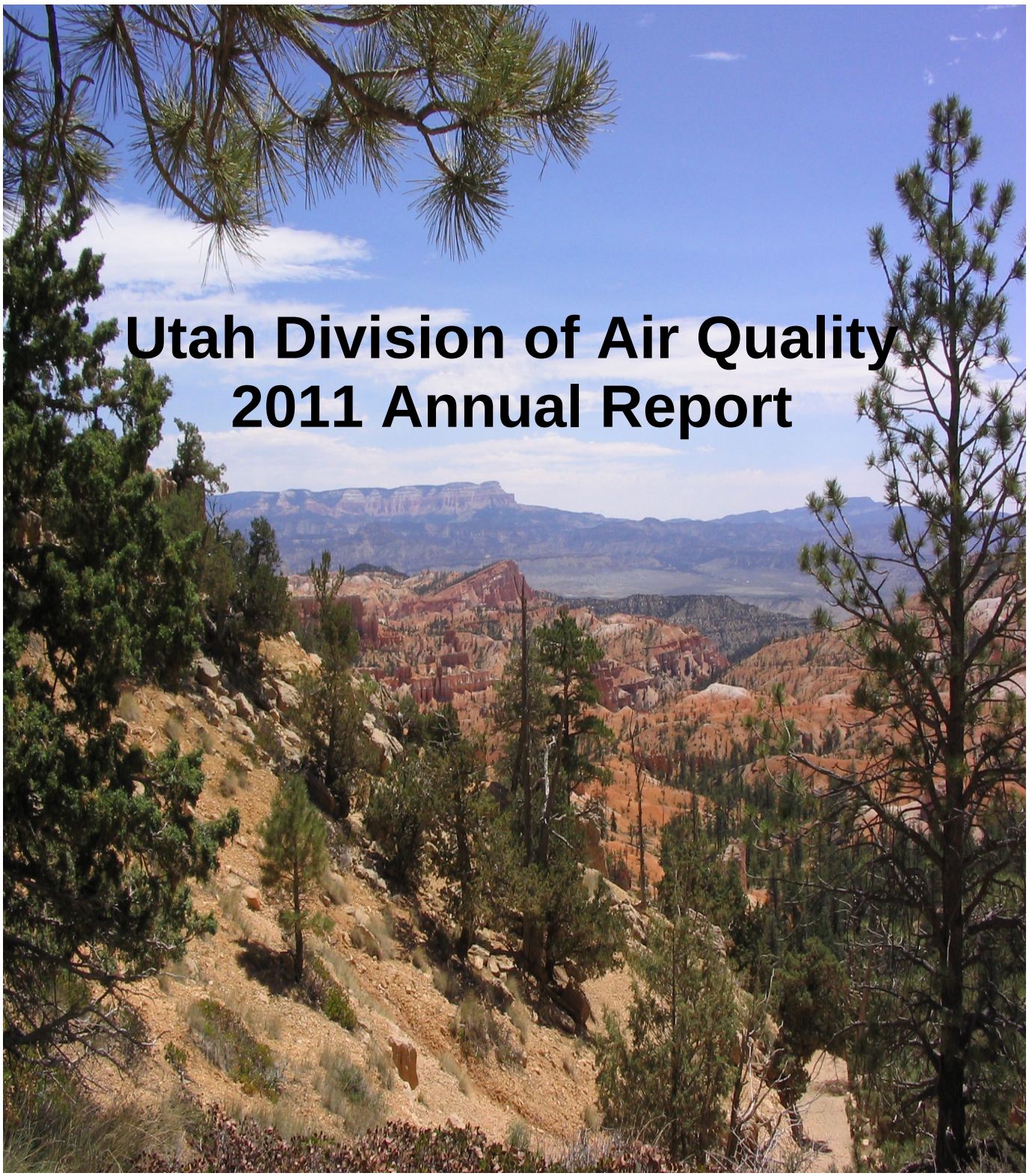

Utah Division of Air Quality
2011 Annual Report

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Acronyms

AO	Approval Order
AHERA	Asbestos Hazard Emergency Response Act
ATLAS	Air Toxics, Lead-Based Paint, Asbestos and Small Business Environmental Assistance Section
AMS	Air Monitoring Section
BACT	Best Available Control Technology
CAA	Clean Air Act
CAP	Compliance Advisory Panel
CFR	Code of Federal Regulations
CO	Carbon Monoxide
CNG	Compressed Natural Gas
DAQ	Division of Air Quality
DEQ	Department of Environmental Quality
EPA	Environmental Protection Agency
GHG	Green House Gas
HAPs	Hazardous Air Pollutants
MACT	Maximum Available Control Technology
$\mu g/m^3$	Micrograms Per Cubic Meter
Micron	One Millionth of a Meter
NAAQS	National Ambient Air Quality Standards
NESHAP	National Emissions Standards for Hazardous Air Pollutants
NOI	Notice of Intent
NO_2	Nitrogen Dioxide
NOV	Notice of Violation
NO_x	Nitrogen Oxides
NSPS	New Source Performance Standard
NSR	New Source Review
O_3	Ozone
PM	Particulate Matter
PM10	Particulate Matter Smaller Than 10 Microns in Diameter
PM2.5	Particulate Matter Smaller Than 2.5 Microns in Diameter
PPB	Parts Per Billion
PPM	Parts Per Million
SBEAP	Small Business Environmental Assistance Program
SCAN	Source Compliance Action Notice
SIP	State Implementation Plan
SO_2	Sulfur Dioxide
SO_x	Sulfur Oxides
TSCA	Toxic Substances Control Act
TSP	Total Suspended Particles
VOC	Volatile Organic Compounds
UAC	Utah Administrative Code

NOTE

THIS REPORT IS INTENDED TO PROVDE AN OVERVIEW OF UTAH'S AIR QUALITY. THIS REPORT IS PUBLISHED BEFORE END OF YEAR DATA CAN BE AUDITED AND IS SUBJECT TO CHANGE.

Introduction

The mission of the Utah Division of Air Quality (DAQ) is to protect public health and the environment from the harmful effects of air pollution. It is the responsibility of DAQ to ensure that the air in Utah meets health and visibility standards established under the federal Clean Air Act (CAA). To fulfill this responsibility, DAQ is required by the federal government to ensure compliance with the U.S. Environmental Protection Agency's (EPA) National Ambient Air Quality Standards (NAAQS) statewide and visibility standards at national parks. DAQ enacts rules pertaining to air quality standards, develops plans to meet the federal standards when necessary, issues preconstruction and operating permits to stationary sources, and ensures compliance with state and federal air quality rules.

The DAQ allocates a large portion of its resources to implementing the CAA. The Utah Air Conservation Act empowers the Utah Air Quality Board to enact rules pertaining to air quality issues. The DAQ staff supports the Board in its policy-making role. Board membership provides representation from industry, local government, environmental groups, and the public, and includes the Executive Director of the Department of Environmental Quality. The eleven board members have diverse interests, are knowledgeable in air pollution matters, and are appointed by the Governor with consent of the Senate. The Director of DAQ is the Board's Executive Secretary.

The Utah Air Quality Rules define the Utah air quality program. Implementation of the rules requires DAQ interaction with industry, other government agencies and the public. The state air quality program is responsible for the implementation of the federal standards under the CAA as well as state rules for pollution sources not regulated by the CAA.

2011 Synopsis

Despite an ever-increasing population and industrial base, Utah's monitored concentrations of all federal health standards for criteria air pollutants, with the exception of particulates due solely to natural wind storms, have either stayed the same or continued their decreasing trends.

On January 22, 2010, EPA finalized a revision to the nitrogen dioxide (NO_2) standard that included new ambient air monitoring requirements for NO_2 that must be in place by January 2013. In urban areas, monitors are required near major roads as well as in other locations where maximum concentrations are expected. Additional monitors are required in large urban areas to measure the highest concentrations of NO_2 that occur more broadly across communities. DAQ and EPA are reviewing the current Utah monitoring network for compliance with the new monitoring standard.

On August 12, 2011, EPA issued a final rule retaining the existing standard for carbon monoxide (CO). The final rule contains revisions to the CO monitoring network, requiring near road CO monitoring in metropolitan areas with a population of 2.5 million or more beginning in 2015. Near road CO monitoring will be required in metropolitan areas with a population of 1 million or more beginning in 2017. The CO near road monitors will likely be co-located with the near road NO_2 monitors.

With approval from EPA Region 8, the state halted monitoring for lead in the ambient air in September 2005 because measured levels of lead were extremely low relative to the former primary and secondary lead standards (1.5 $\mu g/m^3$ quarterly average). Subsequently, in 2008, EPA revised the lead standard to 0.15 $\mu g/m^3$ as total suspended particles (TSP) and set a monitoring requirement that caused DAQ to initiate lead monitoring near one lead specific emission source. On October 12, 2009, the State made a recommendation to EPA that all 29 counties in Utah be designated unclassifiable for the primary and secondary lead standards. EPA concurred with the state attainment recommendation on July 15, 2010. On December 27, 2010, EPA revised the lead monitoring requirements such that additional monitoring for lead would have to take place at one additional urban non-source monitoring location. Monitoring at that location will begin in 2012.

During wintertime episodes of air stagnation and temperature inversion, low-lying valleys routinely experience elevated concentrations of both particulate matter smaller than 10 microns in diameter (PM10) and particulate matter smaller than 2.5 microns in diameter (PM2.5). Although PM10 concentrations no longer exceed the standard under these conditions, the lower PM2.5 standard is low enough that it is violated in several areas along the Wasatch Front and Cache Valley. In June, DAQ began meeting with stakeholders throughout the state to identify strategies to bring Utah's PM2.5 non-attainment areas into compliance with the PM2.5 standard. The information gathered from these meetings will be used to develop Utah's new State Implementation Plan (SIP) for PM2.5.

Air Quality Standards

The Clean Air Act (CAA) as last amended in 1990 requires EPA to set National Ambient Air Quality Standards (NAAQS) for pollutants considered harmful to public health and the environment. The CAA established two types of air quality standards: primary and secondary standards. Primary standards are set to protect public health, including the health of sensitive populations such as asthmatics, children, and the elderly. Secondary standards are set to protect public welfare, including protection against decreased visibility and damage to animals, crops, vegetation, and buildings.

Standards are composed of a numerical value and a form. The form may be a statistical value, such as the 98^{th} percentile calculation or a rolling average over a designated period of time that is then compared against the numerical value.

The EPA has established health-based NAAQS for six pollutants known as criteria pollutants. These are carbon monoxide, nitrogen dioxide, ozone, particulate matter, sulfur dioxide and. lead. Each of these pollutants is addressed in greater detail later in this chapter, while Table 1 provides a brief description of each. The primary health standards are established by EPA after considering both the concentration level and the duration of exposure that can cause adverse health effects. Pollutant concentrations that exceed the NAAQS are considered unhealthy. The DAQ monitors each of these criteria pollutants, as well as several non-criteria pollutants for special studies.

Table 1. EPA Designated Criteria Pollutants

Name	Sources	Health Effects	Welfare Effects
Carbon Monoxide (CO); a clear, colorless, odorless gas	Burning of gasoline, wood, natural gas, coal, oil, etc.	Reduces the ability of blood to transport oxygen to body cells and tissues. May be particularly hazardous to people who have heart or circulatory (blood vessel) problems and people who have damaged lungs or breathing passages.	
Nitrogen Dioxide (NO_2) (one component of NO_x); smog-forming chemical	Burning of gasoline, natural gas, coal, oil, and other fuels; Cars are also an important source of NO_2.	Can cause lung damage, illnesses of breathing passages and lungs (respiratory system).	Ingredient of acid rain (acid aerosols), which can damage trees, lakes, flora and fauna. Acid aerosols can also reduce visibility.
Ozone (O_3) (ground-level ozone is the principal component of smog)	Chemical reaction of pollutants; VOCs and NO_x.	Can cause breathing problems, reduced lung function, asthma, irritated eyes, stuffy noses, and reduced resistance to colds and other infections. It may also speed up aging of lung tissue.	Can damage plants and trees; smog can cause reduced visibility.
Particulate Matter (PM10, PM2.5); dust, smoke, soot	Burning of gasoline, natural gas, coal, oil and other fuels; industrial plants; agriculture (plowing or burning fields); unpaved roads, mining, construction activities. Particles are also formed from the reaction of VOCs, NO_x, SO_x and other pollutants in the air.	Can cause nose and throat irritation, lung damage, bronchitis, and early death.	Main source of haze that reduces visibility.
Sulfur Dioxide (SO_2)	Burning of coal and oil (including diesel and gasoline); industrial processes.	Can cause breathing problems and may cause permanent damage to lungs.	Ingredient in acid rain (acid aerosols), which can damage trees, lakes, flora and fauna. Acid aerosols can also reduce visibility.
Lead (Pb)	Paint (houses, cars), smelters (metal refineries); manufacture of lead storage batteries; note: burning leaded gasoline was the primary source of lead pollution in the US until unleaded gasoline was mandated by the federal government.	Damages nervous systems, including brains, and causes digestive system damage. Children are at special risk. Some lead-containing chemicals cause cancer in animals.	Can harm wildlife.

Ambient Air Quality in Utah

Utah's Air Monitoring Network

The Air Monitoring Center operates a network of monitoring stations throughout Utah. The monitors are situated to measure air quality in both neighborhoods and industrial areas. Table 2 presents the monitoring station locations and monitored constituents.

Table 2. Utah Monitoring Network Stations

Station	City	Address	CO	NO_2	Hg	O_3	PM10	PM2.5	SO_2	Pb	Met.
Air Monitoring center	SLC	2861 W. Parkway Blvd.			X						
Antelope Island	None	North end of island									X
Badger Island	None	On Island									X
Beach	Lakepoint	1200 S. 12100 W.				X			X		X
Bountiful	Bountiful	200 W. 1380 N.		X		X	X	X	X		X
Brigham City	Brigham City	140 W. Fishburn				X		X			X
Fruitland	Fruitland	6200 S. 45000 W.				X					X
Harrisville	Harrisville	425 W. 2250 N.				X		X			X
Hawthorne	SLC	1675 S. 600 E.	X	X		X	X	X			X
Lindon	Lindon	30 N. Main St.					X	X			X
Logan	Logan	125 W. Center St.		X		X	X	X			X
Magna	Magna	2935 S. 8560 W.					X	X	X	X	X
North Provo	Provo	1355 N. 200 W.	X	X		X	X	X			X
N. Salt Lake	SLC	1795 N. Warm Springs Rd.					X		X		X
Ogden #2	Ogden	228 East 32nd St.	X	X		X	X	X			X
Price #2	Price	351 S. Weasel Run Rd.		X		X					X
Rose Park	SLC	1354 W. Goodwin Ave.						X			
Saltaire	None	6640 W. 1680 N.									X
Santa Clara	Santa Clara	1215 N Lava Flow Dr		X		X					X
Spanish Fork	Spanish Fork	312 W. 2050 N.				X		X			X
Syracuse	Syracuse	4700 W. 1700 S.									X
Tooele	Tooele	434 N. 50 W.				X		X			X
Vernal	Vernal	220 S 1000 E				X		X			X
Washington Blvd.	Ogden	2540 S. Washington Blvd.	X								
West Jordan	West Jordan	4540 W. 8700 S.									X

NAAQS Nonattainment & Maintenance Areas

Areas that are not in compliance with the NAAQS are referred to as nonattainment areas. Figure 1 contains maps of the current nonattainment areas within the state. A maintenance area (also shown in Figure 2) is an area that was once designated as nonattainment, and which subsequently demonstrated to EPA statistically that it will attain and maintain a particular standard for a period of 10 years. EPA must approve the demonstration.

