Indiana Department of Environmental Management

# The States' View of the Air

## Hawaii

2016

**Keith Baugues**
**Assistant Commissioner**

Indiana Department of Environmental Management
*Office of Air Quality*
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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 2014 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 53 million people lived in counties that measured ozone air quality levels better than the standard. By 2012 – 2014 this had increased to 195 million people.**

**The situation for fine particles (PM-2.5) is very similar. In 2000 – 2002, 115 million people lived in counties where 24-hour PM-2.5 levels were measured below the standard. By 2012 – 2014 this had increased to 187 million people. Of note, is that monitoring for PM-2.5 is only conducted in counties with a total of 193 million people.**

**In the 2000 – 2002 period, 138 million people lived in counties where annual PM-2.5 levels were measured below the standard. By 2012 – 2014 this had increased to 186 million people. Approximately 7 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. Figure 4 shows states that have 8 hour ozone nonattainment areas based on 2012 – 2014 data. Sixteen states are included.**

**Figure 5 shows those states that violate the 24-hour PM-2.5 standard based on 2012 – 2014 data. Only five states are included.**

**Figure 6 shows those states that violate the annual PM-2.5 standard based on 2012 – 2014 data. Only Arizona, California, Ohio, and Pennsylvania are included.**

**The bottom line is that most areas of the country were meeting the PM-2.5 standard at the 2011 – 2013 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 2012, U.S. EPA lowered the annual PM-2.5 standard. This analysis compares historical air quality levels with this new standard.**

**Figure 1**

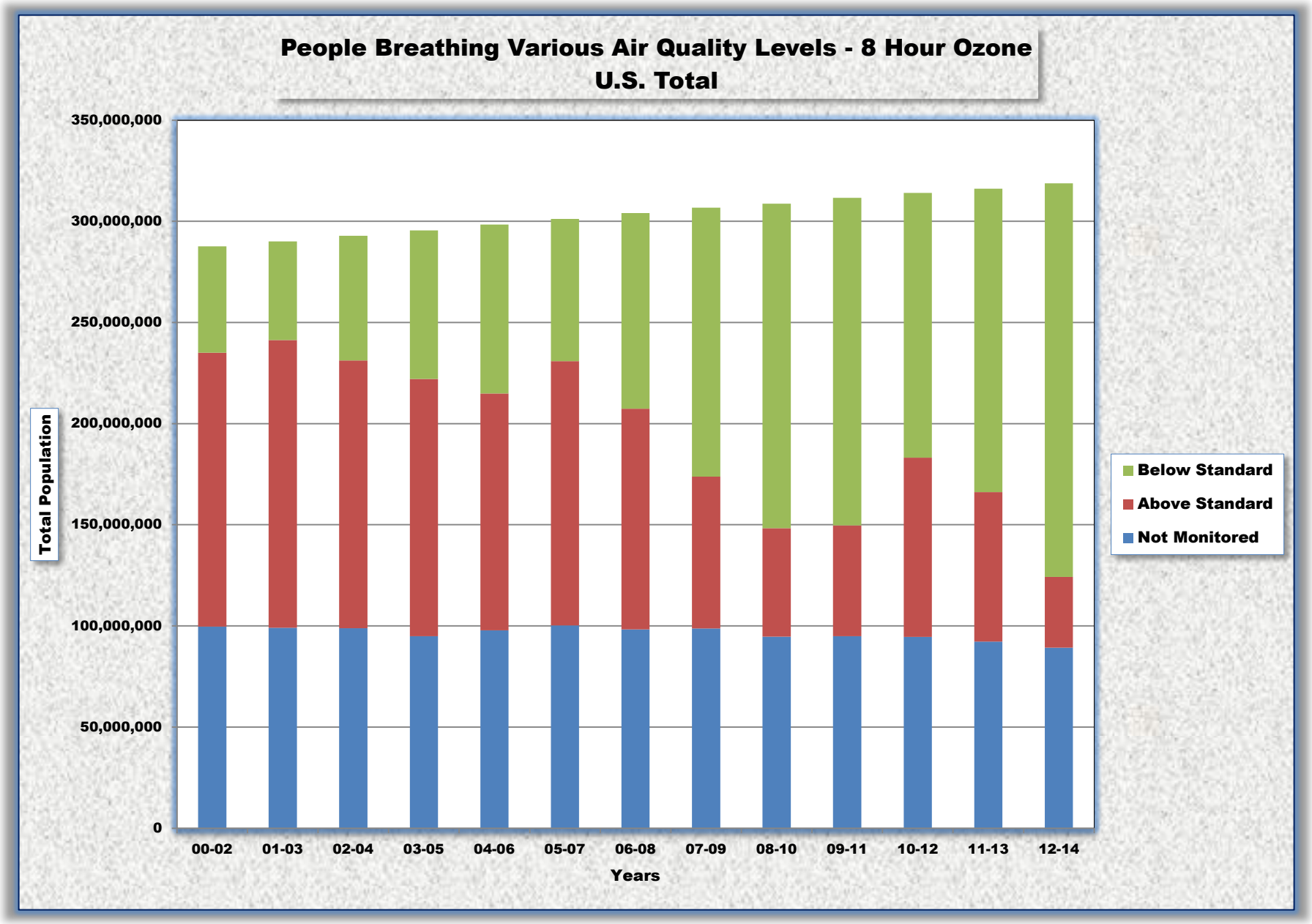

People Breathing Various Air Quality Levels - 8 Hour Ozone
U.S. Total
350,000,000
300,000,000
250,000,000
200,000,000
150,000,000
100,000,000
50,000,000
0
Total Population
00-02
01-03
02-04
03-05
04-06
05-07
06-08
07-09
08-10
09-11
10-12
11-13
12-14
Years
Below Standard
Above Standard
Not Monitored

**Figure 2**

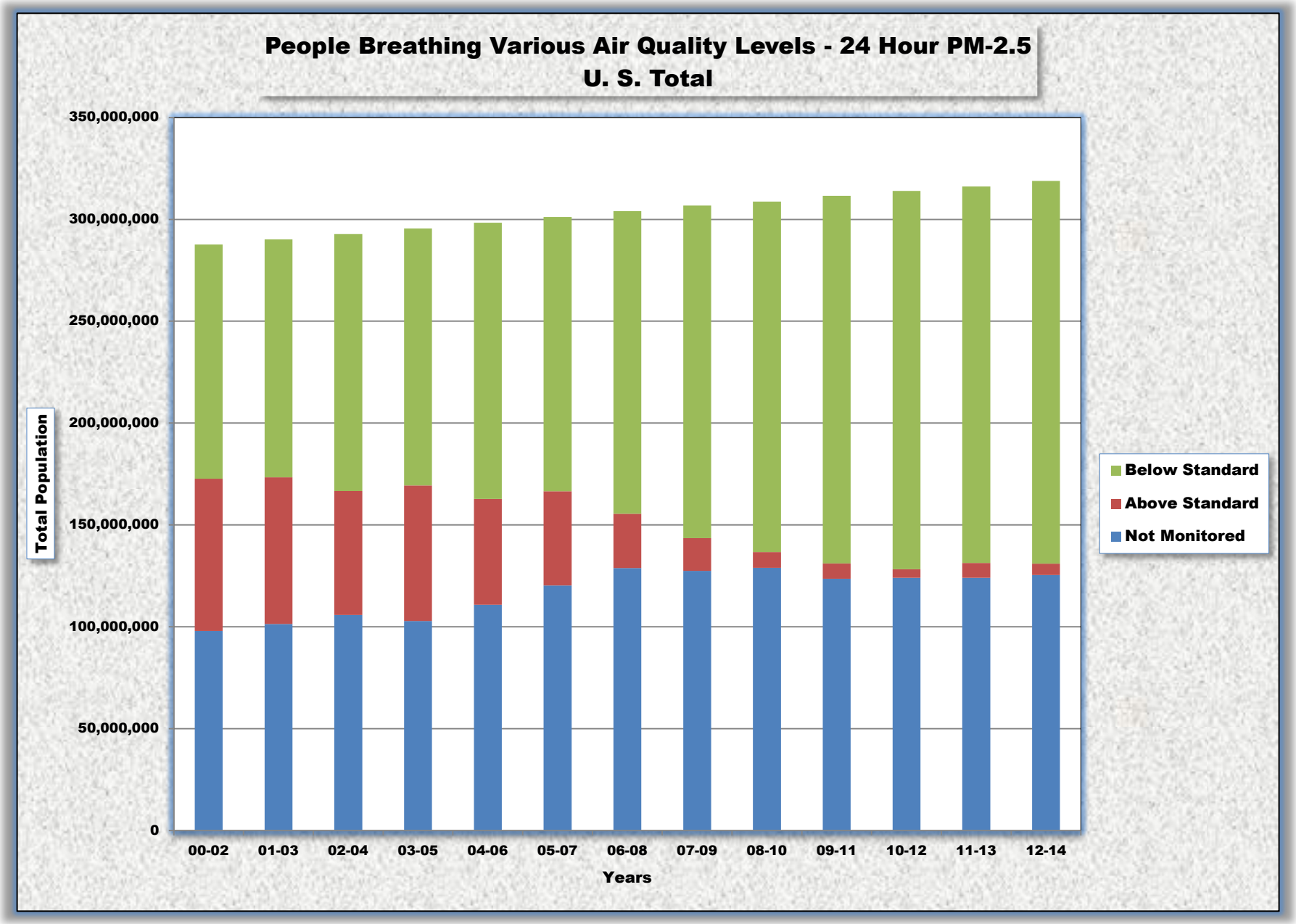

People Breathing Various Air Quality Levels - 24 Hour PM-2.5
U. S. Total
350,000,000
300,000,000
250,000,000
200,000,000
150,000,000
100,000,000
50,000,000
0
Total Population
00-02
01-03
02-04
03-05
04-06
05-07
06-08
07-09
08-10
09-11
10-12
11-13
12-14
Years
Below Standard
Above Standard
Not Monitored

