

Areas Participating in the Oxygenated Gasoline Program

Contents

- [Introduction](#)
- [Original Oxygenated Gasoline Control Areas](#)
 - [Table 1. Original Oxygenated Gasoline Program Areas](#)
- [Additions to Original Control Areas](#)
 - [Table 2. Additions to Original Control Areas](#)
- [Areas Redesignated in Attainment](#)
 - [Table 3. Areas Redesignated in Attainment](#)
- [Temporarily Suspended Oxygenated Gasoline Programs](#)
- [Changes to Oxygenated Gasoline Control Periods](#)
 - [Table 4. Changes to Oxygenated Gasoline Control Periods](#)
- [Revised Oxygenate Requirements](#)
 - [Table 5. Revised Oxygenate Requirements](#)
- [State Oxygenated Gasoline Programs](#)
 - [Table 6. State Mandated Oxygenated Gasoline Programs](#)
- [State Regulations](#)
 - [Table 7. State Air Quality Regulations On-Line](#)
- [Endnotes](#)

Spreadsheets Referenced in this Article

- [Oxygenated Gasoline Control Area Populations](#)

Related EIA Short-Term Forecast Analysis Products

- [Areas Participating in the Reformulated Gasoline Program](#)
 - [Demand and Price Outlook for Phase 2 Reformulated Gasoline](#)
 - [Environmental Regulations and Changes in Petroleum Refining Operations](#)
 - [Oxygenate Supply/Demand Balances in the Short-Term Integrated Forecasting Model](#)
 - [Demand, Supply, and Price Outlook for Reformulated Motor Gasoline, 1995](#)
-

Introduction

Carbon monoxide (CO) is a colorless, odorless, and poisonous gas produced by incomplete burning of fuels used in internal combustion engines. Elevated levels of CO generally occur

during the winter months because of increased CO emissions from cold vehicles and the occurrence of temperature inversions, which trap pollutants near the ground and inhibit dispersion and dilution. The U.S. Environmental Protection Agency (EPA) has set National Air Ambient Quality Standards (NAAQS) for CO that specify upper limits of 35 ppm for a 1-hour period and 9 ppm for an 8-hour period. Generally, the 8-hour limit is the more restrictive and virtually all exceedances in recent years involve violation of this limit. Monitoring stations are allowed one exceedance of the air quality standard per year. A second exceedance constitutes a violation.

An important program for reducing ambient CO concentrations is the use of cleaner burning oxygenated gasoline. Extra oxygen enhances fuel combustion and helps to offset fuel-rich operating conditions, particularly during vehicle starting in cold weather.⁽¹⁾ Section 211(m) of the Clean Air Act (42 U.S.C. 7401-7671q) requires that gasoline containing at least 2.7 percent oxygen by weight is to be used in the wintertime in those areas of the county that exceed the CO NAAQS. The winter oxygenated gasoline program applies to all gasoline sold in the larger of the Consolidated Metropolitan Statistical Area (CMSA) or Metropolitan Statistical Area (MSA) in which the nonattainment area is located.⁽²⁾

For a current list of oxygenated gasoline program areas, refer to the U.S. Environmental Protection Agency, Office of Mobile Sources, [State Winter Oxygenated Fuel Programs](#). For a current list of ozone nonattainment areas, refer to the [EPA Green Book](#).

The control period is that portion of the year in which the area is prone to high ambient concentrations of CO, as determined by the EPA ("Guidelines for Oxygenated Gasoline Credit Programs and Guidelines on Establishment of Control Periods Under Section 211(m) of the Clean Air Act as Amended," 57 FR 47853, October 20, 1992).⁽³⁾

Original Oxygenated Gasoline Control Areas

Beginning on November 1, 1992, 39 areas of the county were required to participate in the oxygenated gasoline program. These 39 original CO nonattainment areas had CO design values of 9.5 ppm or above based on data for the 2-year period of 1988 and 1989 (Table 1).