Figure 1. Utah Nonattainment Areas

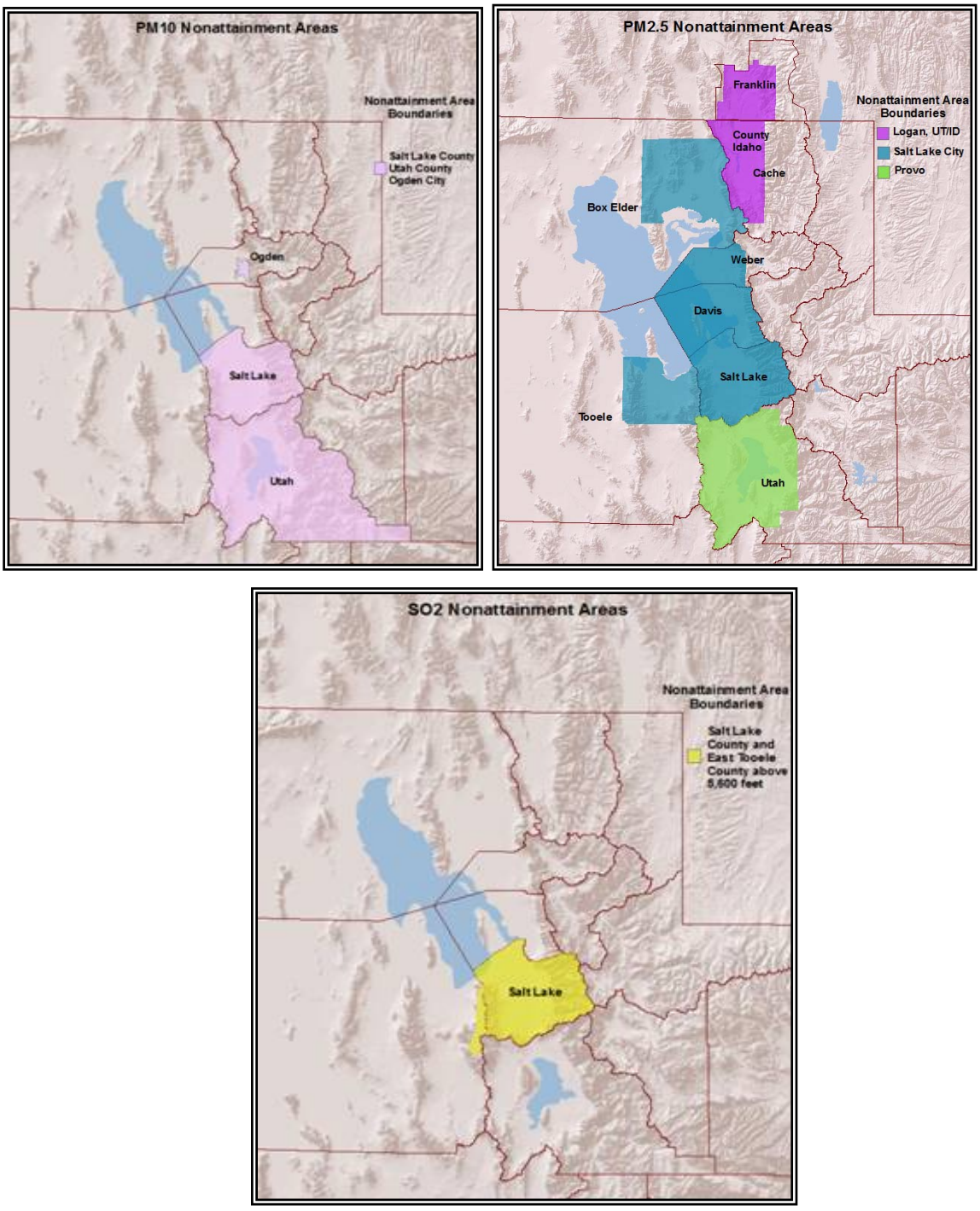
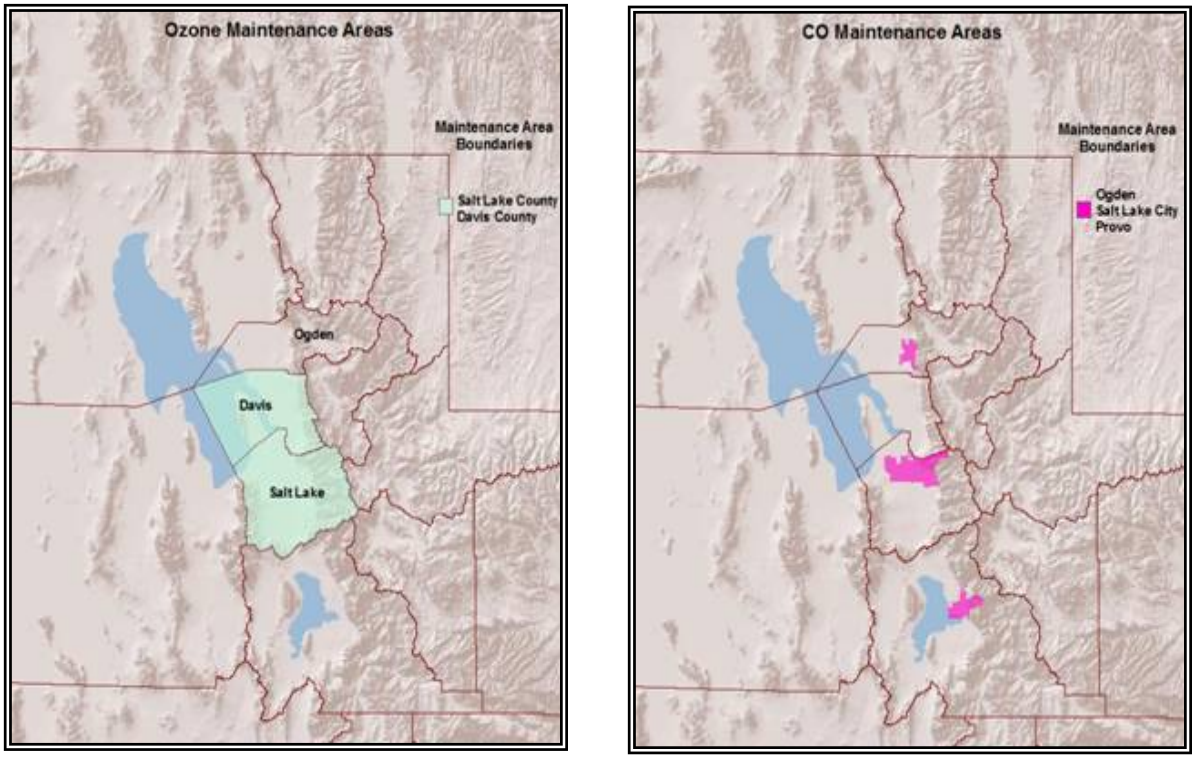


Figure 2 Utah Maintenance Areas



Criteria Air Pollutants

Carbon Monoxide (CO)

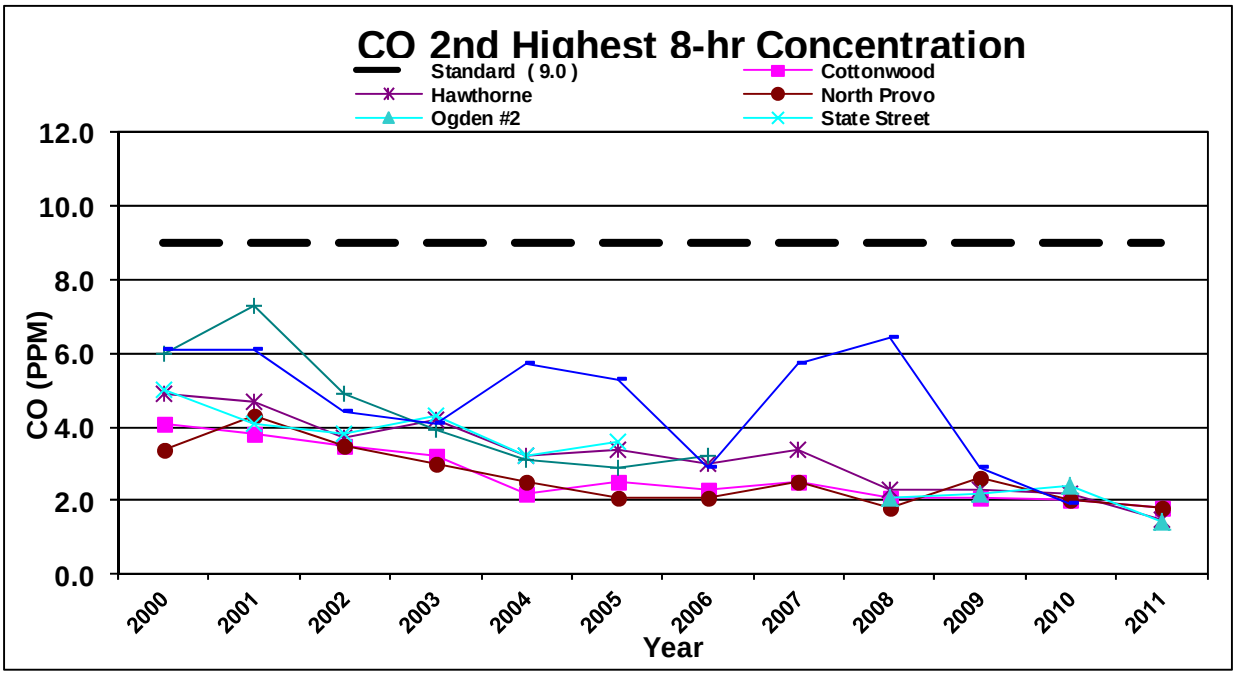
Carbon monoxide is a colorless and odorless gas formed by the incomplete combustion of carbon-based fuel. Carbon monoxide is primarily produced from on-road motor vehicle emissions. Other significant sources of CO emissions are wood burning stoves and fireplaces. The remaining emissions come from industrial facilities, construction equipment, miscellaneous mobile sources and other types of space heating.

Because motor vehicle emissions are the major source of CO, the highest concentrations occur during morning and evening rush hours near high traffic areas. The worst problems occur when there are large numbers of slow-moving vehicles in large parking lots, busy intersections, and traffic jams. Carbon monoxide problems are greater in winter due to several factors: cold weather makes motor vehicles run less efficiently, wood burning and other space heating takes place in the winter, and cold weather temperature inversions trap CO near the ground.

Standards

EPA has developed two national standards for CO. They are 35 ppm of CO averaged over a 1-hour period and 9 ppm of CO averaged over an 8-hour period. A violation of the NAAQS occurs with the second exceedance of either standard at a single location in a calendar year. Once a location measures a second exceedance of either standard, it is considered to be in violation and becomes designated as a "nonattainment area." Three cities in Utah (Salt Lake City, Ogden, and Provo) were at one time designated nonattainment areas for CO. Due primarily to improvements in motor vehicle technology, Utah has been in compliance with the CO standards since 1994. Salt Lake City, Ogden, and Provo were successfully re-designated to attainment status in 1999, 2001, and 2006 respectively.

Figure 3. Carbon Monoxide Second Highest 8-hr. Concentration



Nitrogen Dioxide (NO_2)

During high temperature combustion, nitrogen in the air reacts with oxygen to produce various oxides of nitrogen, or NO_x, a reddish-brown gas. One of the oxides of nitrogen, NO_2, is considered a criteria pollutant.

Oxides of nitrogen react with other air contaminants to form other criteria pollutants. In the summer, photochemical reactions between NO_2 and volatile organic compounds lead to the formation of ground-level ozone. In the winter, NO_2 reacts with ammonia to form fine particulate matter (PM2.5). Both of these seasonal scenarios can result in increased pollution. Utah continues to struggle with both the ozone and particulate matter standards, and because of this, DAQ is mindful of the trend in NO_2 emissions illustrated in Figure 4.

Standard

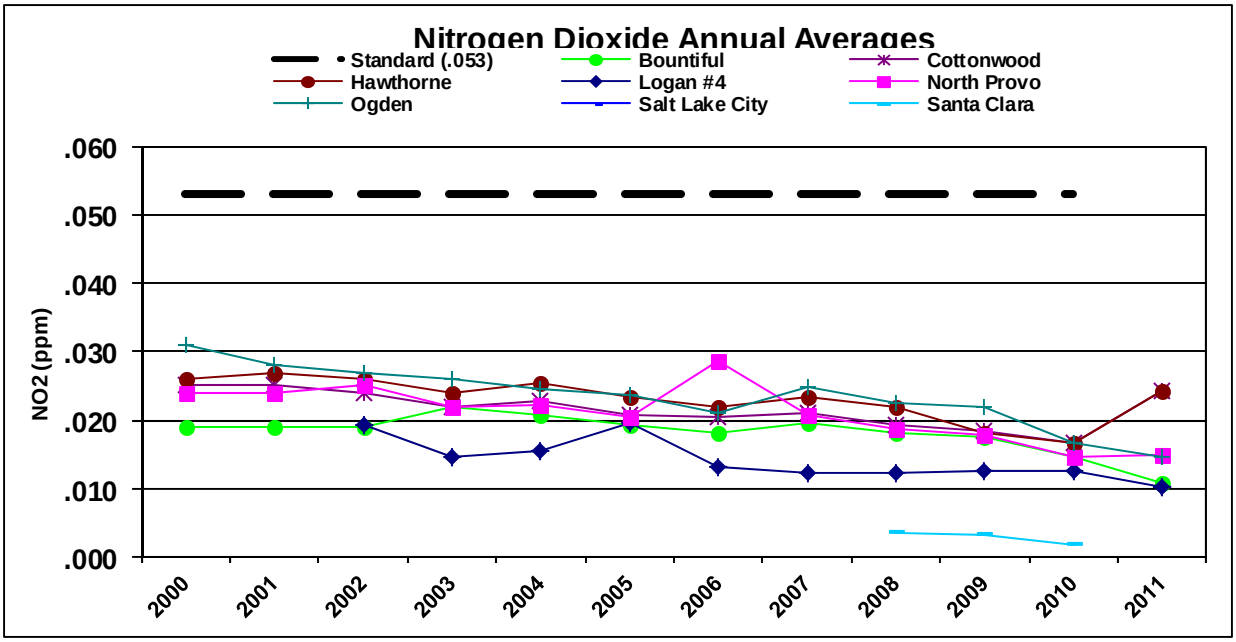
EPA has developed two national standards for NO_2, an hourly and an annual. The hourly standard is set at 100 ppb measured as the three-year average of the 98th percentile of the annual distribution of daily maximum one-hour average concentrations. Table 3 presents this assessment for years 2008-2010 and 2009-2011.