**Figure 3**

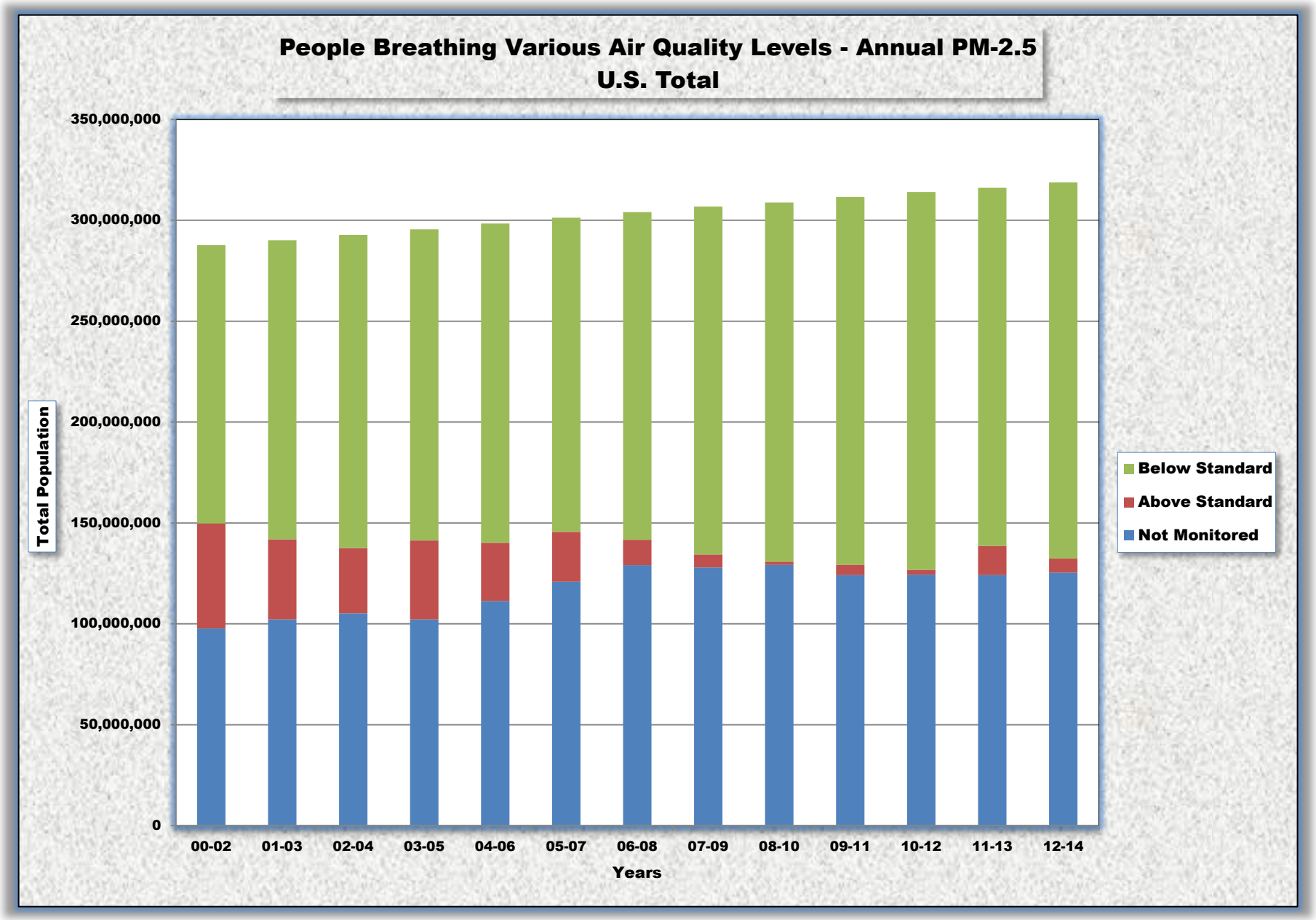

People Breathing Various Air Quality Levels - Annual PM-2.5
U.S. Total
350,000,000
300,000,000
250,000,000
200,000,000
150,000,000
100,000,000
50,000,000
0
Total Population
00-02
01-03
02-04
03-05
04-06
05-07
06-08
07-09
08-10
09-11
10-12
11-13
12-14
Years
Below Standard
Above Standard
Not Monitored