[\[Control Area Populations\]](#)

Table 1. Original Oxygenated Gasoline Control Areas			
Control Area	Estimated Population 7/1/96 (thousands)	Control Period	
		Start	End
Albuquerque, NM *	527	Nov. 1	Feb. 29
Anchorage, AK	250	Nov. 1	Feb. 29

Baltimore, MD *	2,436	Nov. 1	Feb. 29
Boston-Lawrence-Salem, MA *	3,939	Nov. 1	Feb. 29
Chico, CA *	192	Oct. 1	Jan. 31
Cleveland-Akron-Lorain, OH *	2,811	Nov. 1	Feb. 29
Colorado Springs, CO	473	Nov. 1	Feb. 29 **
Denver-Boulder, CO	2,277	Nov. 1	Feb. 29 **
Duluth, MN *	196	Oct. 1	Jan. 31
El Paso, TX	684	Nov. 1 **	Feb. 29 **
Fairbanks, AK	84	Nov. 1	Feb. 29
Fort Collins-Loveland, CO	222	Nov. 1	Feb. 29 **
Fresno, CA *	751	Oct. 1	Jan. 31
Grants Pass, OR	21	Nov. 1	Feb. 29
Greensboro-Winston-Salem-High Point, NC *	1,025	Nov. 1	Feb. 29
Hartford, CT *	1,062	Nov. 1	Feb. 29
Klamath County, OR	62	Nov. 1	Feb. 29
Las Vegas, NV	1,049	Oct. 1	Feb. 29 **
Los Angeles-Anaheim-Riverside, CA	15,495	Oct. 1	Feb. 29
Medford, OR	169	Nov. 1	Feb. 29
Memphis, TN *	912	Nov. 1	Feb. 29
Minneapolis-St. Paul, MN	2,618	Oct. 1 **	Jan. 31 **
Missoula, MT	88	Nov. 1	Feb. 29
Modesto, CA *	416	Oct. 1	Jan. 31
New York City, CT *	969	Oct. 1 **	Apr. 30 **
New York City, NY-NJ	17,588	Oct. 1 **	Apr. 30 **
Philadelphia-Wilmington-Trenton, PA-MD-NJ *	5,832	Nov. 1	Feb. 29
Phoenix, AZ	2,611	Oct. 1 **	Feb. 29 **
Portland, OR * (1)	1,411	Nov. 1	Feb. 29

Provo-Orem, UT	320	Nov. 1	Feb. 29
Raleigh-Durham, NC *	883	Nov. 1	Feb. 29
Reno, NV	299	Oct. 1	Jan. 31
Sacramento, CA *	1,632	Oct. 1	Jan. 31
San Diego, CA *	2,655	Nov. 1	Feb. 29
San Francisco, CA *	6,605	Oct. 1	Jan. 31
Seattle-Tacoma, WA *	2,823	Nov. 1	Feb. 29
Spokane, WA	405	Sep. 1	Feb. 29
Stockton, CA *	533	Oct. 1	Jan. 31
Syracuse, NY *	664	Nov. 1	Feb. 29
Vancouver, WA * (1)	305	Nov. 1	Feb. 29
Washington, DC-MD-VA *	4,216	Nov. 1	Feb. 29
Total Population, Mandated Areas	87,509	33.0 % of total U.S. population	
Total U.S. Population	265,284		

Notes:

- Populations based on state definitions of control areas or 1990 Census definitions of MSA and CMSA boundaries.
- * Control areas appearing in red have been redesignated in attainment (refer to [Table 3](#))
- ** Control period dates appearing in red have been revised (refer to [Table 4](#))
- (1) The Portland-Vancouver, OR-WA nonattainment area was separated by EPA into 2 control areas effective Nov. 28, 1995 (EPA, [60 FR 50423](#))

Sources:

- Population - U.S. Census Bureau, [Place and County Subdivision Population Estimates](#)
- Control Periods - U.S. Environmental Protection Agency, "Guidelines on Establishment of Control Periods Under Section 211(m) of the Clean Air Act as Amended," *Federal Register* (Washington, DC, October 20, 1992) pp. 47853-47855.

Additions to Original Control Areas

Any area that exceeds the CO design value of 9.5 ppm for any 2-year period after 1989, will be designated in nonattainment and must implement an oxygenated gasoline program within 3 years.