Table 3. Nitrogen Dioxide Hourly Averages (PPB)

Monitoring Station	2008 -2010	2009-2011	2010 Standard (PPB)
Bountiful	58	54	100
Cottonwood	60	59	
Hawthorne	59	57	
Logan	47	47	
North Provo	54	52	
Ogden	63	58	

The annual NO_2 standard of 0.053 ppm is expressed as an annual arithmetic mean (average). DAQ monitors the concentrations of NO_2 at various locations throughout the state, and has never observed a violation of the annual standard.

Figure 4. Nitrogen Dioxide Annual Averages



Ozone (O_3)

Ozone is a clear, colorless gas composed of molecules of three oxygen atoms. Ground level ozone can be inhaled and is considered a pollutant. Ground-level ozone should not be confused with the stratospheric ozone layer that is located approximately 15 miles above the earth's surface. It is this layer that shields the earth from cancer-causing ultraviolet radiation. Ground level ozone is formed by a complex chemical reaction involving volatile organic carbon compounds (VOCs) and oxides of nitrogen in the presence of sunlight.

Ozone production is a year-round phenomenon. However, the highest ozone levels generally occur during the summer when strong sunlight, high temperatures, and stagnant meteorological conditions combine to drive chemical reactions and trap the air within a region for several days. Some major sources for these pollutants are vehicle engine exhaust, emissions from industrial facilities, gasoline vapors, chemical solvents, and biogenic emissions from natural sources such as vegetative growth.

Standard

On March 12, 2008, the EPA revised the NAAQS for ozone to 0.075 ppm. The standard is based on a three-year average of the annual 4th highest daily eight-hour average concentration. Several areas along the Wasatch Front have current ambient monitoring data that met the standard prior to the 2008 revision, but did not meet this new standard. In March 2009, the State of Utah submitted a recommendation to EPA that Salt Lake County, Davis County, and the western portion of Weber County be designated nonattainment, and the rest of the state be designated as attainment/unclassifiable for the new standard. EPA has not yet acted on Utah's designation recommendation. The current monitoring for the years 2008-10 and 2009-11 demonstrate attainment with the standard. On December 8, 2011, EPA made proposed designations under the 2008 standard. EPA does not intent to designate any areas of the state as nonattainment.

Figure 5 shows the eight-hour ozone concentrations by looking at the 4th highest annual concentration while Figure 6 presents the NAAQS threshold, which is the three-year average of the 4th highest eight-hour ozone concentration. The heavy red dashed lines indicate the current standard of 0.075 ppm while the heavy black dashed lines represent the former standard of 0.084 ppm.

Figure 5. Ozone 4th Highest 8-hr Concentration

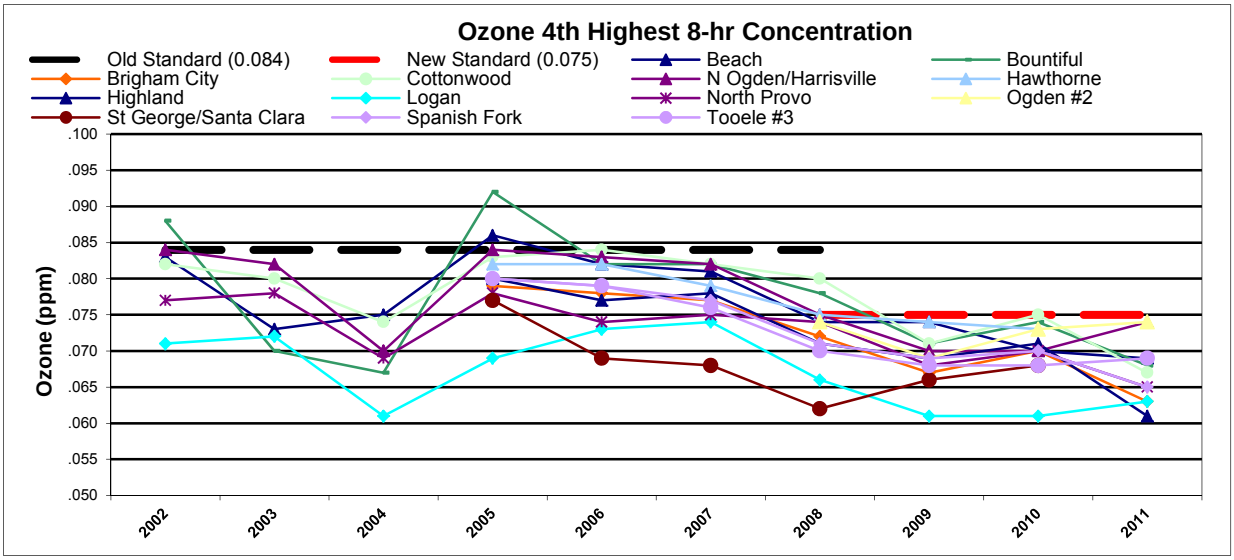
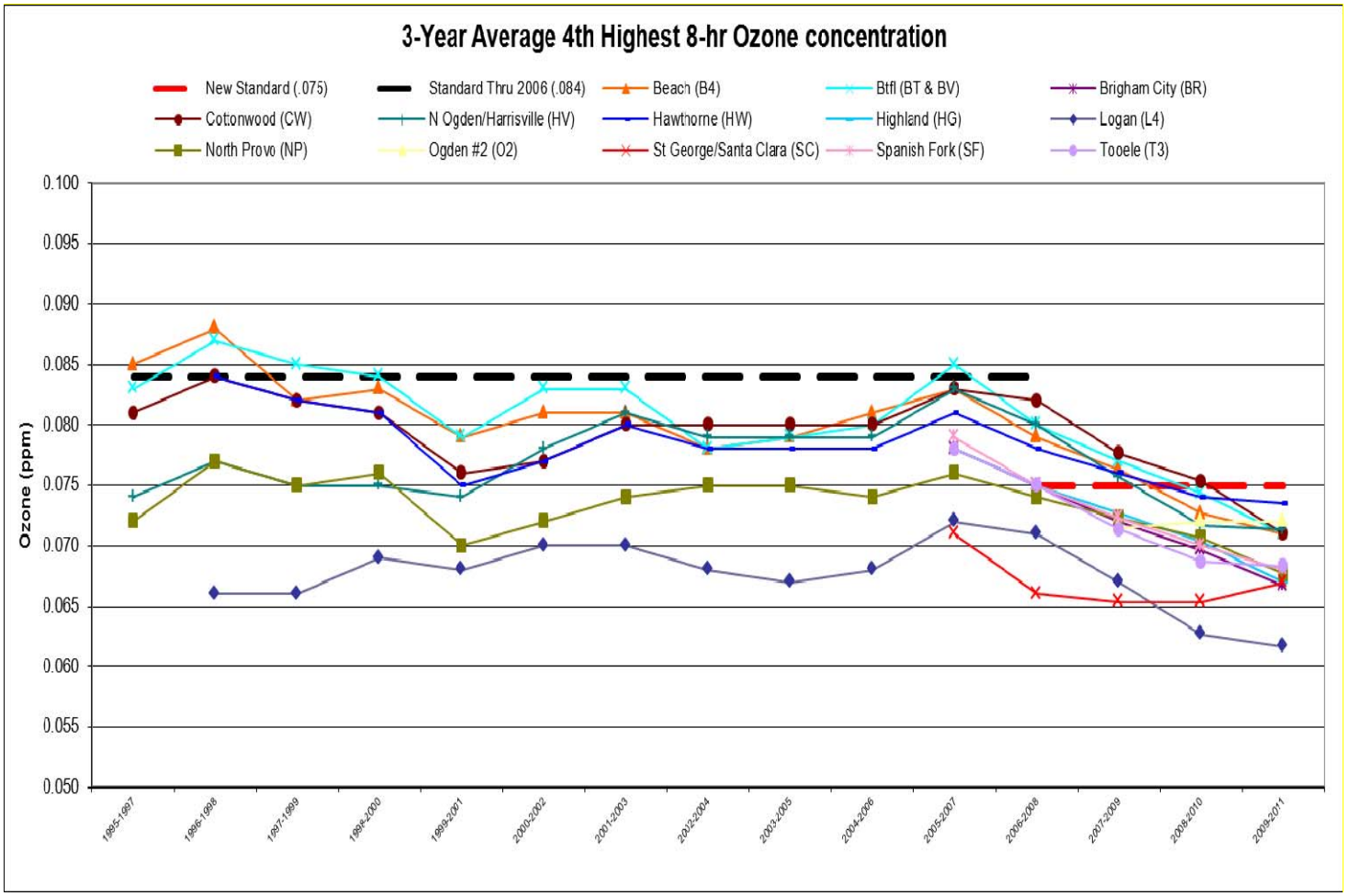


Figure 6. Ozone 3-year Average 4th Highest 8-hr Concentration



Particulate Matter

Regulated particulate matter is a complex mixture of extremely tiny particles of solid or semi-solid material suspended in the atmosphere and is divided into two categories: PM10 and PM2.5. PM10 is particulate less than 10 micrometers in diameter, which is about one-seventh the width of a strand of human hair. PM10 can lodge deep in the lungs and cause respiratory problems. The coarse fraction of PM10, that which is larger than 2.5 microns, is typically made up of "fugitive dust" (sand and dirt blown by winds from roadways, fields, and construction sites) and contains large amounts of silicate (sand-like) material.

PM2.5, or fine particulate, is 2.5 micrometers in diameter or less. Primary PM2.5 is directly emitted into the atmosphere from combustion sources and includes fly ash from power plants, carbon black from cars and trucks, and soot from fireplaces and woodstoves.

The majority of Utah's PM2.5 is called secondary aerosol, meaning that it is not emitted directly as a particle, but is produced when gasses such as SO_2 and NOx, products of combustion, react with other gasses in the atmosphere, such as ammonia, to become tiny particles. Wintertime temperature inversions not only provide ideal conditions for the creation of secondary aerosols, they also act to trap air in valleys long enough for concentrations of PM2.5 to build up to levels that can be unhealthy. The smallest of particles that make up PM2.5 are major contributors to visibility impairment in both urban and rural areas. Along the Wasatch Front, the effects can be seen as the thick brownish haze that lingers in our northern valleys, particularly in the winter. These particles are so small that they can become imbedded in human lung tissue, exacerbating respiratory diseases and cardiovascular problems. Other negative effects are reduced visibility and accelerated deterioration of buildings. DAQ currently operates PM10 and PM2.5 monitors throughout the state to assess the ambient air quality with respect to the standards for both PM10 and PM2.5.

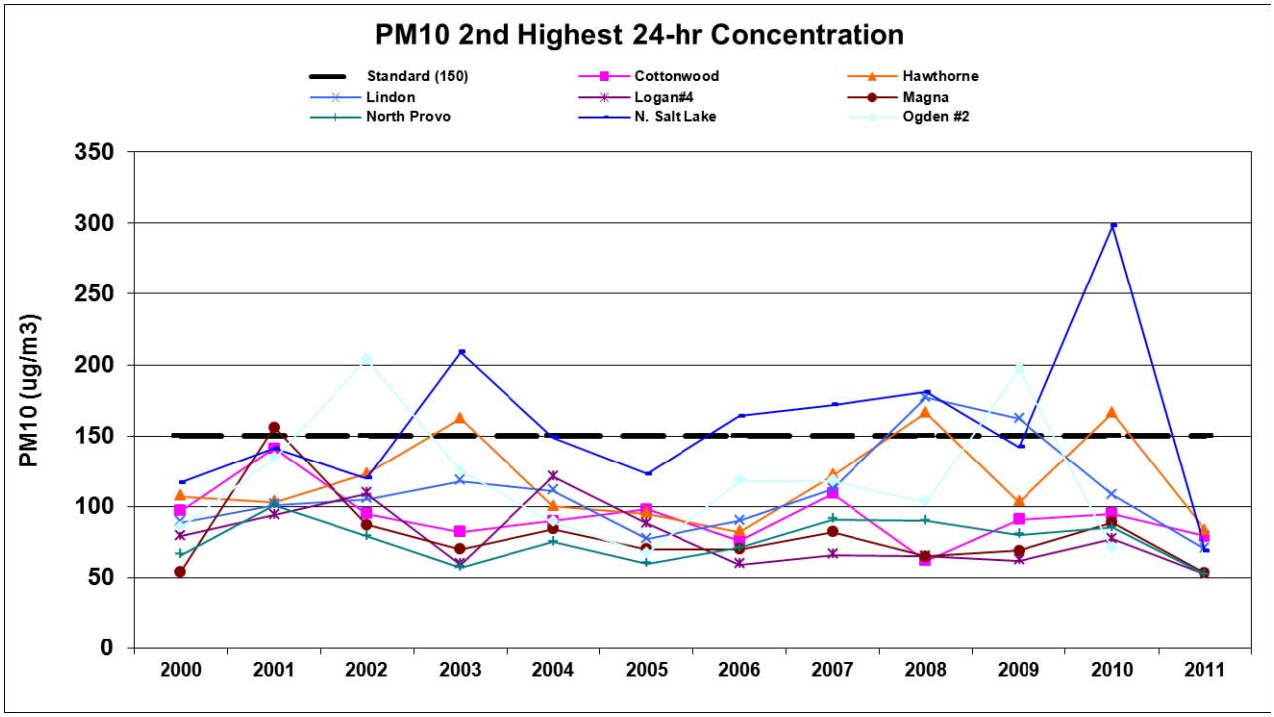
Standards – PM10

The 24-hour air quality standard for PM10 was established by the EPA in July 1987 and was set at 150 $\mu g/m^3$. The standard is met when the probability of exceeding the standard is no greater than once per year for a three-year averaging period. In other words, four exceedances within a three-year period would constitute a violation. Utah County, Salt Lake County, and Ogden City are officially designated as PM10 nonattainment areas because of past difficulty with the 24-hour standard. Control strategies contained in the State Implementation Plan promulgated in 1991 are responsible for the marked decrease in concentrations observed in the early 1990s. The associated control strategies were phased in through 1995.