**Figure 4**

**Non-Attainment States - 8 Hour Ozone (Map 1)**

**2012 - 2014**

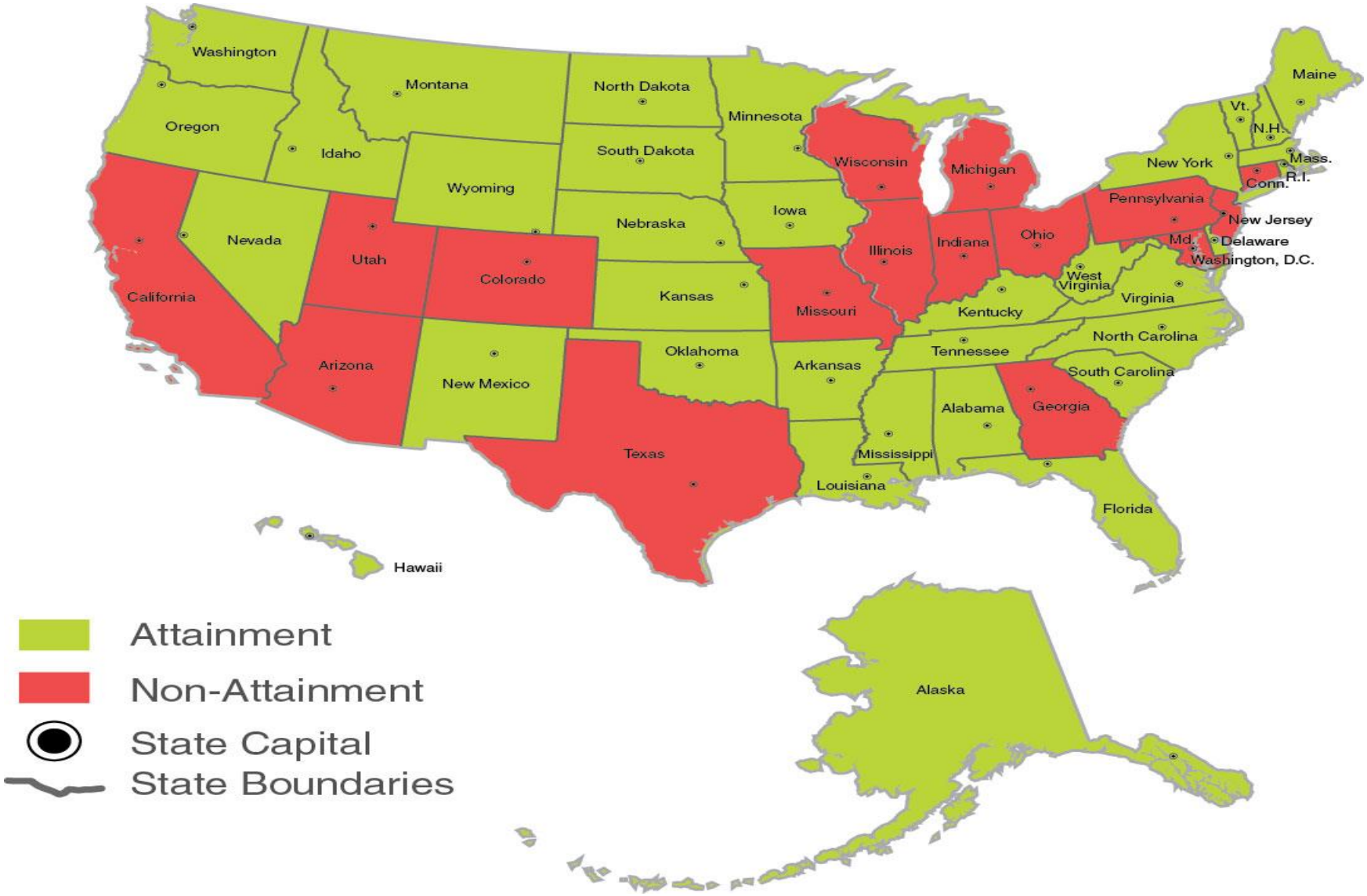


**Figure 5**

**Non-Attainment States – 24 Hour PM-2.5 (Map 2)**
**2012 - 2014**

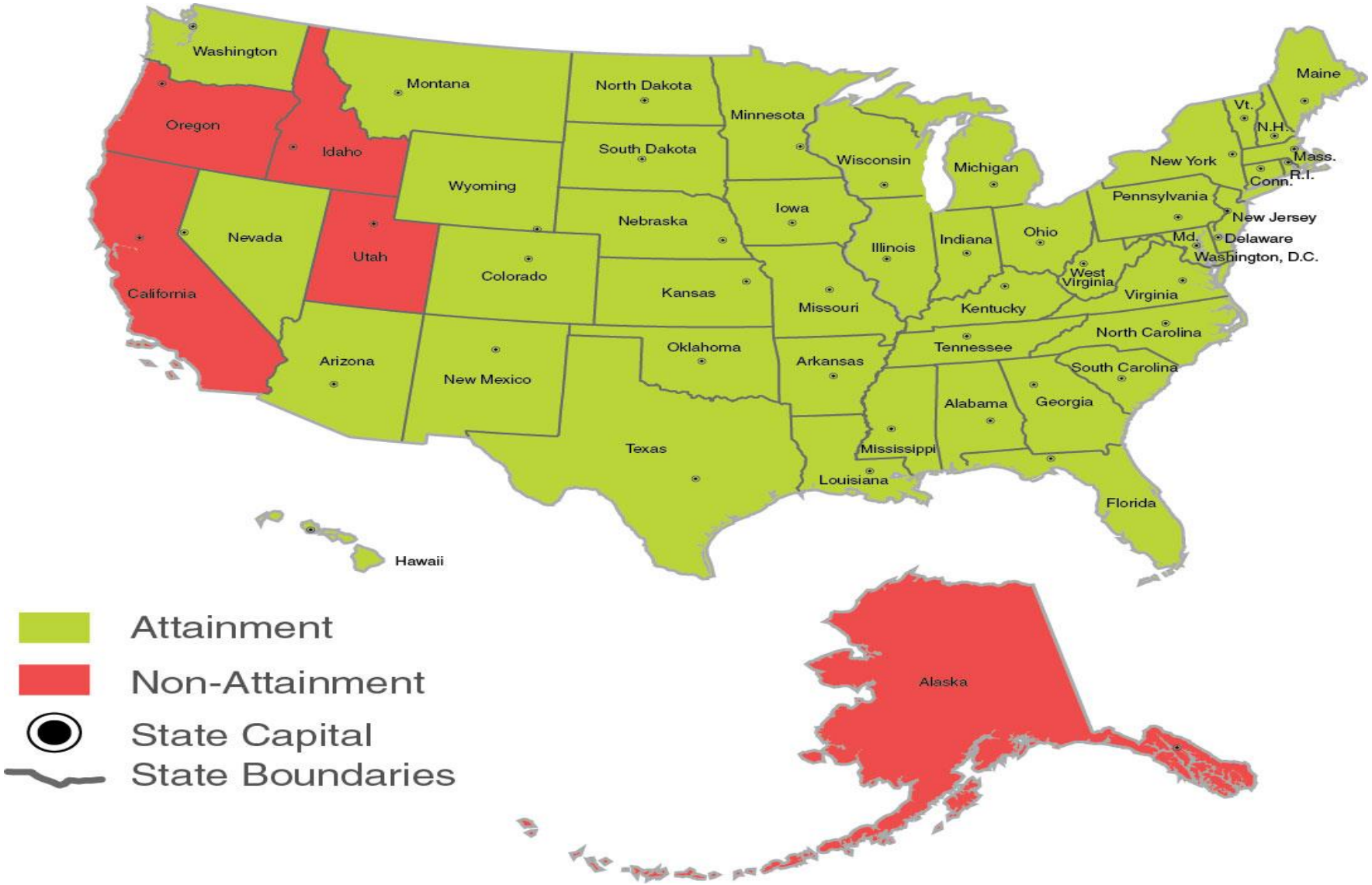
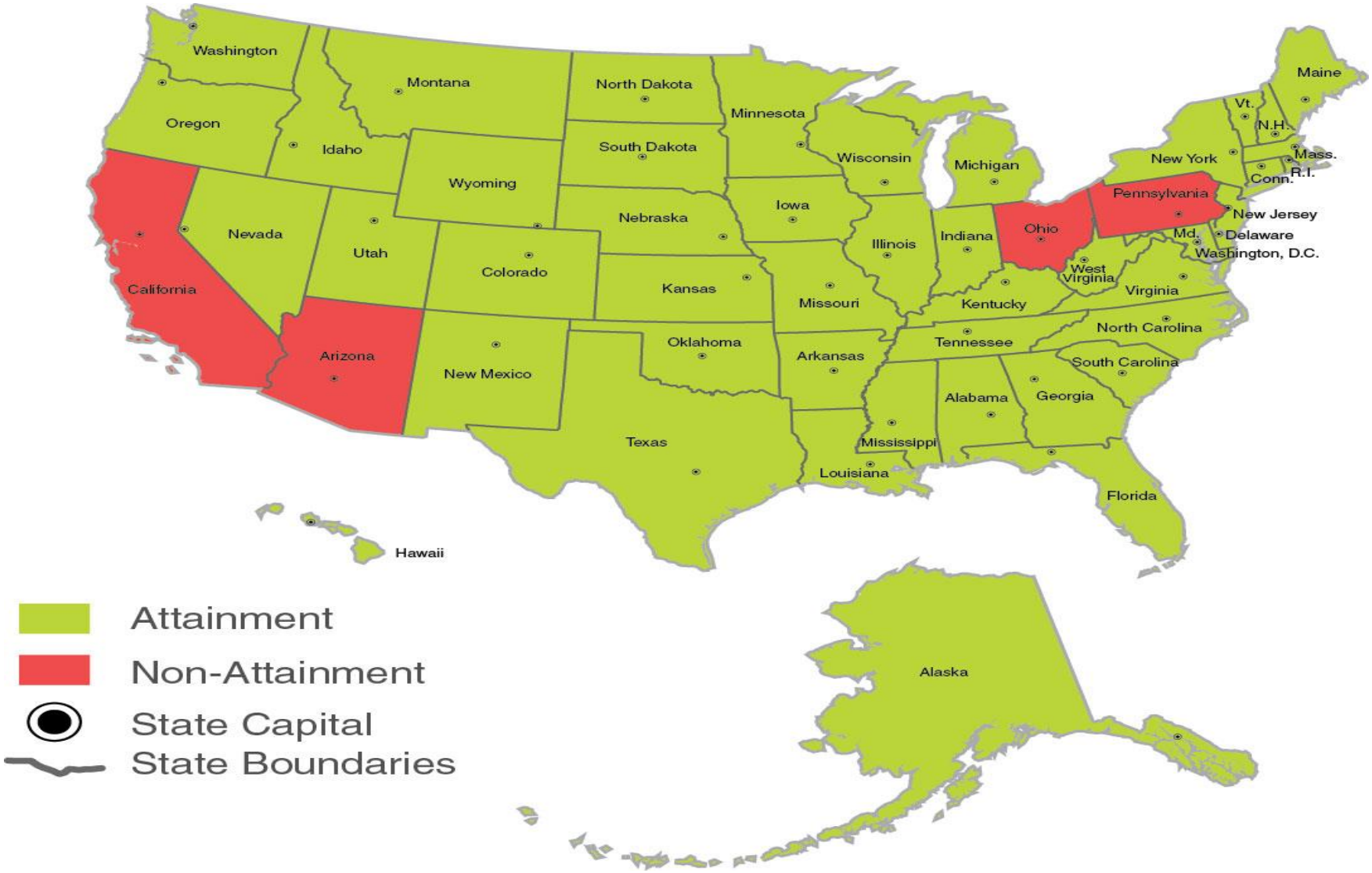


**Figure 6**

**Non-Attainment States - Annual PM-2.5 (Map 3)**
**2012 - 2014**



# The States' View of the Air – 2016

This is the fifth 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 – 2014. 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% of the standard is rated a "C". Any level between 80 and 90% of the standard is rated as "B". Any level below 80% is set as an "A". Any level between 101 and 110% of the standard is set as a "D". Any level above 110% of the standard is rated as an "F". This translates into the following ranges.

**Table 1**
**Grading Scheme**

| Grade | Ozone (ppm) | 24-hr PM-2.5 (µg/m3) | Annual PM-2.5 (µg/m3) |
|---|---|---|---|
| A | < 0.060 | < 28.0 | < 9.6 |
| B | 0.060 – 0.067 | 28.0 – 31.4 | 9.6 – 10.7 |
| C | 0.068 – 0.075 | 31.5 – 35.0 | 10.8 – 12.0 |
| D | 0.076 – 0.082 | 35.1 – 38.5 | 12.1 – 13.2 |
| F | ➢ 0.082 | ➢ 38.5 | ➢ 13.2 |

This grading scale has been revised since last year because the national ambient air quality standard for annual PM-2.5 was revised. These are the appropriate levels for the standards that were in place during the time period (2012 – 2014).

**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 2014 so that the reader can see how the air quality is changing over time.**

## Ozone

**In the 2000 – 2002 period approximately 53 million people (18.3% of the U.S. population) lived in counties that met the ozone standard. During the same time period approximately 100 million people (34.6%) lived in counties where ozone was not monitored. By the 2012 – 2014 period 195 million people (61.0%) lived in counties that met the ozone standard. During the same time period over 89 million people (28.0%) 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 115 million people (40.0% of the U.S. population) lived in counties that met the 24-hour PM-2.5 standard. During this same time period approximately 98 million people (34.1%) lived in counties where PM-2.5 was not monitored. By the 2012 – 2014 period over 187 million people (58.9%) lived in counties that met the 24-hour PM-2.5 standard. During the same time period nearly 125 million people (39.3%) 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 138 million people (47.9% of the U.S. population) lived in counties that met the annual PM-2.5 standard. During the same time period approximately 98 million people (34.1%) lived in counties where PM-2.5 was not monitored. By the 2012 - 2014 period nearly 186 million people (58.5%) lived in counties that met the annual PM-2.5 standard. During the same time period nearly 125 million people (39.3%) 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 2

### People Breathing Ozone

| Grades | 2000-2002 | 2001-2003 | 2002-2004 | 2003-2005 | 2004-2006 | 2005-2007 | 2006-2008 | 2007-2009 | 2008-2010 | 2009-2011 | 2010-2012 | 2011-2013 | 2012-2014 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A | 10,131,523 | 6,376,588 | 6,564,989 | 7,179,887 | 7,438,778 | 9,108,266 | 9,329,550 | 11,697,719 | 12,873,435 | 17,116,889 | 17,577,711 | 17,588,417 | 19,659,698 |
| B | 10,934,876 | 10,379,229 | 15,360,917 | 14,281,887 | 16,738,616 | 17,327,984 | 26,008,122 | 38,548,375 | 51,404,139 | 50,594,617 | 34,461,410 | 45,163,198 | 68,630,097 |
| C | 31,457,264 | 32,021,777 | 39,633,626 | 51,990,459 | 59,279,810 | 43,946,615 | 61,381,814 | 82,753,537 | 96,126,505 | 94,200,993 | 78,782,851 | 87,192,869 | 106,296,788 |
| D | 39,798,643 | 42,296,781 | 44,910,528 | 64,018,708 | 61,416,817 | 64,353,908 | 64,816,984 | 52,256,925 | 37,600,509 | 40,633,207 | 64,379,495 | 56,190,199 | 23,391,272 |
| F | 95,662,347 | 99,999,209 | 87,448,733 | 63,070,320 | 55,634,742 | 66,212,862 | 44,238,249 | 22,829,013 | 16,042,793 | 14,155,462 | 24,254,213 | 17,728,174 | 11,605,705 |
| Subtotals | 187,984,653 | 191,073,584 | 193,918,793 | 200,541,261 | 200,508,763 | 200,949,635 | 205,774,719 | 208,085,569 | 214,047,381 | 216,712,168 | 219,455,680 | 223,862,857 | 229,592,558 |
| NM | 99,640,540 | 99,034,349 | 98,886,505 | 94,975,338 | 97,871,149 | 100,281,572 | 98,319,247 | 98,685,960 | 94,698,157 | 94,879,749 | 94,548,360 | 92,265,982 | 89,273,476 |
| Totals | 287,625,193 | 290,107,933 | 292,805,298 | 295,516,599 | 298,379,912 | 301,231,207 | 304,093,966 | 306,771,529 | 308,745,538 | 311,591,917 | 314,004,040 | 316,128,839 | 318,857,036 |