Table 2. Additions to Original Control Areas

Control Area	Estimated Population 7/1/96 (thousands)	Control Period		EPA <i>Federal Register</i> Notice	
		Start	End	Citation	Date
Salt Lake City, UT *	1,043	11/1	2/29	59 FR 55585	Nov. 8, 1994
Ogden, UT	175	11/1	2/29	59 FR 55585	Nov. 8, 1994

Notes:

- * Control areas appearing in red have been redesignated in attainment (refer to [Table 3](#))
- Ogden, UT has never implemented an oxygenated gasoline program and is developing redesignation requests [Utah State Implementation Plan](#) (September 4, 1996).

Sources: Population - U.S. Census Bureau, [Place and County Subdivision Population Estimates](#)

Areas Redesignated in Attainment

An oxygenated gasoline program is no longer required once an area is redesignated in attainment of the CO NAAQS. To be redesignated in attainment, an area must have no more than one exceedance of the CO standard over at least two consecutive years. To provide for the possibility of future NAAQS violations, a maintenance plan must contain contingency measures to assure prompt correction of any air quality problems. A contingency measure for several redesignated areas is reinstatement of the oxygenated gasoline program for the following CO season if there is a violation of the CO standard. An area may also voluntarily continue the oxygenated gasoline programs as part of its maintenance plan (refer to [Table 6](#)).

Table 3. Areas Redesignated in Attainment

Control Area	Estimated Population 7/1/96 (thousands)	EPA <i>Federal Register</i> Notice	
		Citation	Date
Albuquerque, NM *	527	61 FR 29970	Jun. 13, 1996
Baltimore, MD	2,436	60 FR 55321	Oct. 31, 1995
Boston-Lawrence-Salem, MA	3,939	61 FR 2918	Jan. 30, 1996
Chico, CA	192	63 FR 15305	Mar. 31, 1998
Cleveland-Akron-Lorain, OH	2,811	59 FR 5332	Feb. 4, 1994
Duluth, MN	196	59 FR 17706	Apr. 14, 1994

Fesno, CA	751	63 FR 15305	Mar. 31, 1998
Greensboro-Winston-Salem-Highpoint, NC	1,025	59 FR 48399	Sep. 21, 1994
Hartford, CT	1,062	61 FR 24239	May 14, 1996
Memphis, TN	912	59 FR 37939	Jul. 26, 1994
Minneapolis-St. Paul, MN *	2,618	64 FR 25855 (proposed rule)	May 13, 1999
Modesto, CA	416	63 FR 15305	Mar. 31, 1998
New York City, CT *	969	64 FR 12005	Mar. 10, 1999
Philadelphia-Wilmington-Trenton, PA-MD-NJ	5,832	61 FR 2926 (PA) 61 FR 33678 (NJ)	Jan. 30, 1996 Jun. 28, 1996
Portland, OR *	1,411	62 FR 46802	Sep. 2, 1997
Raleigh-Durham, NC	883	60 FR 39258	Aug. 2, 1995
Sacramento, CA	1,632	63 FR 15305	Mar. 31, 1998
Salt Lake City, UT	1,043	64 FR 3216	Jan. 21, 1999
San Diego, CA	2,655	63 FR 15305	Mar. 31, 1998
San Francisco, CA	6,605	63 FR 15305	Mar. 31, 1998
Seattle-Tacoma, WA	2,823	61 FR 53323	Oct. 11, 1996
Stockton, CA	533	63 FR 15305	Mar. 31, 1998
Syracuse, NY	664	58 FR 50851	Sep. 29, 1993
Vancouver, WA	305	61 FR 54560	Oct. 21, 1996
Washington, DC-MD-VA	4,216	61 FR 2931	Jan. 30, 1996
Total Population, Redesignated Areas	46,456	15.2 % of total U.S. population	
Total U.S. Population	265,284		
Notes:			
<ul style="list-style-type: none"> Control areas may have suspended their oxygenated gasoline program before the final notice was published by EPA. * Control areas appearing in red continue to implement a state mandated oxygenated gasoline program (refer to Table 6) 			
Sources: Population - U.S. Census Bureau, Place and County Subdivision Population Estimates			

The following areas are reported to be preparing or have submitted redesignation requests: ⁽⁴⁾

- Colorado Springs, CO.
- Fort Collins, CO.
- Grant's Pass, OR.
- Klamath County, OR.
- Medford, OR.
- Ogden, UT
- Reno, NV.