Figure 7 presents the second highest 24-hour PM10 concentrations recorded at each station since 2000. The heavy dashed line indicates the NAAQS. High monitoring values sometimes result from exceptional events, such as high winds from dust storms and wildfires, as is the case for 2010, when Utah experienced an exceptional dust storm on March 30, resulting in very high PM10 values across the network. Data collected during exceptional events in 2008 through 2010 have been flagged by DAQ and are currently under review for exclusion per the

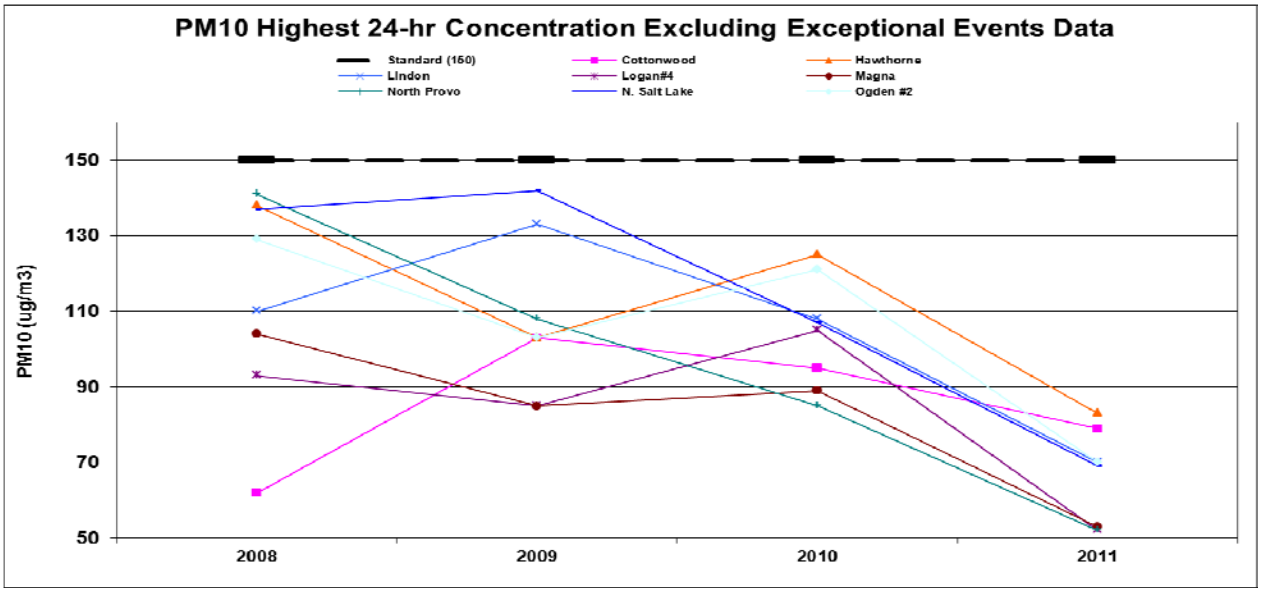
EPA Exceptional Event Rule. There were no high wind exceptional events in 2011. The following graph includes the values influenced by exceptional events.

Figure 7. PM10 Second Highest 24-hr Concentration



By excluding data impacted by exceptional events, Utah has been in compliance with the PM10 NAAQS, as demonstrated in Figure 8.

Figure 8. PM10 Highest 24-hr Excluding Exceptional Events



Standards – PM2.5

EPA first established standards for PM2.5 in 1997 and then revised those standards in December of 2006. It lowered the 24-hour PM2.5 standard from 65 µg/m^3 to 35 µg/m^3 and retained the current annual PM2.5 standard at 15 µg/m^3. Both standards are evaluated by considering monitored data collected during a three-year period. In this way, the effects of meteorological variability are minimized.

The 24-hour standard is met when the average of 98th percentile values collected for each of the three years is less than or equal to 35 µg/m^3. The 98th percentile concentration for each year is selected from all of the data recorded at a given monitor, such that the values of at least 98 percent of all that data are of a lower concentration. Figure 9 presents the three-year averages of the 98th percentile concentrations at Wasatch Front monitors. The following graph shows that Utah was in compliance with the 1997 standard but is not in compliance under the revised standard.

Figure 9. PM2.5 3-year Average 98th Percentile 24-hr Concentration

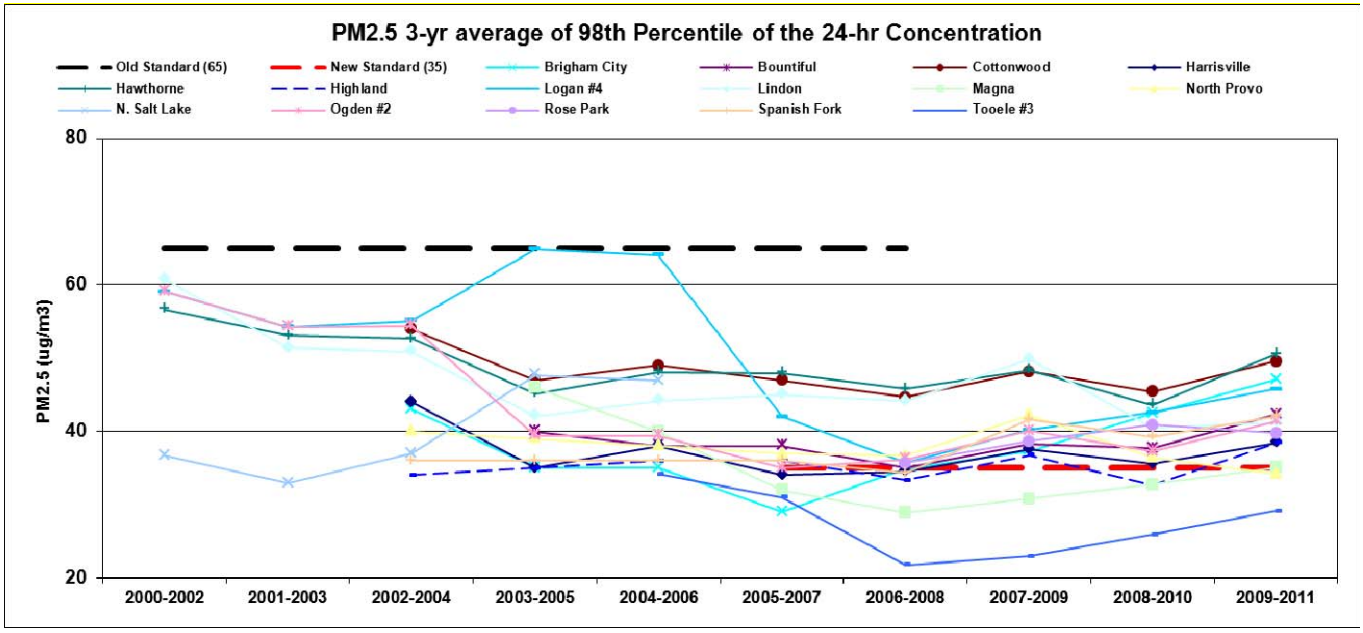
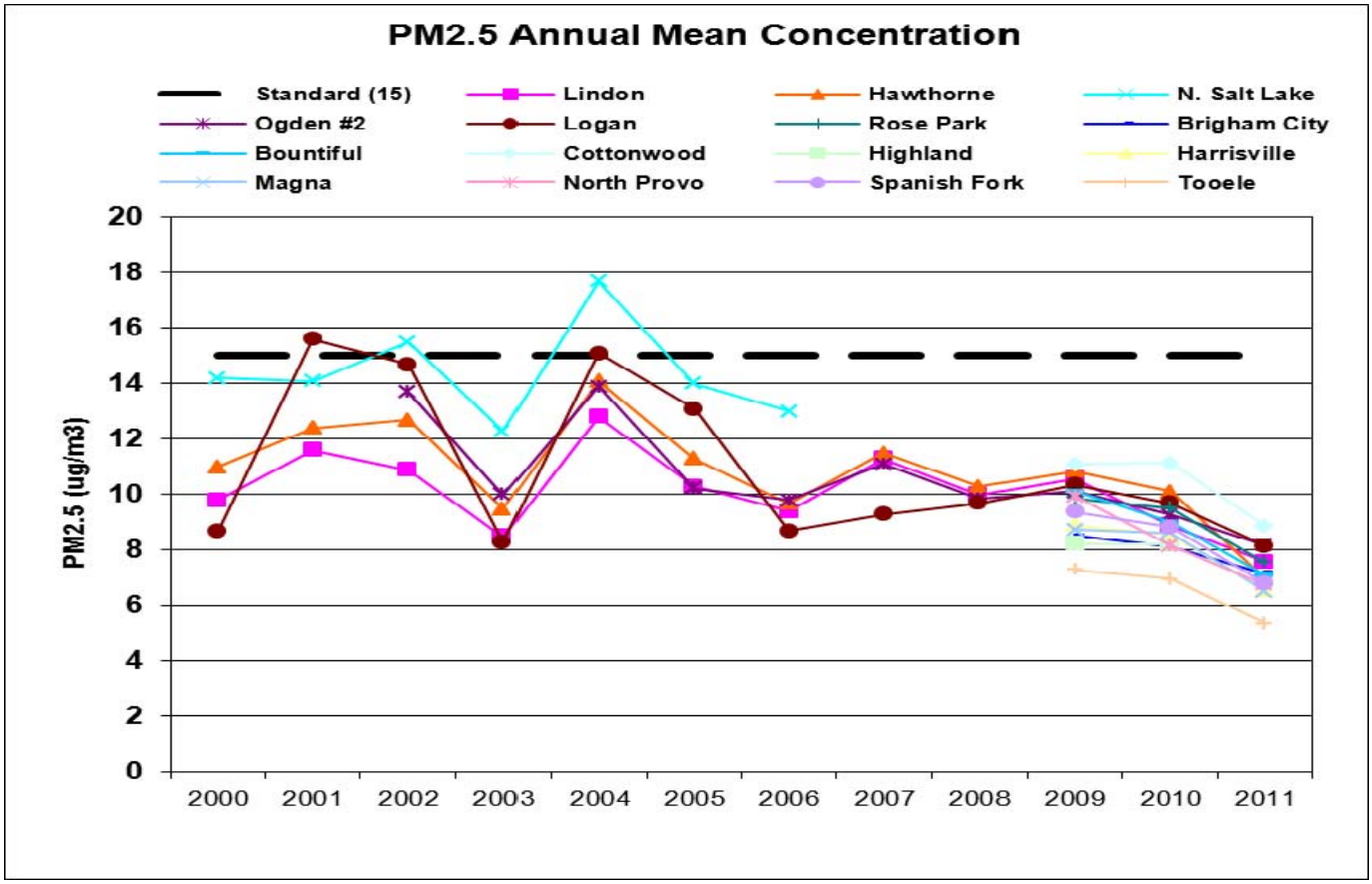


Figure 10 shows the annual mean concentrations for discrete years. This illustrates the effect of meteorological variability. In particular, the severities of wintertime temperature inversions have a dramatic effect on PM2.5 concentrations collected year to year.

Figure 10. PM2.5 Annual Mean Concentration



Sulfur Dioxide (SO_2)

Sulfur dioxide is a colorless gas with a pungent odor. In the atmosphere, sulfur dioxide is easily converted into sulfates, which are detected as particulates. It is also converted into sulfuric acid, the major acidic component of acid rain. It is emitted primarily from stationary sources that burn fossil fuels (mainly coal and oil) such as power plants and refineries. SO_2 is also a byproduct of copper smelting and steel production. Diesel fuel and, to a lesser extent, gasoline contain sulfur and are considered contributors to sulfur dioxide in the atmosphere.

Standards

In 2010, EPA revoked the 24-hr and annual standards and established a new three-year average of the 99th percentile of the annual distribution of daily maximum one-hour average concentrations for SO_2 at a level of 75 ppb.

DAQ has situated its monitors near the largest sources of SO_2 (Kennecott Utah Copper and the five refineries along the Wasatch Front). Throughout the 1970s the Magna monitor routinely measured violations of the 24-hour standard. Consequently, all of Salt Lake County and parts of eastern Tooele County above 5600 feet were designated as nonattainment for

SO_2. Two significant technological upgrades at the Kennecott smelter have resulted in continued compliance with the SO_2 standard since 1981. In the mid 1990s, Kennecott, Geneva Steel, the five refineries, and several other large sources of SO_2 made dramatic reductions in emissions as part of an effort to curb concentrations of secondary particulate (sulfates) that were contributing to PM10 violations. Utah submitted an SO_2 Maintenance Plan and re-designation request for Salt Lake and Tooele Counties to EPA in April of 2005. Measurements of SO_2 under the former standards and the new standard indicate that Utah's ambient air was, and continues to be, well within the federal health standards.

Figure 11 shows the historical trend in SO_2 concentrations based on the former standard, while Table 4 presents the most current measurements to compare against the new 75 ppb NAAQS.

Figure 11. Sulfur Dioxide 2nd Highest 24-hr Values

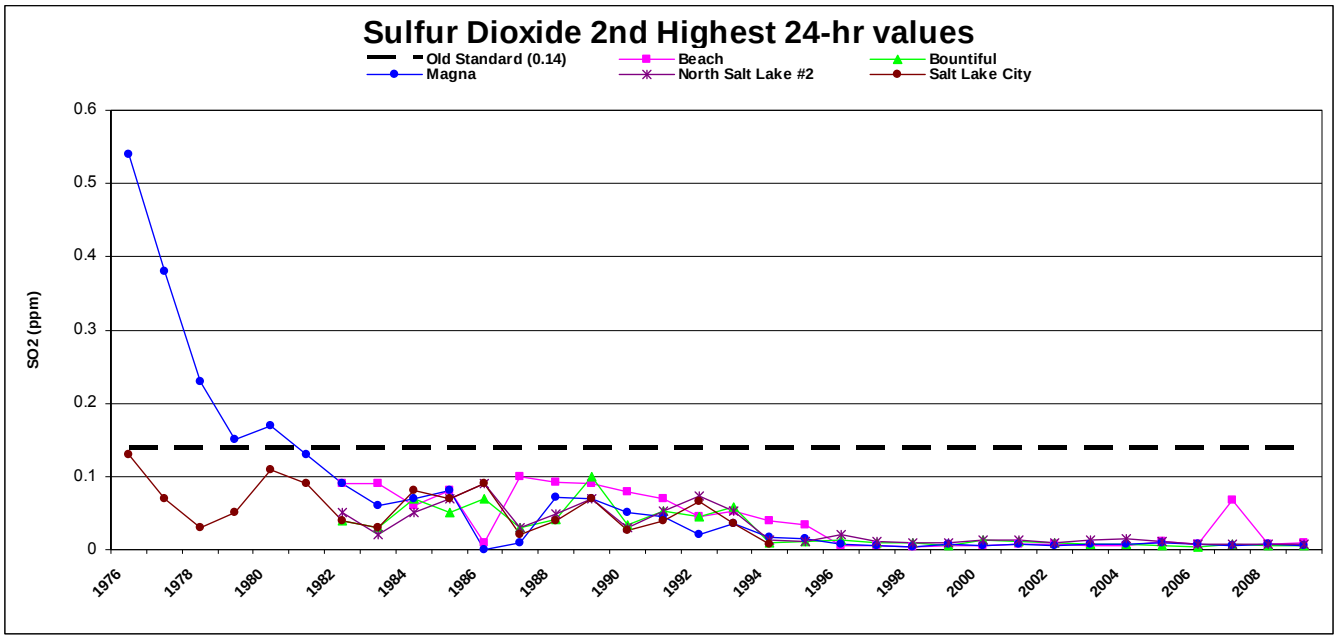


Table 4. Sulfur Dioxide 99th Percentile of Daily Max. 1-HR Averages (PPB)

Monitoring Station	2008 -2010	2009-2011	New 2010 Standard
Beach	43	19	75
Bountiful	13	11	
Magna	28	22	
North Salt Lake	41	27	

Lead (Pb)

Lead in the ambient air exists primarily as particulate matter in the respirable size range. Historically, the major source of lead was from gasoline. However, because leaded gasoline for automobiles was completely phased-out in the US by the end of 1995, lead from this source is no longer a significant problem. The extraction and processing of metallic ores is currently the major source of lead in Utah, followed by exhaust from small aviation aircraft.