## Table 3

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

| Grades | 2000-2002 | 2001-2003 | 2002-2004 | 2003-2005 | 2004-2006 | 2005-2007 | 2006-2008 | 2007-2009 | 2008-2010 | 2009-2011 | 2010-2012 | 2011-2013 | 2012-2014 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A | 39,881,763 | 47,887,689 | 49,231,738 | 45,397,201 | 52,283,496 | 56,454,021 | 73,299,289 | 100,515,234 | 123,740,873 | 140,662,435 | 158,596,598 | 164,160,356 | 170,684,569 |
| B | 36,431,942 | 30,082,632 | 34,646,612 | 35,162,480 | 36,377,810 | 36,503,487 | 45,877,264 | 42,834,521 | 37,211,482 | 27,743,252 | 23,728,800 | 14,120,383 | 11,472,530 |
| C | 38,677,918 | 38,809,795 | 42,267,519 | 45,596,607 | 46,980,855 | 41,705,298 | 29,459,586 | 19,860,604 | 11,157,556 | 12,113,406 | 3,468,212 | 6,524,086 | 5,705,918 |
| D | 26,102,105 | 24,031,712 | 25,444,744 | 28,827,340 | 21,462,979 | 21,559,722 | 13,086,958 | 4,857,812 | 4,478,582 | 1,242,344 | 1,072,537 | 1,254,409 | 1,134,946 |
| F | 48,603,338 | 47,902,446 | 35,461,117 | 37,701,675 | 30,439,705 | 24,695,846 | 13,462,714 | 11,217,210 | 3,182,497 | 6,292,520 | 3,122,749 | 6,007,513 | 4,509,547 |
| Subtotals | 189,697,066 | 188,714,274 | 187,051,725 | 192,685,303 | 187,544,845 | 180,918,374 | 175,285,811 | 179,285,481 | 179,770,990 | 188,053,957 | 189,988,896 | 192,066,747 | 193,507,510 |
| NM | 97,928,127 | 101,393,659 | 105,753,573 | 102,831,296 | 110,835,067 | 120,312,833 | 128,808,155 | 127,486,148 | 128,974,548 | 123,537,960 | 124,015,144 | 124,062,092 | 125,349,526 |
| Totals | 287,625,193 | 290,107,933 | 292,805,298 | 295,516,599 | 298,379,912 | 301,231,207 | 304,093,966 | 306,771,629 | 308,745,538 | 311,591,917 | 314,004,040 | 316,128,839 | 318,857,036 |

## Table 4

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

| Grades | 2000-2002 | 2001-2003 | 2002-2004 | 2003-2005 | 2004-2006 | 2005-2007 | 2006-2008 | 2007-2009 | 2008-2010 | 2009-2011 | 2010-2012 | 2011-2013 | 2012-2014 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A | 65,326,851 | 70,127,621 | 80,452,773 | 60,204,962 | 82,674,701 | 87,498,801 | 96,640,186 | 121,852,039 | 151,225,649 | 164,746,645 | 170,012,770 | 113,784,047 | 126,244,562 |
| B | 34,521,401 | 36,264,896 | 36,541,564 | 39,483,688 | 39,249,507 | 32,830,328 | 38,732,333 | 36,788,172 | 19,844,125 | 13,048,977 | 15,087,987 | 39,133,366 | 40,724,323 |
| C | 38,049,342 | 41,868,373 | 38,353,168 | 34,474,313 | 36,334,814 | 35,279,983 | 27,076,409 | 13,762,659 | 6,813,460 | 4,517,511 | 2,105,166 | 24,659,204 | 19,517,172 |
| D | 23,184,888 | 19,155,969 | 14,856,077 | 21,734,832 | 16,037,478 | 14,515,489 | 7,880,525 | 4,785,715 | 1,146,913 | 1,986,357 | 1,906,695 | 8,208,984 | 4,488,456 |
| F | 28,786,860 | 20,471,466 | 17,349,069 | 17,383,298 | 12,734,577 | 10,201,029 | 4,669,777 | 1,709,042 | 503,779 | 3,165,892 | 530,349 | 6,281,149 | 2,532,998 |
| Subtotals | 189,869,342 | 187,888,325 | 187,552,651 | 193,281,093 | 187,031,077 | 180,325,630 | 174,999,230 | 178,897,727 | 179,534,926 | 187,465,382 | 189,642,967 | 192,066,750 | 193,507,560 |
| NM | 97,755,851 | 102,219,608 | 105,252,647 | 102,235,506 | 111,348,835 | 120,905,577 | 129,094,736 | 127,873,902 | 129,211,612 | 124,126,535 | 124,361,073 | 124,062,089 | 125,349,525 |
| Totals | 287,625,193 | 290,107,933 | 292,805,298 | 295,516,599 | 298,379,912 | 301,231,207 | 304,093,966 | 306,771,629 | 308,746,538 | 311,591,917 | 314,004,040 | 316,128,839 | 318,857,036 |

**NM = Not Monitored**

**Table 5**
**High Cities - Year Round Particle Pollution (Annual PM-2.5)**
**(2012 - 2014)**

| Rank | MSA | PW DV | Grade | 2013 Population |
|---|---|---|---|---|
| **1** | **Visalia, CA** | **17.2** | **F** | 458,198 |
| **2** | **Hanford, CA** | **16.2** | **F** | 150,269 |
| **3** | **Fresno, CA** | **14.0** | **F** | 965,974 |
| **4** | **Modesto, CA** | **13.4** | **F** | 531,997 |
| **5** | **Lebanon, PA** | **12.8** | **D** | 136,539 |
| **6** | **Bakersfield, CA** | **12.2** | **D** | 874,589 |
| 7 | Harrisburg, PA | 12.0 | C | 562,849 |
| 8 | Stockton, CA | 11.9 | C | 715,597 |
| 9 | Altoona, PA | 11.7 | C | 125,955 |
| 9 | Merced, CA | 11.7 | C | 266,353 |
| 11 | Johnstown, PA | 11.6 | C | 137,132 |
| 11 | Lancaster, PA | 11.6 | C | 533,320 |
| 13 | Portland, OR | 11.5 | C | 2,348,247 |
| 14 | Erie, PA | 11.4 | C | 278,443 |
| 14 | Indianapolis, IN | 11.4 | C | 1,841,205 |
| 16 | Canton, OH | 11.2 | C | 403,923 |
| 16 | Houston, TX | 11.2 | C | 6,518,179 |
| 18 | Shreveport, LA | 11.0 | C | 405,809 |
| 18 | York, PA | 11.0 | C | 440,755 |
| 18 | Steubenville, OH | 11.0 | C | 121,336 |
| 21 | Cincinnati, OH | 10.9 | C | 2,165,137 |
| 21 | St. Joseph, MO | 10.9 | C | 127,431 |
| 23 | Evansville, IN | 10.8 | C | 362,157 |
| 23 | Los Angeles, CA | 10.8 | C | 13,262,220 |
| 25 | Little Rock, AR | 10.7 | B | 729,135 |
| 25 | Owensboro, KY | 10.7 | B | 116,506 |
| 25 | Reading, PA | 10.7 | B | 413,691 |

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

**Of the top 27 cities, six have air quality that exceeds the revised national ambient air quality standard. Eighteen cities are rated as C and three are rated as B.**

**Table 6**
**Highest Cities – Short Term Particle Pollution (24-hour PM-2.5)**
**(2012 - 2014)**

| Rank | MSA | PW DV | Grade | 2013 Population |
|---|---|---|---|---|
| 1 | Hanford, CA | 64 | F | 150,269 |
| 2 | Visalia, CA | 56 | F | 458,198 |
| 3 | Fresno, CA | 51 | F | 965,974 |
| 4 | Modesto, CA | 50 | F | 531,997 |
| 5 | Bakersfield, CA | 44 | F | 874,589 |
| 5 | Logan, UT | 44 | F | 131,197 |
| 7 | Provo, CA | 43 | F | 571,460 |
| 8 | Merced, CA | 41 | F | 266,353 |
| 8 | Stockton, CA | 41 | F | 715,597 |
| 10 | Fairbanks, AK | 40 | F | 99,357 |
| 11 | Salt Lake City, UT | 39 | F | 1,192,445 |
| 12 | Odgen, UT | 36 | D | 580,775 |
| 13 | Medford, OR | 35 | C | 210,287 |
| 14 | Lebanon, PA | 34 | C | 136,539 |
| 15 | Harrisburg, PA | 33 | C | 562,849 |
| 16 | Yakima, WA | 32 | C | 247,687 |
| 17 | Lancaster, PA | 31 | B | 533,320 |
| 18 | Reading, PA | 29 | B | 413,691 |
| 19 | Altoona, PA | 28 | B | 125,955 |
| 19 | Elkhart, IN | 28 | B | 201,971 |
| 19 | Eugene, OR | 28 | B | 358,337 |
| 19 | Johnstown, PA | 28 | B | 137,132 |
| 23 | Corpus Christi, TX | 27 | A | 448,108 |
| 23 | Grand Junction, CO | 27 | A | 148,255 |
| 23 | Portland, OR | 27 | A | 2,348,247 |
| 23 | Riverside, CA | 27 | A | 4,441,890 |
| 23 | York, PA | 27 | A | 440,755 |
| 23 | Allentown, PA | 27 | A | 829,835 |
| 23 | Los Angeles, CA | 27 | A | 13,262,220 |

