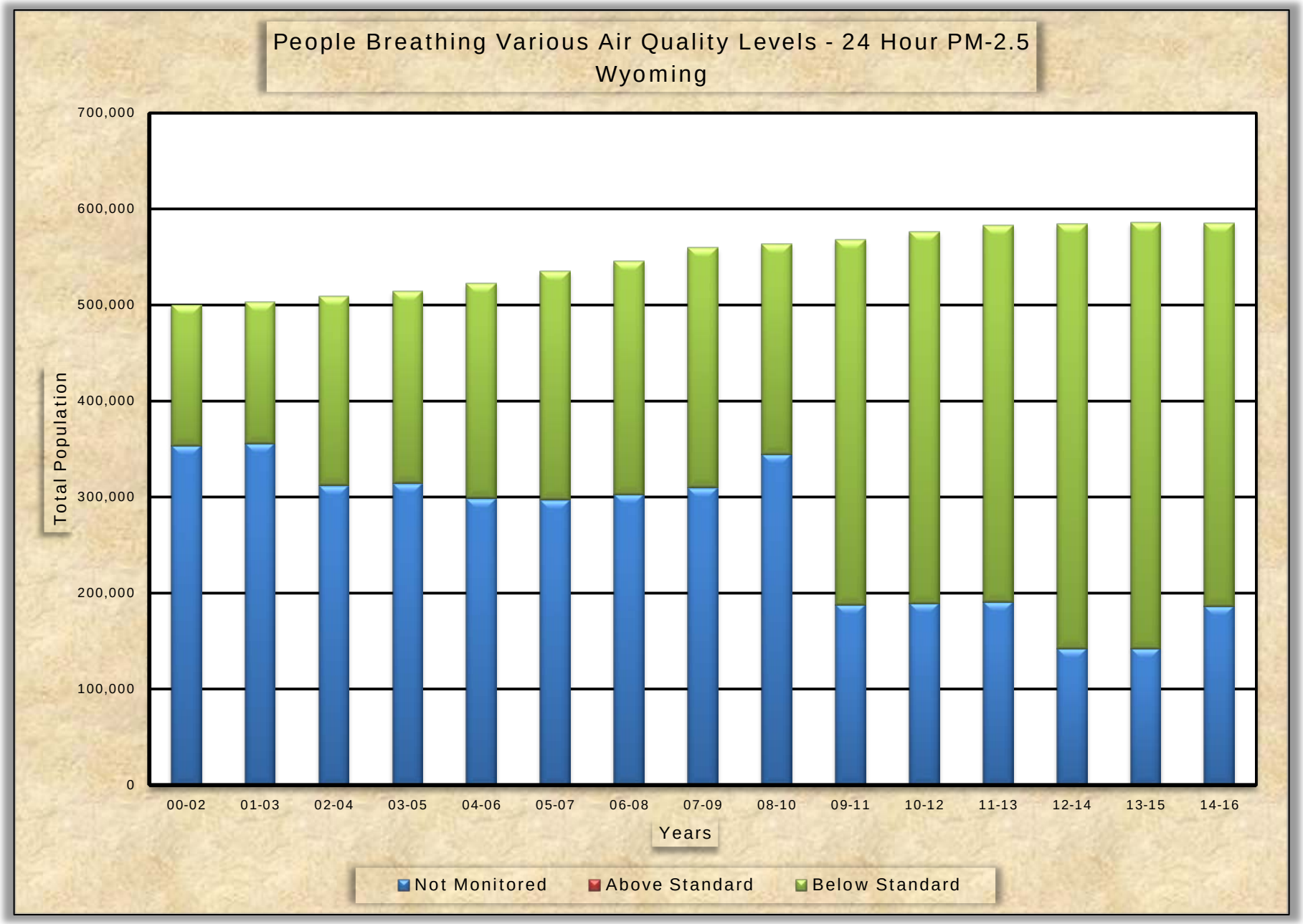
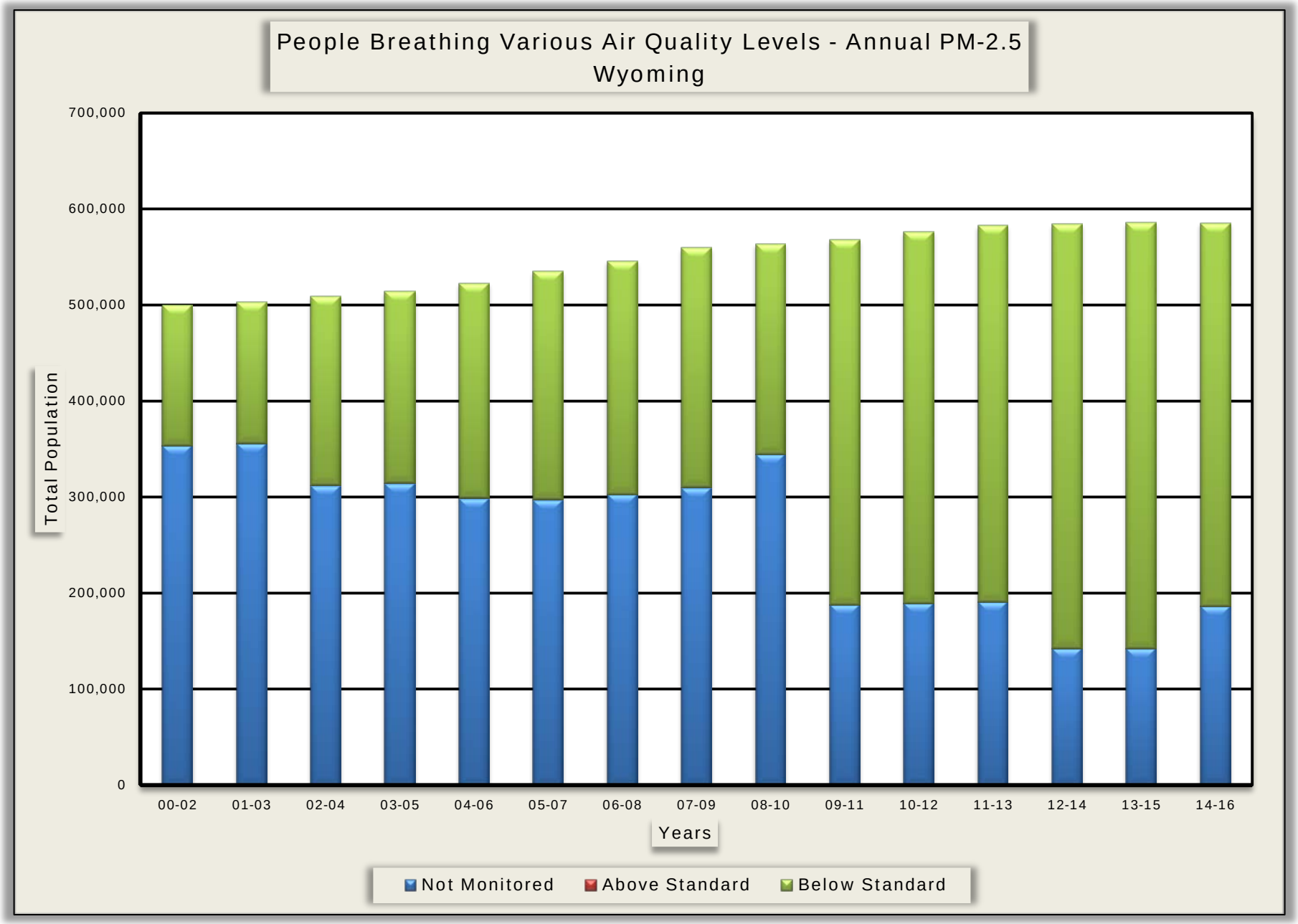

People Breathing Various Air Quality Levels - 24 Hour PM-2.5
Wyoming
Total Population
700,000
600,000
500,000
400,000
300,000
200,000
100,000
0
00-02
01-03
02-04
03-05
04-06
05-07
06-08
07-09
08-10
09-11
10-12
11-13
12-14
13-15
14-16
Years
Not Monitored
Above Standard
Below Standard

Figure WY-3


People Breathing Various Air Quality Levels - Annual PM-2.5
Wyoming
Total Population
700,000
600,000
500,000
400,000
300,000
200,000
100,000
0
00-02
01-03
02-04
03-05
04-06
05-07
06-08
07-09
08-10
09-11
10-12
11-13
12-14
13-15
14-16
Years
Not Monitored
Above Standard
Below Standard