Utah had not exceeded the health standard for lead since the late 1970s, and EPA authorized the discontinuation of lead monitoring in Utah in 2005; however, in both 2008 and 2010, EPA set new monitoring requirements for lead. DAQ now monitors for lead at one point source site and in 2012 will monitor at an additional urban non-source monitoring location.

Standard

On November 12, 2008 EPA strengthened the NAAQS for lead. The previous standard for lead was a calendar quarter (three-month) average concentration not to exceed 1.5 $\mu g/m^3$. The new standard is 0.15 $\mu g/m^3$ as total suspended particles (TSP), measured as a three-month rolling average. The new standard included a monitoring requirement which caused the state to begin lead monitoring again at the Magna station near a point source. Additional monitoring requirements established by EPA in December 2010 require monitoring for lead starting in 2011 at the Hawthorn monitoring station.

Technical difficulties with the lead monitoring equipment late in 2010 required re-evaluation of the data into 2011. The error may have caused an increase of up to 12% in measured concentration of lead, bringing the maximum rolling average to 0.067µg/m3 or 45% of the NAAQS. DAQ worked with the instrument manufacturer to identify the cause and a solution to the problem. As a result, DAQ fully expects that the lead data collected in the future will meet all quality assurance requirements.

Emissions Inventories

Every three years, DAQ collects information about the quantity and characteristics of the various air pollutants released by all emission sources in the state. In addition to these triennial inventories, emissions information is also collected annually from the larger industrial sources. Finally, more detailed inventories are prepared as needed for special projects to quantify emissions during specific seasonal air pollution episodes.

Once collected, the inventory information is reviewed, quality assured, analyzed, stored in the DAQ data system, and made available to the public. This emissions information is used by DAQ to review trends over time, as input data for air quality modeling analyses and as an indicator of the effectiveness of existing control strategies. The emissions information is also compiled according to source type to provide billing information for the Title V operating permits program. Both triennial and annual emissions inventory data is uploaded to EPA's National Emissions Inventory (NEI) data system.

Sources of Air Contaminants

Emission inventories are typically organized into three types of sources: Point, Area and Mobile.

Point sources are large stationary industrial or commercial facilities such as power plants, steel mills, and manufacturing facilities. Air pollutants released from these stationary sources are accounted for on a facility-by-facility basis.

Area sources are generally much smaller stationary sources, and due to their greater number, are accounted for as a group type. Home heating, agricultural burning and harvesting, construction, residential and commercial energy generation, wildfires, and biogenics (emissions from vegetation) are examples of area source categories.

Mobile sources make up the third category in the inventory, and consist of emissions from non-stationary sources such as cars, trains, and aircraft. Mobile emissions are further broken down into on-road mobile and off-road mobile categories. On-road mobile sources primarily consist of personal and commercial cars and trucks, and contribute by far the largest part of the mobile source emissions. Off-Road Mobile sources consist of a diverse group of heavy construction equipment, small engines (lawnmowers and snow blowers), trains, and aircraft. Estimating emissions from mobile sources requires an understanding of the various emission characteristics of the many types of vehicles and model years that make up the fleet, as well as an understanding of how and where they are driven and the distances they travel.

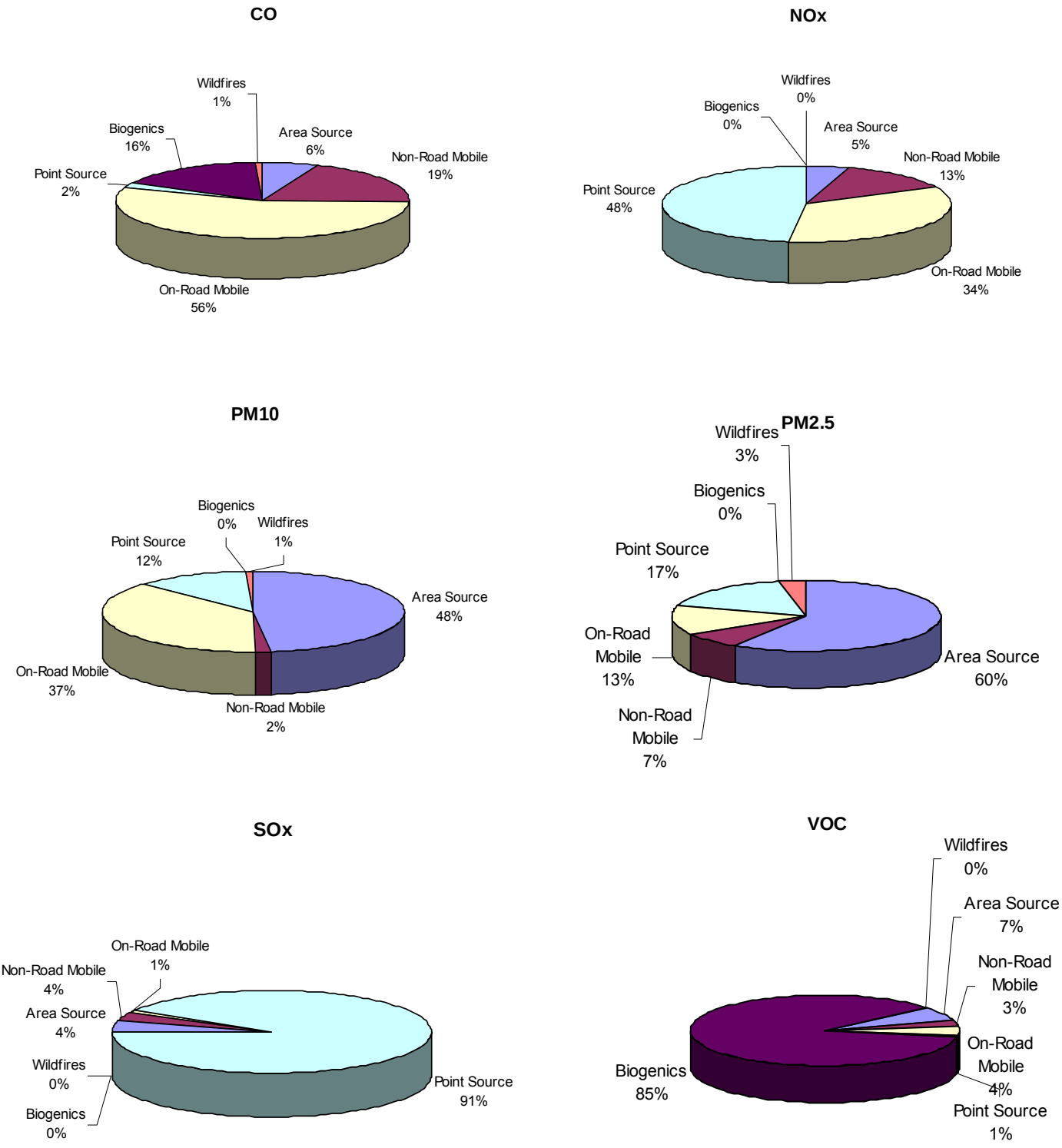
The 2008 triennial inventory is the most recent state-wide inventory available. The triennial inventory covers over 490 individual point sources, 75 area source categories, and 12 non- and on-road source categories. Table 5 shows total emissions, by county, of the criteria pollutants, CO, NOx, PM_{10}, $PM_{2.5}$, SO_X, and VOCs. Figure 12 presents the updated 2008 triennial emissions inventory in six pie charts, displaying the relative portion of emissions generated within source categories. Biogenic and wildfire emissions produced from non-anthropogenic (non-human), natural activity of vegetation and wildfires are usually estimated as segments within the area source category but have been listed separately due to their unique nature and impact.

The triennial inventory for 2011 will be collected and compiled in 2012.

Table 5. 2008 Triennial Inventory (tons/year)

County	CO	NOx	PM10	PM2.5	SOx	VOC
Beaver	12,406.83	2,192.19	1,354.23	274.28	102.42	31,624.33
Box Elder	49,197.62	6,089.31	5,724.33	1,651.51	190.80	40,140.02
Cache	34,231.73	3,070.43	3,491.30	796.54	109.54	18,749.97
Carbon	11,811.31	5,733.24	1,930.90	460.00	5,671.81	17,006.40
Daggett	4,284.10	945.96	326.76	108.37	2.63	14,340.86
Davis	53,384.22	8,173.28	5,279.19	1,071.00	1,048.28	17,566.33
Duchesne	12,783.87	3,095.74	2,877.13	684.38	19.70	24,688.75
Emery	16,613.08	32,326.93	4,361.77	1,136.44	9,484.08	32,545.00
Garfield	18,821.51	648.56	1,464.88	660.00	32.52	46,532.86
Grand	19,815.59	3,749.03	3,276.87	780.37	129.14	37,308.71
Iron	25,941.84	4,167.04	2,919.24	617.91	270.00	42,215.48
Juab	17,719.35	2,761.78	2,082.35	422.19	112.12	29,615.69
Kane	17,683.73	655.50	1,411.84	517.19	39.86	49,718.54
Millard	29,829.81	32,494.91	4,078.69	1,014.48	5,851.82	51,982.44
Morgan	6,914.68	2,138.79	735.48	142.55	277.97	10,293.47
Piute	7,339.75	113.84	326.24	93.35	10.21	13,470.27
Rich	8,404.33	254.98	992.44	292.84	12.73	10,869.12
Salt Lake	186,179.10	31,000.81	17,750.68	3,756.61	6,314.71	41,860.54
San Juan	24,839.14	1,521.45	2,961.61	993.21	47.40	66,066.15
Sanpete	10,593.21	853.47	1,360.66	301.44	98.17	19,415.89
Sevier	14,528.92	1,892.59	1,926.47	428.14	118.78	19,678.44
Summit	19,645.90	5,380.07	2,911.70	546.33	239.02	20,893.70
Tooele	32,487.53	6,970.88	5,502.20	1,245.71	280.38	43,060.70
Uintah	19,301.98	1,249.53	3,779.11	1,081.38	27.72	31,652.58
Utah	80,904.42	11,644.94	10,184.34	2,093.70	405.98	33,132.05
Wasatch	10,250.63	1,141.21	1,712.29	331.15	20.21	18,424.33
Washington	45,522.36	4,214.45	3,818.47	955.94	106.66	58,252.25
Wayne	7,034.76	183.26	624.87	158.99	41.80	24,930.26
Weber	42,534.05	5,581.28	3,970.67	936.73	154.54	14,369.32
Subtotal	**841,005.35**	**180,245.42**	**99,136.68**	**23,552.72**	**31,220.98**	**880,404.45**
Portable Point Sources	144.25	412.12	148.51	43.35	62.51	40.64
Total	**841,150**	**180,658**	**99,285**	**23,596**	**31,283**	**880,445**

Figure 12. 2008 Triennial Emissions Inventory by Source Category



Division Organization

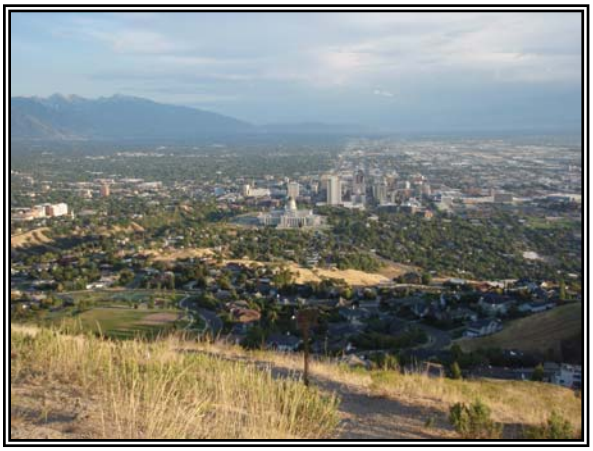
The Division of Air Quality is divided into three separate branches: Planning, Compliance, and Permitting. The Planning Branch is responsible for developing comprehensive plans to reduce air pollution and is comprised of three sections: The Air Monitoring Section (AMS), Mobile Sources, and Technical Analysis. The AMS is responsible for establishing and operating the monitoring network to gather and analyze data used to determine concentrations of ambient air pollutants. Planning staff in the Mobile Sources and Technical Analysis sections routinely compile emissions inventories in order to understand the origins of the various contaminants detected in the air. They also use computer models to evaluate the impacts of new and existing sources of air pollution and to understand the relationship between the emissions, meteorology, and pollutant concentrations measured in the air. The Planning Branch is also involved in identifying the air quality impacts of transportation issues, which include vehicle inspection and maintenance, clean fuels, and highway construction. This information must be considered in the development of State Implementation Plans in order to ensure that Utah's ambient air remains in compliance with the federal health standards, even as our population and our economy continue to grow.

The *Compliance Branch* has responsibility for ensuring that industries and residents comply with Utah's air quality regulations and is comprised of three sections: Major Source Compliance; Minor Source Compliance; and Air Toxics, Lead-Based Paint, Asbestos, and Small Business Environmental Assistance (ATLAS). The Major and Minor Source Compliance Sections are responsible for ensuring that all Utah air quality regulatory requirements are met. This is done through inspections and enforcement. The ATLAS section is responsible for the regulation, under various EPA air quality programs, of toxic air pollutants, also known as Hazardous Air Pollutants (HAPs). HAPs are those pollutants listed in the CAA that are known or suspected to cause cancer and other serious health problems. The ATLAS section is also responsible for the enforcement of federal and state regulations for preconstruction asbestos removal and a number of outreach and enforcement programs designed to reduce exposure to lead-based paint.