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

**Of the 29 highest cities, 11 have ratings of F, 1 is a D, 4 are C, 6 are Band 7 are A.**

**Table 7**
**Highest 8-Hour Ozone Cities**
**(2012 - 2014)**

| Rank | MSA | PW DV | Grade | 2013 Population |
|---|---|---|---|---|
| 1 | Riverside, CA | 0.089 | F | 4,441,890 |
| 1 | Fresno, CA | 0.089 | F | 965,974 |
| 3 | Visalia, CA | 0.085 | F | 458,198 |
| 4 | Bakersfield, CA | 0.083 | F | 874,589 |
| 5 | Bridgeport, CT | 0.082 | D | 945,438 |
| 6 | Merced, CA | 0.081 | D | 266,353 |
| 6 | Sheboygan, WI | 0.081 | D | 115,290 |
| 8 | Madera, CA | 0.079 | D | 154,548 |
| 8 | Niles, MI | 0.079 | D | 155,233 |
| 8 | Muskegon, MI | 0.079 | D | 172,344 |
| 8 | Norwich, CT | 0.079 | D | 273,676 |
| 12 | Los Angeles, CA | 0.078 | D | 13,262,220 |
| 12 | Modesto, CA | 0.078 | D | 531,997 |
| 12 | Pittsburgh, PA | 0.078 | D | 2,355,968 |
| 12 | Hartford, CA | 0.078 | D | 1,214,295 |
| 16 | Yuma, AZ | 0.077 | D | 203,247 |
| 16 | Dallas, TX | 0.077 | D | 6,896,953 |
| 18 | El Centro, CA | 0.076 | D | 179,091 |
| 18 | New Haven, CT | 0.076 | D | 861,277 |
| 20 | Holland, MI | 0.075 | C | 276,292 |
| 21 | Sacramento, CA | 0.075 | C | 2,244,397 |
| 22 | Boulder, CO | 0.074 | C | 313,333 |
| 22 | Chico, CA | 0.074 | C | 224,241 |
| 22 | Fort Collins, CO | 0.074 | C | 324,122 |
| 22 | Michigan City, IN | 0.074 | C | 111,444 |
| 22 | Provo, UT | 0.074 | C | 571,460 |
| 22 | St. Louis, MO | 0.074 | C | 2,855,934 |
| 22 | San Antonio, TX | 0.074 | C | 2,328,652 |
| 22 | Stockton, CA | 0.074 | C | 715,597 |

**MSA = Metropolitan Statistical Area PW = Population Weighted DV = Design Value**
**Of the 29 highest rated cities, four are rated F, 15 are rated D and 10 are rated C.**

## Table 8

### Highest Counties - Short Term Particle Pollution (24-hour PM-2.5) (2012 - 2014)

| Rank | County/State | DV | Grade | 2013 Population |
|---|---|---|---|---|
| 1 | Kings, CA | 64 | F | 150,269 |
| 1 | Tulare, CA | 64 | F | 458,198 |
| 3 | Lake, OR | 57 | F | 7,838 |
| 4 | Fresno, CA | 51 | F | 965,974 |
| 5 | Stanislaus, CA | 50 | F | 531,997 |
| 6 | Kern, CA | 44 | F | 874,589 |
| 6 | Cache, UT | 44 | F | 118,343 |
| 8 | Siskiyou, CA | 43 | F | 43,628 |
| 8 | Utah, UT | 43 | F | 560,874 |
| 10 | Franklin, ID | 42 | F | 13,021 |
| 10 | Crook, OR | 42 | F | 20,998 |
| 12 | Merced, CA | 41 | F | 266,353 |
| 12 | San Joaquin, CA | 41 | F | 715,597 |
| 14 | Fairbanks, AK | 40 | F | 99,357 |
| 14 | Salt Lake, UT | 40 | F | 1,091,742 |
| 16 | Davis, UT | 38 | D | 329,692 |
| 17 | Lemhi, ID | 37 | D | 7,726 |
| 17 | Box Elder, UT | 37 | D | 51,518 |
| 19 | Jackson, OR | 35 | C | 210,287 |
| 20 | Klamath, OR | 34 | C | 65,455 |
| 20 | Lebanon, PA | 34 | C | 136,359 |
| 22 | Plumas, CA | 33 | C | 18,606 |
| 22 | Cumberland, PA | 33 | C | 245,762 |
| 22 | Weber, UT | 33 | C | 240,475 |
| 25 | Bucks, PA | 32 | C | 626,685 |
| 25 | Yakima, WA | 32 | C | 247,687 |

**DV = Design Value**

**Of the 26 highest counties, 15 are rated F, 3 are D, and 8 are C.**

**Table 9**
**Highest Counties Year Round Particle Pollution (Annual PM-2.5)**
**(2012 - 2014)**

| Rank | County/State | DV | Grade | 2013 Population |
|---|---|---|---|---|
| **1** | **Tulare, CA** | **17.2** | **F** | 458,198 |
| **2** | **Kings, CA** | **16.2** | **F** | 150,269 |
| **3** | **Fresno, CA** | **14.0** | **F** | 965,974 |
| **4** | **Stanislaus, CA** | **13.4** | **F** | 531,997 |
| **5** | **Lebanon, PA** | **12.8** | **D** | 136,359 |
| **6** | **Kern, CA** | **12.2** | **D** | 874,589 |
| 7 | Cumberland, PA | 12.0 | C | 245,762 |
| 8 | San Joaquin, CA | 11.9 | C | 715,597 |
| 9 | Merced, CA | 11.7 | C | 266,353 |
| 9 | Butler, OH | 11.7 | C | 374,158 |
| 9 | Blair, PA | 11.7 | C | 125,955 |
| 12 | Cambria, PA | 11.6 | C | 137,132 |
| 12 | Delaware, PA | 11.6 | C | 562,960 |
| 12 | Lancaster, PA | 11.6 | C | 533,320 |
| 15 | Jefferson, OH | 11.5 | C | 67,694 |
| 15 | Beaver, PA | 11.5 | C | 169,392 |
| 17 | Marion, IN | 11.4 | C | 934,243 |
| 17 | Erie, PA | 11.4 | C | 278,443 |
| 19 | Los Angeles, CA | 11.3 | C | 10,116,705 |
| 19 | Lemhi, ID | 11.3 | C | 7,726 |
| 19 | Bucks, PA | 11.3 | C | 626,685 |
| 22 | Cuyahoga, OH | 11.2 | C | 1,259,828 |
| 22 | Stark, OH | 11.2 | C | 375,736 |
| 22 | Harris, TX | 11.2 | C | 4,441,370 |
| 25 | DeKalb, GA | 11.1 | C | 722,161 |
| 25 | Marshall, WV | 11.1 | C | 32,416 |

**DV = Design Value**

**Of the 26 highest counties, four are rated an F and two are D. All others meet the National Ambient Air Quality Standards with 20 being rated as C.**

**Table 10**
**Highest Ozone Counties**
**(2012 - 2014)**

| Rank | County/State | DV | Grade | 2013 Population |
|---|---|---|---|---|
| 1 | San Bernardino, CA | 0.093 | F | 2,112,619 |
| 2 | Fresno, CA | 0.089 | F | 965,974 |
| 3 | Riverside, CA | 0.085 | F | 2,329,271 |
| 3 | Tulare, CA | 0.085 | F | 458,198 |
| 5 | Kern, CA | 0.083 | F | 874,589 |
| 5 | Allegan, MI | 0.083 | F | 113,847 |
| 7 | El Dorado, CA | 0.082 | D | 183,087 |
| 7 | Fairfield, CT | 0.082 | D | 945,438 |
| 9 | Los Angeles, CA | 0.081 | D | 10,116,705 |
| 9 | Merced, CA | 0.081 | D | 266,353 |
| 9 | Middlesex, CT | 0.081 | D | 164,943 |
| 9 | Kenosha, WI | 0.081 | D | 168,068 |
| 9 | Sheboygan, WI | 0.081 | D | 115,290 |
| 14 | Tolland, MI | 0.080 | D | 151,367 |
| 14 | Denton, TX | 0.080 | D | 753,363 |
| 16 | Madera, CA | 0.079 | D | 154,548 |
| 16 | New London, CT | 0.079 | D | 273,676 |
| 16 | Lake, IL | 0.079 | D | 705,186 |
| 16 | Berrien, MI | 0.079 | D | 155,233 |
| 16 | Muskegon, MI | 0.079 | D | 172,344 |
| 16 | Uintah, UT | 0.079 | D | 36,867 |
| 22 | Stanislaus, CA | 0.078 | D | 531,997 |
| 22 | Douglas, CO | 0.078 | D | 314,638 |
| 22 | Collin, TX | 0.078 | D | 885,241 |
| 22 | Tarrant, TX | 0.078 | D | 1,945,360 |

**DV = Design Value**
**Of the top 25 counties, 6 are rated as F and 19 are rated as D.**

**Table 11**

**Cleanest U.S. Cities for Short-term Particle Pollution (24-hr PM-2.5)**
**(2012 - 2014)**

| Rank | MSA | PW DV | Grade | 2013 Population |
|---|---|---|---|---|
| 1 | Santa Fe, NM | 9 | A | 148,164 |
| 2 | Farmington, NM | 12 | A | 123,785 |
| 2 | Honolulu, HI | 12 | A | 991,788 |
| 4 | Casper, WY | 13 | A | 81,624 |
| 4 | Cheyenne, WY | 13 | A | 96,389 |
| 4 | Salinas, CA | 13 | A | 431,344 |
| 4 | Santa Cruz. CA | 13 | A | 271,804 |
| 4 | Tucson, AZ | 13 | A | 1,004,516 |
| 9 | Cape Coral, FL | 14 | A | 679,513 |
| 9 | Lakeland, FL | 14 | A | 634,638 |
| 9 | Las Cruces, NM | 14 | A | 213,676 |
| 9 | Manchester, OH | 14 | A | 405,184 |
| 9 | Miami, FL | 14 | A | 5,929,819 |
| 14 | Bismarck, ND | 15 | A | 120,325 |
| 14 | Burlington, VT | 15 | A | 216,167 |
| 14 | Deltona, FL | 15 | A | 507,531 |
| 14 | Orlando, FL | 15 | A | 2,321,418 |
| 14 | Pueblo, CO | 15 | A | 161,875 |
| 14 | Rapid City, SD | 15 | A | 135,193 |
| 14 | Tampa, FL | 15 | A | 2,915,582 |
| 14 | Wilmington, NC | 15 | A | 171,649 |
| 22 | Asheville, NC | 16 | A | 442,316 |
| 22 | Albuquerque, NM | 16 | A | 904,587 |
| 22 | Bangor, ME | 16 | A | 153,414 |
| 22 | Colorado Springs, CO | 16 | A | 686,968 |
| 22 | Gainesville, GA | 16 | A | 190,761 |
| 22 | Greenville, NC | 16 | A | 196,447 |
| 22 | Kingsport, TN | 16 | A | 297,498 |
| 22 | Palm Bay, FL | 16 | A | 556,885 |
| 22 | Pensacola, FL | 16 | A | 474,081 |
| 22 | Providence, RI | 16 | A | 1,609,367 |
| 22 | Redding, CA | 16 | A | 179,804 |
| 22 | Santa Barbara, CA | 16 | A | 440,668 |
| 22 | Syracuse, NY | 16 | A | 661,478 |

**MSA= Metropolitan Statistical Area PW = Population Weighted DV = Design Value**
**Of the 34 cleanest cities, all are rated as A.**

**Table 12**
**Cleanest U.S. Cities for Year Round Particle Pollution (Annual PM-2.5)**
**(2012 - 2014)**

| Rank | MSA | PW DV | Grade | 2013 Population |
|---|---|---|---|---|
| 1 | Cheyenne, WY | 4.1 | A | 96,389 |
| 2 | Farmington, NM | 4.5 | A | 123,785 |
| 2 | Santa Fe, NM | 4.5 | A | 148,164 |
| 4 | Casper, WY | 4.7 | A | 81,624 |
| 5 | Honolulu, HI | 5.3 | A | 991,788 |
| 5 | Anchorage, AK | 5.3 | A | 398,892 |
| 7 | Salinas, CA | 5.4 | A | 431,344 |
| 8 | Manchester, OH | 5.7 | A | 405,184 |
| 8 | Redding, CA | 5.7 | A | 179,804 |
| 8 | Tucson, AZ | 5.7 | A | 1,004,516 |
| 11 | Bismarck, ND | 5.8 | A | 120,325 |
| 12 | Palm Bay, FL | 5.9 | A | 556,885 |
| 13 | Burlington, VT | 6.0 | A | 216,167 |
| 13 | Santa Cruz, CA | 6.0 | A | 271,804 |
| 15 | Cape Coral, FL | 6.2 | A | 679,513 |
| 15 | Colorado Springs, CO | 6.2 | A | 686,968 |
| 15 | Las Cruces, NM | 6.2 | A | 213,676 |
| 18 | Duluth, MN | 6.3 | A | 280,218 |
| 18 | Orlando, FL | 6.3 | A | 2,321,418 |
| 18 | Pueblo, CO | 6.3 | A | 161,875 |
| 18 | Rapid City, SD | 6.3 | A | 135,193 |
| 22 | Miami, FL | 6.4 | A | 5,929,819 |
| 22 | Deltona, FL | 6.4 | A | 507,531 |
| 22 | Tampa, FL | 6.4 | A | 2,915,582 |
| 25 | Albuquerque, NM | 6.5 | A | 904,587 |
| 25 | North Port, FL | 6.5 | A | 748,708 |
| 25 | Providence, RI | 6.5 | A | 1,609,367 |

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

**Of the 27 cleanest cities all are rated as A.**

**Table 13**
**Cleanest U.S. Cities for Ozone Air Pollution**
**(2012 - 2014)**

| Rank | MSA | PW DV | Grade | 2013 Population |
|---|---|---|---|---|
| 1 | Bellingham, WA | 0.045 | A | 208,351 |
| 1 | Mount Vernon, WA | 0.045 | A | 120,365 |
| 3 | Fairbanks, AK | 0.046 | A | 99,357 |
| 4 | Honolulu, HI | 0.049 | A | 991,788 |
| 5 | Santa Cruz, CA | 0.053 | A | 271,804 |
| 6 | Santa Rosa, CA | 0.054 | A | 500,292 |
| 7 | Missoula, MT | 0.055 | A | 112,684 |
| 7 | Olympia, WA | 0.055 | A | 265,851 |
| 7 | Salinas, CA | 0.055 | A | 431,344 |
| 7 | Duluth, MN | 0.055 | A | 280,218 |
| 11 | San Francisco, CA | 0.056 | A | 4,594,060 |
| 11 | Seattle, WA | 0.056 | A | 3,671,478 |
| 13 | Brunswick, GA | 0.057 | A | 114,806 |
| 13 | Eugene, OR | 0.057 | A | 358,337 |
| 13 | McAllen, TX | 0.057 | A | 831,073 |
| 13 | Portland, OR | 0.057 | A | 2,348,247 |
| 13 | Tuscaloosa, AL | 0.057 | A | 225,949 |
| 18 | Bangor, ME | 0.058 | A | 153,414 |
| 18 | Brownsville, TX | 0.058 | A | 420,392 |
| 18 | Lincoln, NE | 0.058 | A | 318,945 |
| 21 | Bend, OR | 0.059 | A | 170,388 |
| 21 | Bismarck, ND | 0.059 | A | 120,325 |
| 21 | Columbia, SC | 0.059 | A | 800,495 |
| 21 | Jacksonville, FL | 0.059 | A | 1,419,127 |
| 21 | Monroe, LA | 0.059 | A | 178,864 |
| 21 | Napa, CA | 0.059 | A | 141,667 |
| 21 | Naples, FL | 0.059 | A | 348,777 |
| 21 | Ocala, FL | 0.059 | A | 339,167 |
| 21 | Savannah, GA | 0.059 | A | 372,708 |

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

**Of the cleanest 29 cities, all are rated A.**

**Table 14**
**Cleanest Counties – Short Term Particle Pollution (24-hour PM-2.5)**
**(2012 - 2014)**

| Rank | County/State | DV | Grade | 2013 Population |
|---|---|---|---|---|
| 1 | Santa Fe, NM | 9 | A | 148,164 |
| 2 | Custer, SD | 10 | A | 8,445 |
| 3 | Montezuma, CO | 11 | A | 25,772 |
| 3 | Hancock, ME | 11 | A | 54,696 |
| 3 | Billings, ND | 11 | A | 901 |
| 6 | Lake, CA | 12 | A | 64,184 |
| 6 | Hawaii, HI | 12 | A | 194,190 |
| 6 | Honolulu, HI | 12 | A | 991,788 |
| 6 | Maui, HI | 12 | A | 163,019 |
| 6 | San Juan, NM | 12 | A | 123,785 |
| 6 | Teton, WY | 12 | A | 22,930 |
| 12 | Pima, AZ | 13 | A | 1,004,516 |
| 12 | Monterey, CA | 13 | A | 431,344 |
| 12 | San Benito, CA | 13 | A | 58,267 |
| 12 | Santa Cruz, CA | 13 | A | 271,804 |
| 12 | Litchfield, CT | 13 | A | 184,993 |
| 12 | Palm Beach, FL | 13 | A | 1,397,710 |
| 12 | Rosebud, MT | 13 | A | 9,326 |
| 12 | Belknap, NH | 13 | A | 60,305 |
| 12 | Essex, NY | 13 | A | 38,679 |
| 12 | Kent, RI | 13 | A | 165,128 |
| 12 | Jackson, SD | 13 | A | 3,274 |
| 12 | Albany, NY | 13 | A | 37,811 |
| 12 | Laramie, WY | 13 | A | 96,389 |
| 12 | Natrona, WY | 13 | A | 81,624 |
| 12 | Sweetwater, WY | 13 | A | 45,010 |

**DV = Design Value**

**The cleanest 26 counties are all rated as A.**

**Table 15**
**Cleanest Counties - Year Round Particle Pollution (Annual PM-2.5)**
**(2012 - 2014)**

| Rank | County/State | DV | Grade | 2013 Population |
|---|---|---|---|---|
| 1 | Custer, SD | 3.5 | A | 8,445 |
| 2 | Lake, CA | 4.0 | A | 64,184 |
| 3 | Essex, NY | 4.1 | A | 38,679 |
| 3 | Laramie, WY | 4.1 | A | 96,389 |
| 5 | Hancock, ME | 4.4 | A | 54,696 |
| 5 | Billings, ND | 4.4 | A | 901 |
| 5 | Park, WY | 4.4 | A | 28,989 |
| 8 | San Juan, NM | 4.5 | A | 123,785 |
| 8 | Santa Fe, NM | 4.5 | A | 148,164 |
| 8 | Washington, RI | 4.5 | A | 126,653 |
| 11 | McKenzie, ND | 4.6 | A | 10,996 |
| 11 | Jackson, SD | 4.6 | A | 3,274 |
| 13 | Natrona, WY | 4.7 | A | 81,624 |
| 14 | Matanuska, AK | 4.8 | A | 97,882 |
| 14 | Dunn, ND | 4.8 | A | 4,399 |
| 14 | Albany, WY | 4.8 | A | 37,811 |
| 17 | Maui, HI | 5.0 | A | 163,019 |
| 17 | Teton, WY | 5.0 | A | 22,930 |
| 19 | San Benito, CA | 5.1 | A | 58,267 |
| 19 | Rosebud, MT | 5.1 | A | 9,326 |
| 19 | Ashland, WI | 5.1 | A | 16,103 |
| 22 | Oliver, ND | 5.2 | A | 1,850 |
| 22 | Kent, RI | 5.2 | A | 165,128 |
| 24 | Litchfield, CT | 5.3 | A | 184,993 |
| 24 | Honolulu, HI | 5.3 | A | 991,788 |
| 24 | Aroostook, ME | 5.3 | A | 69,447 |
| 24 | Campbell, WY | 5.3 | A | 48,320 |