The *ATLAS* section also assists small businesses in complying with state and federal regulations, including New Source Performance Standards (NSPS), National Emission Standards for Hazardous Air Pollutants (NESHAP), new source review (NSR), and Utah's air quality rules. The Small Business Environmental Assistance Program can advise small businesses on permitting requirements, emission calculations, technical issues, and pollution prevention techniques.

The *Permitting Branch* is responsible for issuing construction and operating permits to stationary sources that emit air pollutants and is comprised of three sections: Minor Source New Source Review (NSR), Major Source NSR, and Operating Permits. Construction permits are issued to new or modified stationary sources of air pollution through the NSR program. Operating permits are issued on an ongoing basis through Title V of the CAA to "major" stationary sources.

Planning Branch



The *Planning Branch* is responsible for developing State Implementation Plans (SIPs) in order to ensure that Utah's ambient air meets the federal health standards, even as our population and our economy continue to grow. These plans address a variety of air quality issues but most often focus on areas of the state where the monitoring found air quality to be unhealthy for one or more of the criteria pollutants.

In addition, the CAA now requires transportation planning organizations to prepare information detailing the air quality impacts associated with improvements in the transportation infrastructure. These transportation plans must conform to the mobile source emission budgets used by the DAQ to develop the SIPs. Therefore, most of the recent SIP revisions were undertaken with an additional goal of helping transportation planners adapt to an ever-growing population base and updated air quality health standards.

Status of Projects and Initiatives

Fugitive Dust Plan Application Improvement Project

In late 2010, a committee was formed to identify and implement improvements to the manual submission and review process of fugitive dust control plan applications. The committee recommended automating the fugitive dust control plan process and combining it with the existing online storm water permit application. The committee also identified work practice categories that generate fugitive dust, determined how fugitive dust was formed by these activities and identified mitigation measures (Best Management Practices or BMPs) to reduce or control fugitive dust generation. The development and implementation of BMPs will assure continuity of fugitive dust mitigation measures uniformly applied in Utah.

Funding for this project was secured and the process to automate the fugitive dust control plan applications began in January 2011. The automated program was completed and then integrated into existing online storm water permit application. The combined program was tested, modified and tested again prior to being finalized in October 2011. This program was unveiled to the public on November 14, 2011.

PM2.5

One of the six "criteria" pollutants identified for regulation in the original CAA of 1970 was total suspended particulate (TSP). In 1987, EPA defined a size "indicator" of the suspended particles that were of concern to public health. These were particles with an aerodynamic diameter of ten microns or less, and this regulated subset of TSP was called PM10. It includes a complex mixture of extremely small particles and liquid droplets that can be emitted directly,

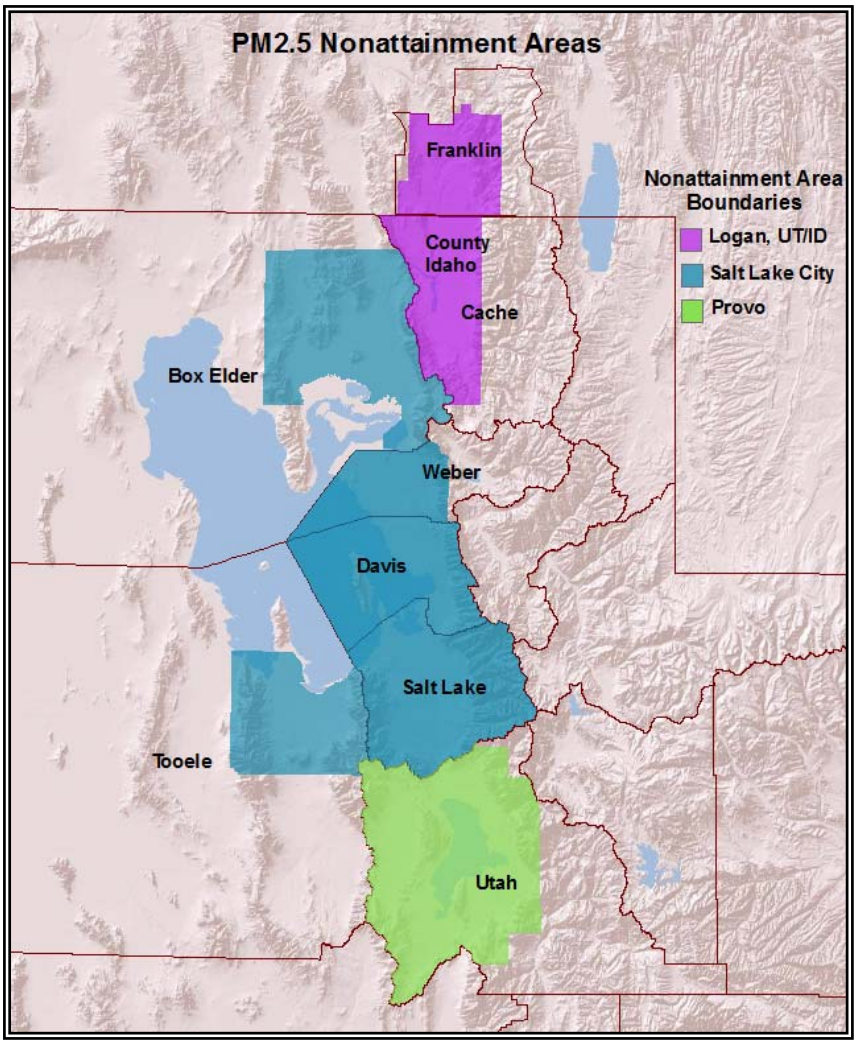
as in smoke from a fire, or it can form in the atmosphere from reactions of "precursor" gases such as sulfur dioxide and ammonia.

Further study of PM10 has revealed a bi-modal size distribution. There are typically two distinct groups of PM10 particles – those between 2.5 and 10 microns in diameter, and 2.5 microns and smaller. A growing body of health studies has led to the conclusion that it is the smaller of these particle that most severely impacts public health. In response to the findings, in 1997, EPA added a new indicator to the regulatory framework for particulate matter. PM2.5 is inclusive of particles having an aerodynamic diameter of 2.5 microns or less.

DAQ has monitored PM2.5 since 2000 and found that all areas within the state have been in compliance with the 1997 standards. In September of 2006, EPA revised the standards for PM2.5. While the annual standard remained unchanged at 15 $\mu g/m^3$, the 24-hr standard was lowered from 65 $\mu g/m^3$ to 35 $\mu g/m^3$. At this new level, all or parts of five counties have collected monitoring data that is not in compliance with the 24-hr standard. This monitoring data, in conjunction with other considerations such as topography, population density, and projected growth estimates has led to the establishment of three nonattainment areas for PM2.5 (see Figure 13). The EPA completed the administrative process of designating these areas on December 14, 2009. To address non-compliance, the state will have to prepare comprehensive plans (SIPs) to meet the revised standard in these areas within three years of EPA's final action. The monitoring data DAQ has been collecting since 2000 suggests that meeting this new standard will be one of our greatest challenges.

During this past year, DAQ finished laying the technical groundwork for the PM2.5 SIPs that will be prepared for the non-attaining areas in the state. Several historical episodes of high PM2.5 concentrations were identified and tested in the Community Multi-scale Air Quality model to validate performance against observed air quality data. The testing of these episodes involved extensive emissions data compiled by DAQ in cooperation with the Governor's Office of Planning and Budget and the various Metropolitan Planning Organizations (MPOs) — Mountainland Association of Governments, the Wasatch Front Regional Council, and the Cache MPO — as well as supplemental atmospheric computer models to process extensive amounts of meteorological data. On the foundation of this work, DAQ is now using the air quality model to evaluate different emission control strategies that can help bring these areas back into attainment with the 24-hr health standard. As part of this process, DAQ has invited participation from stakeholder workgroups in each of the counties belonging to the nonattainment areas. This process has achieved a degree of success in generating strategies from workgroup members. DAQ expects to continue this work in support of the PM2.5 SIPs that will be due to EPA in December of 2012.

Figure 13. PM2.5 Nonattainment Areas

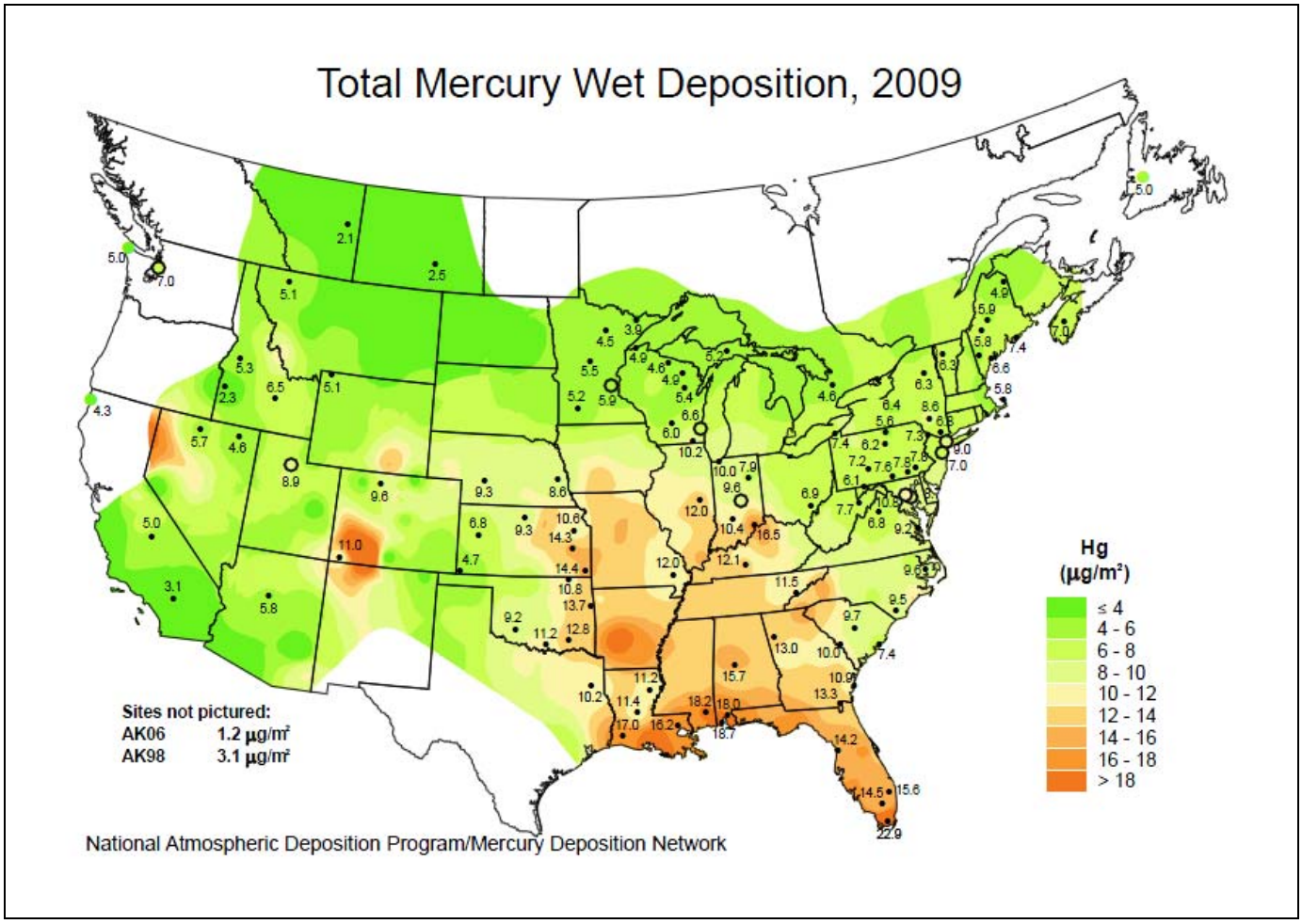


Mercury Study

The Utah Department of Natural Resources issued a waterfowl consumption advisory in 2005 for two duck species due to high levels of mercury found in those species in the southern end of the Great Salt Lake. A Mercury Work Group was established to coordinate and collaborate on mercury studies, including air sampling by DAQ, to determine potential sources of mercury. DAQ received funding to purchase specialized mercury monitoring equipment that has been set up at the DAQ Air Monitoring Center located in Salt Lake City. Utah mercury data is entered into the National Atmospheric Deposition Program (NADP), Atmospheric Mercury Network (AMNet), whose purpose is to measure atmospheric mercury fractions (reactive gaseous, particulate-bound, and elemental) which contribute to dry deposition of mercury as well as deposition through precipitation. Researchers use the data to better understand the pathways of mercury contamination in surface waters and wetlands. The ultimate goal of AMNet will be to create an international archive of mercury concentrations and deposition estimates for use in scientific studies, modeling efforts, and for policy needs.

The following figure from NADP shows the total mercury wet deposition for 2009.

Figure 14. Total Mercury Wet Deposition, 2009



Three-State Pilot Project

The EPA, under the National Environmental Policy Act, is mandated to document current air pollution levels and lessen current and projected adverse impacts through mitigation strategies. Localized monitoring in the three-state area (western Colorado, eastern Utah, and southwestern Wyoming) has revealed degraded air quality in regard to ozone and NOx, leading federal and state agencies to realize more information is needed as energy development in the region is considered. Because of a common need for a comprehensive set of air quality assessment tools, the stakeholders—EPA Region 8, Bureau of Land Management, USDA Forest Service, National Park Service and the states of Utah, Colorado, and Wyoming are cooperating on the following activities:

- Expanding air quality monitoring in the study area to establish baseline conditions, track air quality trends and evaluate the performance of air quality modeling systems;

- Creating and operating a robust, centralized data warehouse to store, manage and share data among state and federal agencies and industry to support air quality modeling and analyses; and

- Performing regional scale baseline air quality modeling of current conditions against which the impacts from proposed future projects can be evaluated.

The Utah component of the first phase of this project included the deployment of two air monitoring stations: one at Price and the other at Fruitland. The data from these two sites will be entered into a data warehouse being developed under the second phase of the project. Work conducted under the Three–State Pilot Project will be directly applicable to the ozone studies currently underway in the Uintah Basin.

Uinta Basin Ozone

Since 2005, the National Park Service has been measuring summertime ozone at Dinosaur National Monument, located near Vernal Utah, and beginning in 2006 at Colorado National Monument, located near Grand Junction, CO. In 2009, the Environmental Protection Agency (EPA) began measuring year-round ozone at two sites on the Ute Indian Reservation, located near Redwash and Ouray. The official air quality levels for the Uintah Basin are currently in compliance with the ozone NAAQS. However, data collected from the two tribal sites during the winter of 2010 indicated that high ozone levels are occurring in the Basin during the middle of winter. This finding was unexpected since ozone is normally an air pollutant that is formed during the summertime when high temperatures and bright sunshine are occurring.