**DV = Design Value**
**The cleanest 27 counties are all rated as A.**

**Table 16**
**Cleanest Counties - Ozone Air Pollution**
**(2012 - 2014)**

| Rank | County/State | DV | Grade | 2013 Population |
|---|---|---|---|---|
| 1 | Humboldt, CA | 0.044 | A | 134,809 |
| 2 | Skagit, WA | 0.045 | A | 120,365 |
| 2 | Whatcom, WA | 0.045 | A | 208,351 |
| 4 | Fairbanks, AK | 0.046 | A | 99,357 |
| 5 | San Francisco, CA | 0.047 | A | 852,469 |
| 6 | Honolulu, HI | 0.049 | A | 991,788 |
| 7 | Columbia, OR | 0.051 | A | 49,459 |
| 8 | Santa Cruz, CA | 0.053 | A | 271,804 |
| 8 | Aroostook, ME | 0.053 | A | 69,447 |
| 8 | Oxford, ME | 0.053 | A | 57,238 |
| 8 | Flathead, MT | 0.053 | A | 94,924 |
| 12 | Denali, AK | 0.054 | A | 1,921 |
| 12 | Sonoma, CA | 0.054 | A | 500,292 |
| 12 | Washington, ME | 0.054 | A | 31,808 |
| 15 | Monterey, CA | 0.055 | A | 431,344 |
| 15 | St. Louis, MN | 0.055 | A | 200,949 |
| 15 | Lewis & Clark, MT | 0.055 | A | 65,856 |
| 15 | Missoula, MT | 0.055 | A | 112,684 |
| 15 | Colleton, SC | 0.055 | A | 37,771 |
| 15 | Edgefield, SC | 0.055 | A | 26,553 |
| 15 | King, WA | 0.055 | A | 2,079,967 |
| 15 | Thurston, WA | 0.055 | A | 265,851 |
| 23 | Alameda, CA | 0.056 | A | 1,610,921 |
| 23 | Marin, CA | 0.056 | A | 260,750 |
| 23 | San Mateo, CA | 0.056 | A | 758,581 |
| 23 | Rosebud, MT | 0.056 | A | 9,326 |
| 23 | Billings, ND | 0.056 | A | 901 |
| 23 | Multnomah, OR | 0.056 | A | 776,712 |
| 23 | Clark, WA | 0.056 | A | 451,008 |

**DV = Design Value**
**Of the 29 cleanest counties, all are rated A.**

# 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 2012 – 2014 this had decreased to a little under 1.0 million people (70.1%). All people in both years either lived in counties with air quality rated as A or lived in counties where ozone was not measured. Figure HI-1 shows the distribution of people by year.

## 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 2012 - 2014 this was approximately 1.3 million people (95.0%). 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. Figure HI-2 shows the distribution of people by year.

## 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 2012 – 2014 this had increased to approximately 1.3 million people (95.0%). 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. Figure HI-3 shows the distribution of people by year.

**Table HI-1**

**2012 – 2014**

| | | OZONE | | | PARTICLE POLLUTION (PM-2.5) | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **County** | **Population** | **Avg. DV** | **Grade** | **MM** | **Avg. 24-Hr DV** | **Grade** | **Avg. Ann DV** | **Grade** | **MM** |
| Hawaii | 194,190 | ND | -- | -- | 12 | A | 6.6 | A | Y |
| Honolulu | 991,788 | 0.049 | A | N | 12 | A | 5.3 | A | Y |
| Maui | 163,019 | ND | -- | -- | 12 | A | 5.0 | A | N |
| Subtotal | **1,348,987** | | | | | | | | |
| Not Monitored | 70,564 | | | | | | | | |
| **Total** | **1,419,561** | | | | | | | | |

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

# HAWAII

## Table HI-2
## People Breathing Ozone

| Grade | 2000-2002 | 2001-2003 | 2002-2004 | 2003-2005 | 2004-2006 | 2005-2007 | 2006-2008 | 2007-2009 | 2008-2010 | 2009-2011 | 2010-2012 | 2011-2013 | 2012-2014 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A | 1,045,049 | 1,052,753 | 907,997 | 918,181 | 926,954 | 925,335 | 933,680 | 943,177 | 953,207 | 963,607 | 976,372 | 983,429 | 994,788 |
| B | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| C | 0 | .0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| D | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| F | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Subtotal | 1,045,049 | 1,052,753 | 907,997 | 918,181 | 926,954 | 925,335 | 933,680 | 943,177 | 953,207 | 963,607 | 976,372 | 983,429 | 994,788 |
| NM | 194,564 | 198,401 | 365,572 | 174,548 | 382,777 | 390,340 | 398,733 | 403,540 | 407,094 | 411,203 | 415,941 | 420,625 | 424,773 |
| Total | 1,239,613 | 1,251,154 | 1,273,569 | 1,292,729 | 1,309,731 | 1,315,675 | 1,332,213 | 1,346,717 | 1,360,301 | 1,374,810 | 1,392,313 | 1,404,054 | 1,419,561 |

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

| Grade | 2000-2002 | 2001-2003 | 2002-2004 | 2003-2005 | 2004-2006 | 2005-2007 | 2006-2008 | 2007-2009 | 2008-2010 | 2009-2011 | 2010-2012 | 2011-2013 | 2012-2014 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A | 1,025,923 | 1,031,780 | 1,048,505 | 1,061,515 | 1,072,621 | 925,335 | 933,680 | 973,177 | 953,207 | 1,307,019 | 1,323,789 | 1,334,452 | 1,348,997 |
| B | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| C | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| D | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| F | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Subtotal | 1,025,923 | 1,031,780 | 1,048,505 | 1,061,515 | 1,072,621 | 925,335 | 933,680 | 973,177 | 953,207 | 1,307,019 | 1,323,789 | 1,334,452 | 1,348,997 |
| NM | 213,690 | 219,374 | 225,064 | 231,214 | 237,110 | 390,340 | 398,535 | 403,540 | 407,094 | 67,791 | 68,524 | 69,602 | 70,564 |
| Total | 1,239,613 | 1,251,154 | 1,273,569 | 1,292,729 | 1,309,731 | 1,315,675 | 1,332,213 | 1,346,717 | 1,360,301 | 1,374,810 | 1,392,313 | 1,404,054 | 1,419,561 |

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

| Grade | 2000-2002 | 2001-2003 | 2002-2004 | 2003-2005 | 2004-2006 | 2005-2007 | 2006-2008 | 2007-2009 | 2008-2010 | 2009-2011 | 2010-2012 | 2011-2013 | 2012-2014 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A | 1,025,923 | 1,031,780 | 1,048,505 | 1,061,515 | 1,072,261 | 925,335 | 933,680 | 943,177 | 953,207 | 1,307,019 | 1,323,789 | 1,296,288 | 1,310,159 |
| B | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 38,164 | 38,838 |
| C | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| D | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| F | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Subtotal | 1,025,923 | 1,031,780 | 1,048,505 | 1,061,515 | 1,072,261 | 925,335 | 933,680 | 943,177 | 953,207 | 1,307,019 | 1,323,789 | 1,296,288 | 1,348,997 |
| NM | 213,690 | 219,374 | 225,064 | 231,214 | 237,110 | 390,340 | 398,535 | 403,540 | 407,094 | 67,791 | 68,524 | 69,602 | 70,564 |
| Total | 1,239,613 | 1,251,154 | 1,273,569 | 1,292,729 | 1,309,731 | 1,315,675 | 1,332,213 | 1,346,717 | 1,360,301 | 1,374,810 | 1,392,313 | 1,404,054 | 1,419,561 |