In the winter of 2010/11, the Uintah Basin Impact Mitigation Special Services District funded a study conducted by the Energy Dynamics Lab and Utah State University. Using data collected from 18 temporary and permanent air monitoring stations placed throughout the Basin, researchers found elevated wintertime ozone concentrations throughout the Basin during temperature inversion events when snow covered the ground. The highest values were found in the central basin area with many exceeding the ozone NAAQS.

This winter, an expansive, cooperative study lead by the Department of Environmental Quality is underway to understand how ozone is formed in the Basin during wintertime inversion conditions. The answer to this question is critical to implementing appropriate and effective strategies for mitigating high ozone levels. Researchers from the National Oceanic Administration, several University research groups, EPA, and the Department of Environmental Quality are working together on this unprecedented air quality study.

Utah Clean Diesel Program

The Utah Clean Diesel Program is a clean air initiative that started in 2008. The program is a collaboration between state and federal agencies, county and municipal governments, community and non-profit organizations, and industry groups. Over $5.3 million in state and federal grants have helped 32 small businesses and 30 school districts purchase cleaner and more fuel efficient equipment for their operations. Each component of the program is presented below.

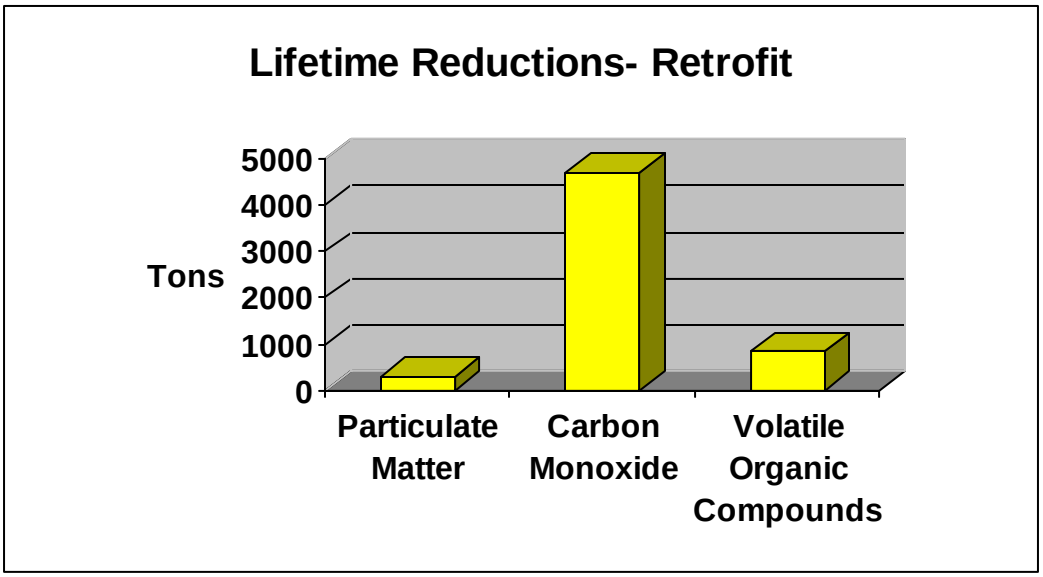
Utah Clean School Bus Project

The Utah Clean School Bus project retrofitted 1,204 school buses throughout the state with devices that are aimed to protect children and operators from harmful air pollutants that emit from the school bus's diesel engine and replaced 27 older buses with new buses that meet a more stringent set of emissions standards.

In 2007, the DAQ started the Utah Clean School Bus Project in conjunction with Utah Office of Education, local school districts, county and municipal governments, as well as community and non-profit organizations. This coalition worked together to secure funding sources for school districts to purchase emission reducing technologies (retrofits) for buses statewide.

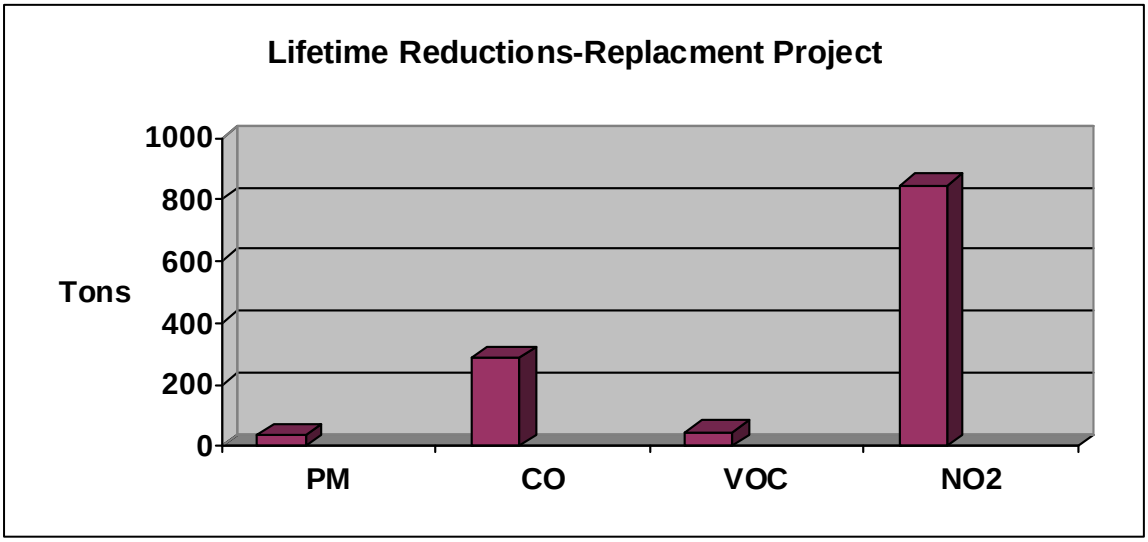
Retrofits are aftermarket vehicle additions that help reduce harmful pollutants found in the bus cabin and in tailpipe emissions. School buses are the safest way to transport children to and from school. However, pollution from diesel vehicles has health implications for everyone, especially children. By reducing bus pollutants in the bus cabin and exhaust emissions, we can ensure that school buses are also a clean way for children to get to school and provide clean-air benefits to communities throughout the state.

DAQ received $2.7 million from the Diesel Emission Reduction Act (DERA) and the Congestion Mitigation and Air Quality Improvement (CMAQ) program to retrofit 1,204 school buses statewide with diesel oxidation catalyst (DOC) and closed crank ventilation (CCV) systems. It is estimated that these retrofits resulted in lifetime reductions of 310 tons of particulate matter, 4,694 tons of carbon monoxide, and 854 tons of volatile organic compounds (also referred to as hydrocarbons).



DAQ also received $1.2 million to partner with Utah State Office of Education and local school districts in non-attainment areas to purchase 27 school buses. DAQ reimbursed school districts $44,000 per school bus through grant money. New school buses were purchased by

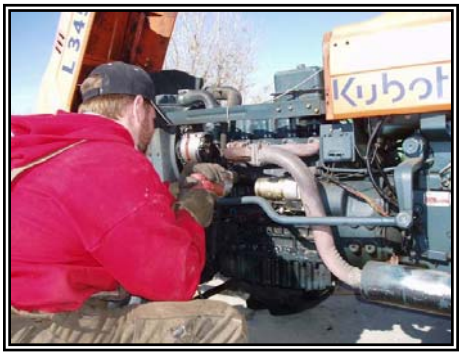
Cache, Logan, Box Elder, Weber, Ogden, Davis, Salt Lake City, Granite, Jordan, Canyons, Alpine, Nebo, Provo City, and Murray school districts. It is estimated that this project will result in lifetime reduction of 844.86 tons of nitrogen oxide (NO_2), 33.83 tons of particulate matter (PM), 43.55 tons of volatile organic compounds (VOC), and 285.06 tons of carbon monoxide (CO).



For more information, visit the following website:
http://www.cleandiesel.utah.gov/schoolbus/sbintro.html.

Clean Diesel for Agriculture Project

In 2010, DAQ managed the replacement of nine aging agricultural vehicles and equipment, repowered 22 engines in agricultural vehicles and equipment, and installed 32 auxiliary power units on agricultural vehicles. This project was funded by the American Recovery and Reinvestment Act. EPA highlighted this project in 2011 on it website because it was one of the first successful clean diesel agricultural projects (http://www.epa.gov/otaq/diesel/projects/utah-ag.htm).



Utah's Clean Diesel Trucking Initiative

Working together with the Utah Trucking Association (UTA), DAQ acquired a $588,235 grant for use in local trucking projects intended to increase fuel efficiency and improve air quality.
The Clean Trucking project installed auxiliary power units on 52 long-haul trucks. These units reduce fuel consumption and diesel emissions by providing climate control and electrical power for the truck's sleeper cab and engine block heater during driver's downtime. These devices use 80-90 percent less fuel than the truck's main engine.

Transportation Conformity

Several Metropolitan Planning Organizations (MPOs) are responsible for developing, producing, and adopting the Metropolitan Transportation Plan (MTP) and Transportation Improvement Program (TIP) for the state of Utah. These include Cache MPO (CMPO), Dixie MPO, Mountainland Association of Governments (MAG), and the Wasatch Front Regional Council (WFRC). MPOs located in nonattainment and/or maintenance areas have the responsibility to ensure that the current MTP and TIP conform to the Utah SIP. The Federal Highway Administration and Federal Transit Administration review the conformity determinations along with the MTP and TIP in consultation with EPA to ensure that the relevant planning regulations have been adequately addressed.

CMPO, MAG, and WFRC demonstrated conformity to the SIP.

CMPO established conformity for the 2012-2017 TIP in July and the 2035 MTP in August for the Cache County, Utah and Franklin County, Idaho $PM_{2.5}$ nonattainment area.

MAG established conformity for the 2040 MTP in June and the 2012-2017 TIP in July for the Provo\Orem City CO maintenance area and for the Utah County PM_{10} and $PM_{2.5}$ nonattainment area.

WFRC established conformity for the 2040 MTP in June and the 2012-2017 TIP in July for the Salt Lake City and Ogden City CO maintenance areas, the Salt Lake County and Ogden PM_{10} nonattainment area, and the $PM_{2.5}$ moderate non-attainment area of Box Elder, Davis, Salt Lake, Weber, and Tooele Counties.

Stage I Vapor Recovery

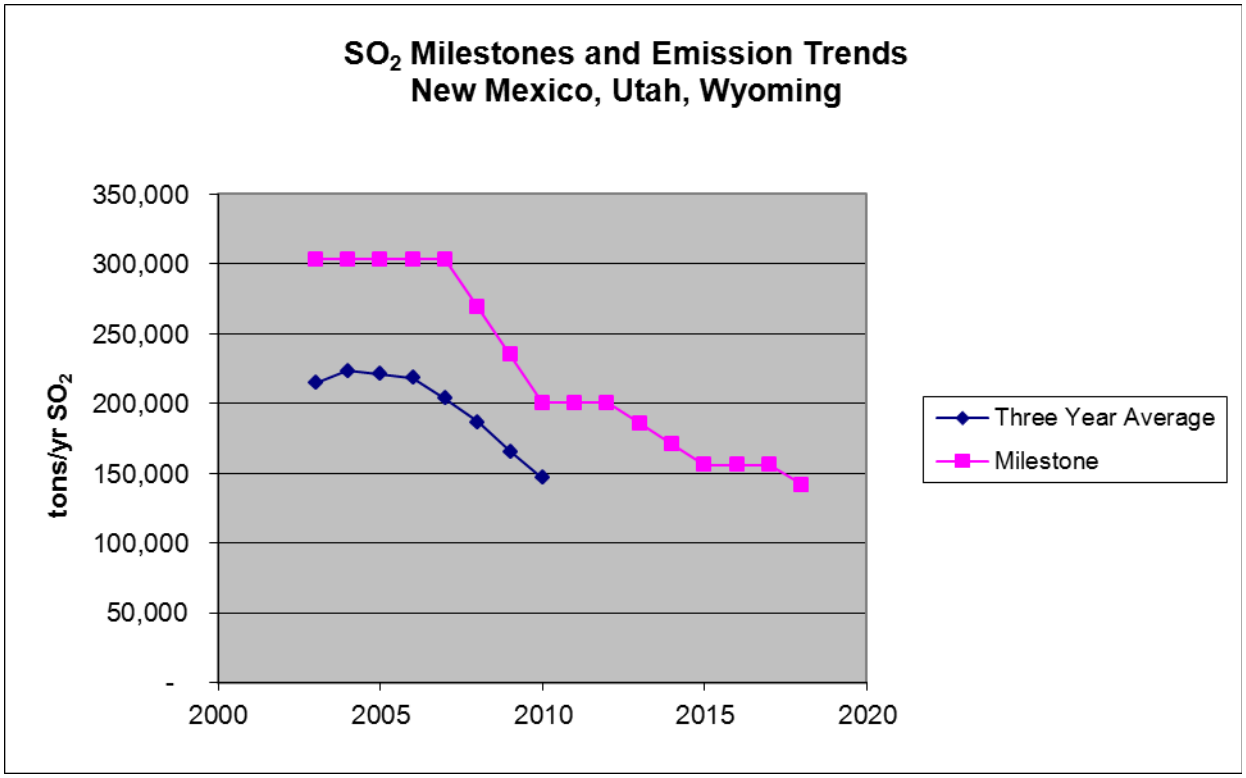
Stage I vapor recovery systems collect vapors resulting from the dispensing of gasoline to both aboveground and underground storage tanks. Stage I vapor recovery requirements were implemented in Salt Lake and Davis Counties in the 1980s and in Utah and Weber Counties in 1999. They have proven to be a successful method of controlling both VOCs and HAPs emissions along the Wasatch Front.

In September 2008, the Air Quality Board adopted changes to the Gasoline Transfer and Storage rule (R307-328) which extended Stage I vapor recovery statewide. On April 30, 2011 the program was completely implemented statewide.

Regional Haze SIP

Utah's Regional Haze Plan includes regional targets for SO_2 emissions, with a backstop trading program to ensure that the emission reduction goals are achieved. Each year the states participating in the program compile an inventory of SO_2 emissions, and then compare the emissions to the milestones established in the plan. The regional emissions in 2010 were 131,124 tons—27% below the milestone. The emissions are far below the milestone due to the early installation of emission controls at power plants and other emission sources, as well

as the permanent closure of Geneva Steel in Utah and several copper smelters in the region. The 2010 milestone report will be completed in the spring of 2012.



Utah Asthma Task Force

The Utah Asthma Task Force is a multi-agency task force to address the problem of asthma in Utah. The task force meets quarterly and has a number of projects currently underway in addition to the programs initiated under the State Asthma Plan. The 2011 accomplishments include the following:

- At the annual meeting of the National Association of Clean Air Agencies (NACAA), the DAQ toxicologist made a presentation outlining Utah's School Recess Guidelines developed by the Utah Asthma Task Force.