**NM = Not Monitored**

**Figure HI-1**

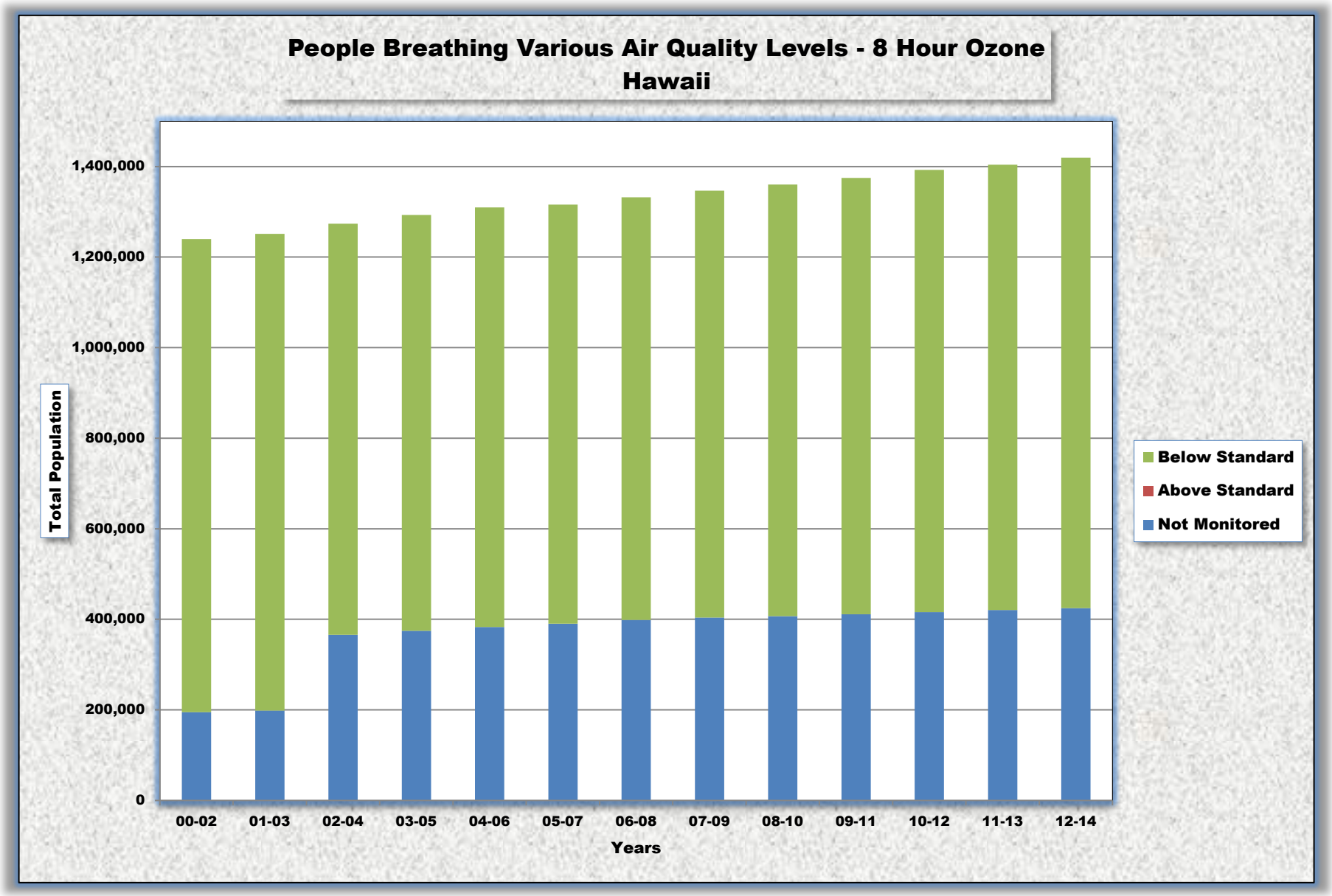

People Breathing Various Air Quality Levels - 8 Hour Ozone
Hawaii
Total Population
1,400,000
1,200,000
1,000,000
800,000
600,000
400,000
200,000
0
00-02
01-03
02-04
03-05
04-06
05-07
06-08
07-09
08-10
09-11
10-12
11-13
12-14
Years
Below Standard
Above Standard
Not Monitored

**Figure HI-2**

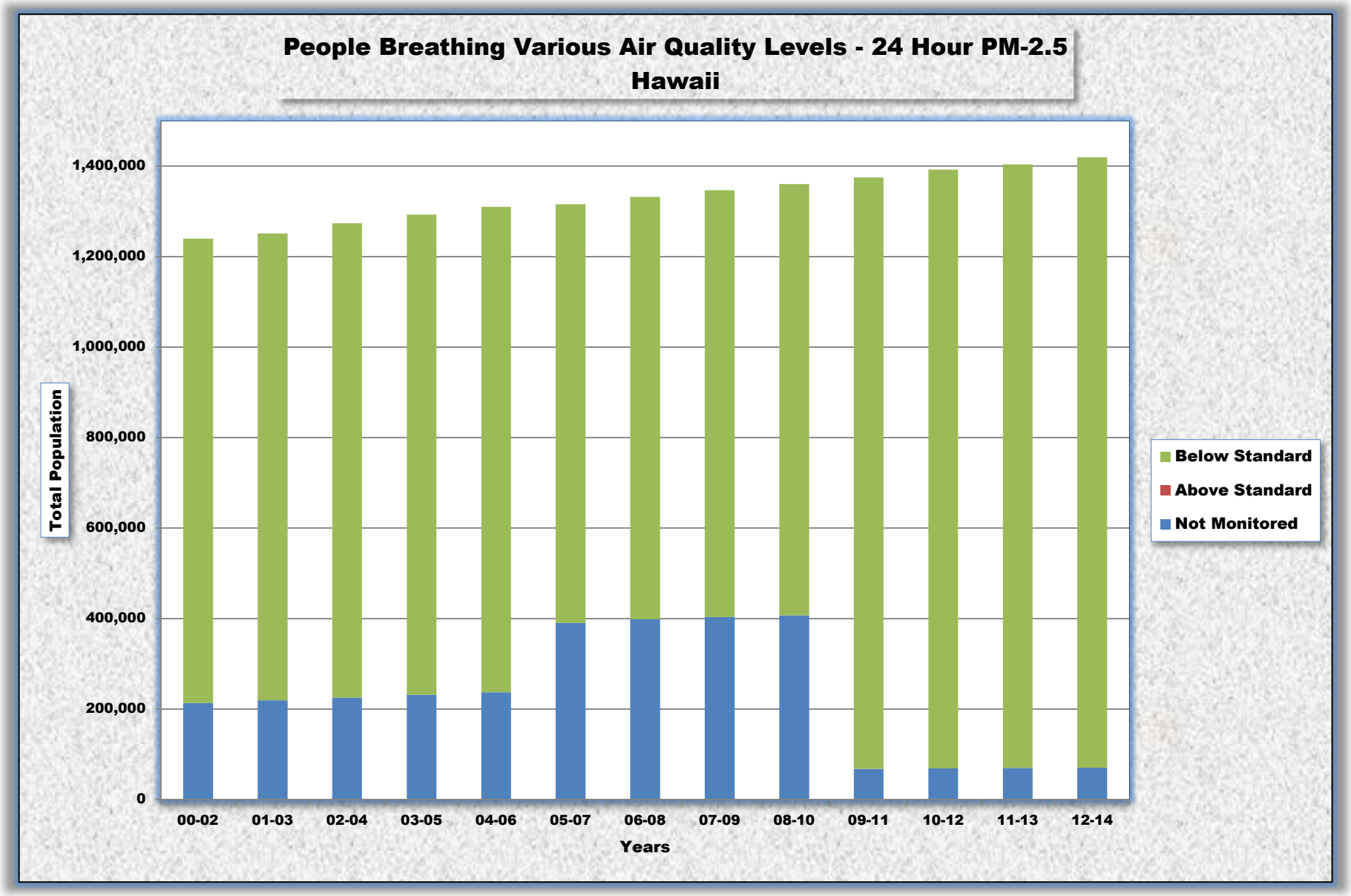
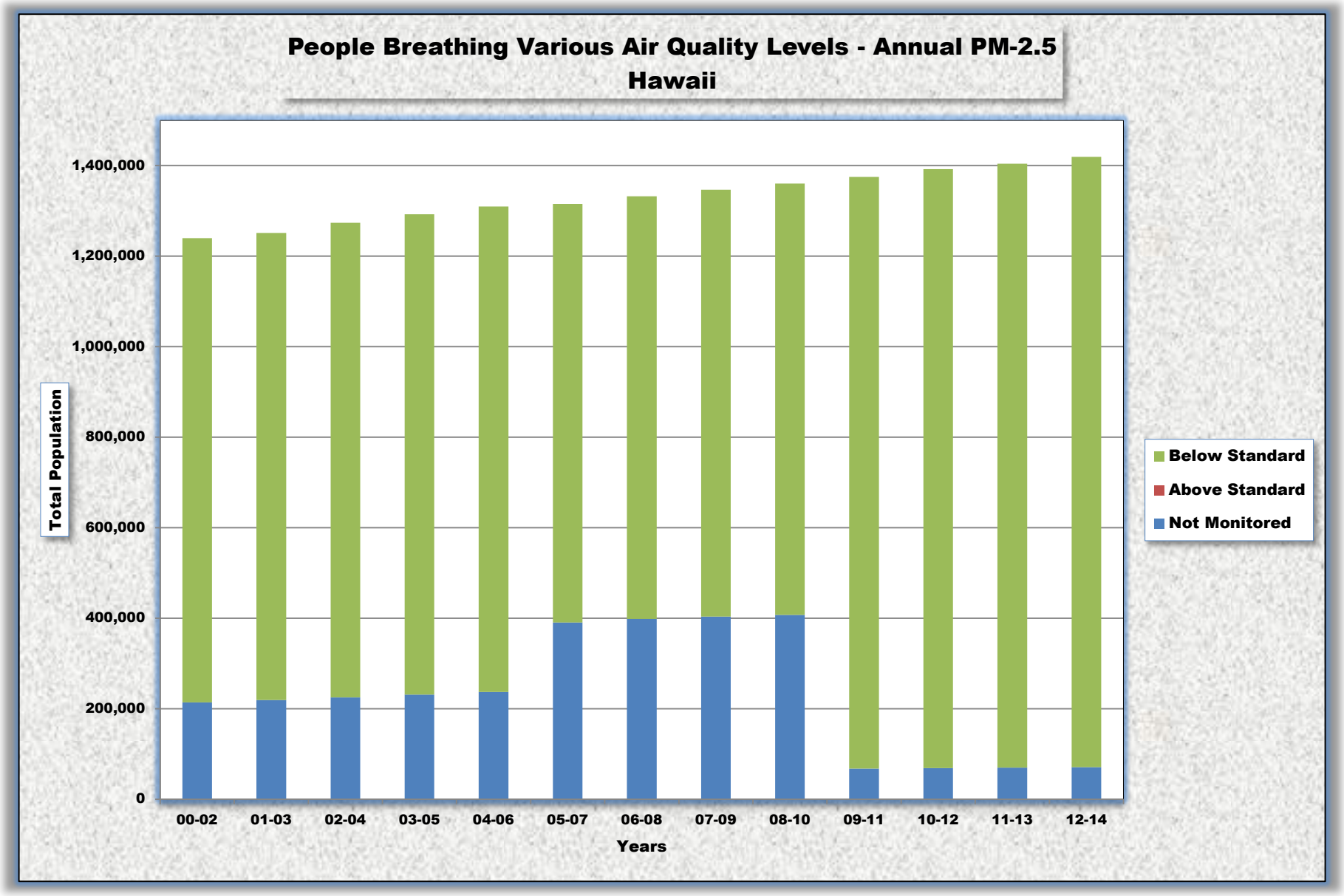

People Breathing Various Air Quality Levels - 24 Hour PM-2.5
Hawaii
Total Population
1,400,000
1,200,000
1,000,000
800,000
600,000
400,000
200,000
0
00-02
01-03
02-04
03-05
04-06
05-07
06-08
07-09
08-10
09-11
10-12
11-13
12-14
Years
Below Standard
Above Standard
Not Monitored

**Figure HI-3**


People Breathing Various Air Quality Levels - Annual PM-2.5
Hawaii
Total Population
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
Years
Below Standard
Above Standard
Not Monitored