- The Utah Department of Health, the National Weather Service, and DAQ collaborated in 2009 through 2010 in an analysis of the association of wintertime temperature inversions with emergency department visits by asthmatic children and adolescents. The project has resulted in a better understanding of the effects of inversion days and PM2.5 on Utah's health care system. DAQ continues to share the results of the analysis through various media outlets and several invited lectures.

- A TeleHealth broadcast was aired on the effects of ambient air quality and asthma in Utah.

- The Utah Department of Health, using a $50,000 grant from the Center of Disease Control, contracted with a private communications firm to help DAQ and the Asthma Risk Factors Action Group produce a series of short videos explaining how a person can use the real-time ambient air quality information published on DAQ's web page to understand risks and benefits of outdoor exercise. These videos are located at the following web page: www.cleanair.utah.gov/resources/multimedia.htm.

Ancillary Programs

Utah Air Quality Public Notifications

DAQ provides air quality forecasting on its webpage for the current and next two days. The Air Monitoring Section (AMS) provides air pollution information based on the daily air quality status. The AMS data is used to determine the relationship of existing pollutant concentrations to the NAAQS. There is a three tiered air quality alert system of Green, Yellow (alert days), and Red (actions days) that is used to implement winter and summer controls on the use of wood and coal burning stoves, fire places, and motor vehicles. There are five health advisory categories: good, moderate, unhealthy advisory A, unhealthy advisory B, and very unhealthy. Each advisory category listed on the webpage is accompanied by a health protection message that recommends actions affected groups can take to mitigate the effects of pollution on them. The AMS advisory is calculated for five major pollutants, including ground-level ozone, particulate pollution (particulate matter), carbon monoxide, sulfur dioxide, and nitrogen dioxide. The outreach program information consolidated in the three day forecast includes the Summer and Winter Control Programs and Choose Clean Air information.

The DEQ is also sponsoring an electronic mail server (Listserv). Subscribers are automatically notified by e-mail when unhealthy air pollution levels are forecast for the Wasatch Front.

Choose Clean Air

DEQ has developed an interactive source of information about ways individuals can help improve air quality by making smart choices in their personal lives.

Winter Control Program (red-burn, yellow and green-burn)

This program originated with the PM10 SIP. The program runs annually from November through early March. In addition to the burning restrictions, residents are encouraged to drive less and industry is encouraged to optimize operating conditions.

Summer Control Program (red, yellow and green)

Color codes are announced whenever the probability of exceeding the ozone standard is forecasted to be high. High temperature and stagnant air masses contribute to this probability. Residents are encouraged to minimize driving whenever the ozone or PM standards are approached.

Vehicle Inspection/Maintenance Programs

Although not run directly by DAQ, the emissions portions of these programs were instituted because of past problems in attaining the federal health standards for several pollutants—most notably CO and ozone. Implementation of these programs was critical to attaining the federal standards, and their continued operation is necessary for the Wasatch Front to remain in attainment of these standards. These programs are administered by the county health departments.

Smoking Vehicles

Vehicles emitting excessive smoke contribute to poor air quality. To promote clean air, several local health departments operate smoking vehicle education and notification programs. People who spot a vehicle producing excessive smoke can report it through their respective county health department:

Cache County	435-792-6611
Davis County	801-546-8860
Salt Lake County	801-944-SMOG(7664)
Utah County	801-851-SMOG(7664)
Weber County	801-399-7140

Summer Ozone

In May, DAQ placed temporary ozone monitoring sites in mountain valleys adjacent to the Wasatch Front, in rural areas of western Utah, and around the Great Salt Lake. Ozone was monitored at these sites through September. The project goals were to determine the extent of a potential ozone non-attainment area along the Wasatch Front, to understand long range transport of ozone from Nevada and California, to determine background levels of ozone in rural areas of Utah, and to understand the role of Great Salt Lake in ozone formation. These data will be used in the SIP development process.

Permitting Branch

The DAQ Permitting Branch is responsible for implementing state and federal air permitting programs that are intended to regulate air emissions from new and modified stationary sources that emit air contaminants. Permits are legally enforceable documents that specify construction limitations, emission limits, and how the emissions source must be operated. Permit limits can be emission limitations or surrogate limits such as production rates, hours of operation, fuel consumption or a combination thereof. Opacity, the measure of opaqueness or transparency of emission plumes, is also a common metric used to both limit and measure source emissions.

The branch issues two types of permits. New Source Review (NSR) permits, also known as Approval Orders, are pre-construction type permits for new and modified sources of air emissions. These are issued by the New Source Review Sections and have been required in Utah since 1969. The Operating Permits Section issues the Title V Operating Permits to the larger "major" stationary sources in the state, as required in Title V of the Federal Clean Air Act. There are approximately 100 of these sources. Operating permits consolidate all air quality related requirements from numerous state and federal air quality programs into a single regulatory document. The purpose of an operating permit is to clarify for the permit holder as well as DAQ compliance inspectors the wide range of requirements applicable to any regulated source by placing those requirements into one consolidated document.

In addition, the branch processes a number of smaller actions such as de minimus determinations for NSR, name changes, tax exemption certificates for pollution control equipment purchases, and soil aeration approvals.

New Source Review

Any new or modified source of air pollution in Utah is required to obtain an Approval Order (AO) before it is allowed to begin construction. For nonattainment areas that are not in compliance with the NAAQS, NSR assures that air quality is not further degraded from the existing levels by new emission sources. In areas that are in compliance with the NAAQS, NSR assures that new emissions do not significantly worsen air quality. These processes are outlined in our state and federal rules.

The application for an AO, called a notice of intent (NOI), is reviewed to make sure that the source installs appropriate state-of-the-art emission controls. For nonattainment areas, state-of-the-art technology is known as lowest achievable emissions rate (LAER). For areas in attainment of the NAAQS, state-of-the-art controls are known as the best available control technology (BACT). Both LAER and BACT are case-by-case determinations of control technology for a specific source. BACT takes into account both the cost and environmental

benefits of the control equipment while LAER technology takes into account only environmental benefits.

The general public and EPA are given an opportunity to review the proposed approval order before it is issued. The criteria indicating which sources must obtain an approval order are specified in the Utah Air Quality Rules. Potential applicants are encouraged to contact DAQ prior to submitting the necessary paperwork. In the EPA fiscal year 2011 (7/1/10 to 6/30/11), the NSR section completed or was working on 457 different projects. This included the completion of 345 AOs.

Operating Permits

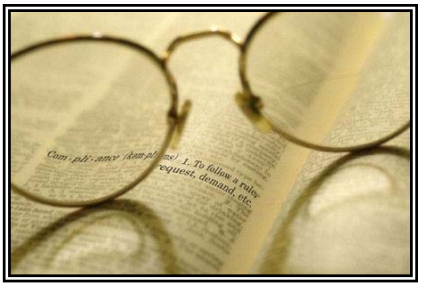
Congress created Title V of the Clean Air Act in 1990. This Title requires States to issue an operating permit to the larger or "major" sources of air pollution within the state. Utah developed and submitted a program in 1994 and received approval from the EPA in 1995. Operating permits are legally enforceable documents issued to air pollution sources after the source has begun to operate. A primary purpose of the permit is to consolidate the applicable requirements from the many and varied air quality programs such as NSR, federal New Source Performance Standards (NSPS) and National Emission Standards for Hazardous Air Pollutants (NESHAP), and Maximum Available Control Technology (MACT). Like the approval orders, the general public is given an opportunity to review the draft operating permits before they are issued. In addition, the EPA has up to 45 days to review the proposed operating permit. The criteria indicating which sources must obtain an operating permit are specified in R307-415 of the Utah Administrative Code (UAC). As with the NSR permit or AOs, potential applicants are encouraged to contact DAQ prior to submitting the necessary paperwork.

Another significant objective of the Title V program is to shift the compliance liability from the regulating agency to the permitted source. Each year the source must certify that it is in compliance with all permit terms and conditions, or indicate non-compliance issues. False reports have criminal implications, beyond the civil liabilities of other violations. In addition, sources must report the results of monitoring at least every six months. Permit provisions for monitoring, record keeping, and reporting are added or enhanced to assure compliance with the permit conditions and limits.

During the last year, the Operating Permits section issued multiple initial permits and permit modifications coordinating extensively with the NSR Section. The Operating Permit has a life of only five years (as opposed to the AO that does not expire), and during the last year the section issued a significant number of permit renewals. These renewal permits are complex, and care must be taken to ensure that new federal requirements for the Compliance Assurance Monitoring Rule (CAM) and any other new requirements (such as new MACT Standards) are included.

Compliance Branch

The Major Source Compliance, Minor Source Compliance, and the Air Toxics, Lead-Based Paint, Asbestos and Small Business Environmental Assistance (ATLAS) Sections are responsible for ensuring compliance with all air pollution orders, permits, rules, and standards. This is accomplished through inspections, audits of stack tests and continuous emission monitoring systems (CEMS), plan and report reviews, accreditation and certification programs, compliance assistance/outreach activities, and, when necessary, enforcement actions.



Major and Minor Source Compliance

The Major and Minor Source Compliance Sections are responsible for ensuring compliance at more than 2,000 facilities within the State. The Major Source Compliance Section is responsible for inspections and report/plan reviews for the large facilities, audits of all stack tests and CEMS, and any associated enforcement. The Minor Source Compliance Section is responsible for inspections and report/plan reviews at small to medium-sized facilities, fugitive dust control, abrasive blasting, residential solid fuel burning, gasoline transport/filling station vapor recovery, open burning, and any associated enforcement.

Table 6. Major and Minor Source Compliance Summary

TASK	2011
Source Inspections	431
On-site Stack Test/CEM Audits	137
Stack Test/CEM Reviews	519
Temporary Relocations Accepted	106
Fugitive Dust Control Plans Accepted	15
Miscellaneous Inspections	97
Complaints Received	161
VOC Inspections	64
Warning Letters	8
Notices of Violations	0
Compliance Advisories	29
Settlements	19
Total Inspections	720
Penalties Assessed	$46,048.00

Air Toxics, Lead-Based Paint, and Asbestos Section (ATLAS)

The ATLAS section determines compliance with specific regulations involving asbestos, lead-based paint, and area sources of air pollutants that are not required to have DAQ Approval Orders but are subject to Maximum Achievable Control Technology (MACT), Title 40 Code of Federal Regulations (40 CFR) Part 63 [Utah Administrative Code (UAC) R307-214-2] requirements.

The following programs are the responsibility of the ATLAS Section:

National Emission Standards for Area Source Categories

Sources that are required to comply with 40 CFR Part 63 Subpart M *National Perchloroethylene Air Emission Standards for Dry Cleaning Facilities MACT* or the 40 CFR Part 63 Subpart N *National Emission Standards for Chromium Emissions from Hard and Decorative Chromium Electroplating and Chromium Anodizing Tanks MACT* and are not required to have DAQ Approval Orders are inspected by the ATLAS Section.

Lead-Based Paint

Toxic Substances Control Act (TSCA) Title IV, 40 CFR Part 745 (UAC R307-840, 841, and 842). Under this program, ATLAS deals with the accreditation of training programs, certification of individuals and firms, work practices for lead-based paint activities, and lead-based paint outreach activities.

Asbestos in Schools

TSCA Title II Asbestos Hazard Emergency Response Act (AHERA), 40 CFR Part 763 (UAC R307-801-4). Under this program, ATLAS deals with the approval of training providers, certification of individuals and companies, inspections of school buildings, and inspections of asbestos abatement in schools.

Asbestos NESHAP and State asbestos work practices

40 CFR Part 61, Subpart M (UAC R307-214-1) and UAC R307-801. Under this program, ATLAS deals with the certification of individuals and companies, review of asbestos project notification forms, review of demolition notification forms for structures, review of alternate work practices, inspection of asbestos abatement projects, demolition of structures, and asbestos outreach activities.

Table 7. ATLAS Activity Summary

TASK	2011
MACT Inspections	12
Other NESHAP Inspections	0
Asbestos Demolition/Renovations Inspections	192
Asbestos in School Inspections	133
Asbestos State Rules (Only) Inspections	5
Asbestos Notifications Accepted	1374
Asbestos Telephone Calls	3505
Asbestos Individual Certifications	718
Asbestos Company Certifications	142
Asbestos Alternate Work Practices	41
Lead Based Paint Inspections	84
Lead Based Paint Notifications	20
Lead Based Paint Telephone Calls	1033
Lead Based Paint Letters Prepared & Mailed	415
Lead Based Paint Courses Reviewed	9
Lead Based Paint Course Audit	26
Lead Based Paint Individual Certifications	249
Lead Based Paint Company Certifications	133
Notices of Violations	0
Compliance Advisories	78
Warning Letters	67
Settlement Agreements	13
Penalties collected	$28,916.50
Total Inspections	362

Enforcement Actions

The following enforcement actions may be taken depending on the magnitude of the alleged violation(s) and prior compliance history and degree of cooperation of an alleged violator:

A. Compliance Advisory – a notification describing the alleged violation(s). The recipient is given opportunity to refute and/or provide further details regarding the alleged violation(s) prior to any further enforcement action. A Compliance Advisory is a discovery document and not a declaration of actual violation(s).
B. Warning Letter – a notification sent to violators to resolve minor, first-time violations.
C. Early Settlement Agreement – a less formal resolution of an alleged violation(s) in which the DAQ and the recipient agree in writing to specific actions taken to correct the alleged violation(s). Any stipulated penalties are discounted by 20% to encourage quick resolution. Supplemental Environmental Projects may be agreed

to, to offset a portion of any cash payments for stipulated penalties. All collected penalties become part of the State General Fund.

D. Notice of Violation and Order for Compliance – a formal, traditional declaration of a violation(s) which involves the Attorney General's Office. The cited violation(s) become final after 30-days unless formal appeal procedures are followed.

E. Settlement Agreement - a resolution of a potential violation(s) in which the DAQ and the recipient agree to specific actions taken to correct the potential violation(s). No discounts of stipulated penalties are offered. DAQ legal costs may also be included. Supplemental Environmental Projects may be agreed to, to offset a portion of any cash payments for stipulated penalties. All collected penalties become part of the State General Fund.

Most enforcement actions are resolved through Warning Letters or Early Settlement Agreements. In rare instances, Notices of Violations and Orders for Compliance are used. In the extremely rare instance where the aforementioned enforcement actions fail for resolve a compliance issue, procedures are in place for Air Quality Board hearings/administrate law judge review or formal judicial action. Environmental criminal cases are referred to the appropriate law enforcement agency.

Small Business Environmental Assistance Program

The Small Business Environmental Assistance Program (SBEAP) helps small businesses understand and comply with state air quality rules. The SBEAP provides "plain language" educational information to help small sources learn about the many air quality requirements. The SBEAP also provides on-site assistance with process evaluation, compliance assistance, and pollution prevention techniques. A toll-free telephone hotline number (1-800-270-4440) provides access to SBEAP services 24 hours a day/seven days a week.