Temporarily Suspended Oxygenated Gasoline Programs

In December 1992, the Governor of Alaska temporarily suspended the oxygenated gasoline program in the cities of Anchorage and Fairbanks because of concerns over the health and driveability of MTBE blended gasoline. Anchorage chose to implement an oxygenated gasoline program using a 10 volume percent ethanol blend rather than MTBE. The Anchorage program resumed on January 1, 1995 and continued through March 31, 1995. In subsequent years, the program will cover the original Nov. 1 through Feb. 29 control period (EPA, [61 FR 24712](#)). The Fairbanks program was scheduled to resume on Nov. 1, 1997 ([Alaska Department of Environmental Conservation](#)), however, the program has yet to be reimplemented.

The Salt Lake City-Ogden, UT., metropolitan statistical area was added to the list of nonattainment areas during the winter of 1994-1995. This area has never implemented an oxygenated gasoline program. The Salt lake City area was recently redesignated in attainment and the Ogden area has requested redesignation [Utah State Implementation Plan](#) (September 4, 1996).

Changes to Oxygenated Gasoline Control Periods

The Clean Air Act specifies that the length of the control period shall not be less than 4 months unless a state can demonstrate that, because of meteorological conditions, that there will no CO exceedances outside the reduced control period. States may also expand the oxygenated gasoline program beyond the control period designated by the EPA. For example, the state of Minnesota extended the Mineapolis-St. Paul oxygenated gasoline season to a year-round program beginning October 1, 1995.

Table 4. Revised Oxygenated Gasoline Control Periods

Control Area	Original Period		Revised Period		EPA <i>Federal Register</i> Notice	
	Start	End	Start	End	Citation	Date
Colorado Springs, CO	Nov. 1	Feb. 29	Nov. 1	Feb. 7 *	62 FR 10690	Mar. 10, 1997
Denver-Boulder, CO	Nov. 1	Feb. 29	Nov. 1	Feb. 7 *	62 FR 10690	Mar. 10, 1997
El Paso, TX	Nov. 1	Feb. 29	Oct. 1	Mar. 31	59 FR 46766	Sep. 12, 1994
Fort Collins-Loveland, CO	Nov. 1	Feb. 29	Nov. 1	Feb. 7 *	62 FR 10690	Mar. 10, 1997
Las Vegas, NV	Oct. 1	Feb. 29	Oct. 1	Mar. 31	63 FR 68415 (proposed rule)	Dec. 11, 1998
Minneapolis-St.Paul, MN	Oct. 1	Jan. 31	Jan. 1	Dec. 31	61 FR 6547	Feb. 21, 1996
New York City, NY-CT-NJ	Oct. 1	Apr. 30	Nov. 1	Feb. 29	61 FR 5299 (NJ) 61 FR 38574 (CT) 61 FR 38594 (NY)	Feb. 12, 1996 Jul. 25, 1996 July 25, 1996
Phoenix, AZ	Oct. 1	Feb. 29	Nov. 15	Mar. 31		

Note: * The control period was first changed to end on Feb. 14. Beginning with the 1998-1999 control period the end date was changed to Feb. 7.

Revised Oxygenate Requirements

EPA may also provide a waiver from the minimum 2.7 weight percent oxygen requirement if the State can demonstrate that using oxygenated gasoline would prevent or interfere with the attainment of a NAAQS or a State or local ambient air quality standard for any air pollutant other than CO. California restricted oxygen content to 1.8 to 2.2 weight percent because of concern over attaining ozone air quality standards. States are also not restricted from requiring a higher oxygen content. Several states have increased the oxygen requirement to be consistent with blending 10 volume percent ethanol (3.5 weight percent oxygen).

Table 5. Revised Oxygenate Requirements			
Control Area	Description	EPA Federal Register Notice	
		Citation	Date
Anchorage, AK	10 volume % ethanol	61 FR 24712	May 16, 1996
California	1.8 to 2.2 weight % oxygen		
Denver, CO	Average 3.1 weight % oxygen	62 FR 10690	Mar. 10, 1997
Fairbanks, AK	10 volume % ethanol	61 FR 24712	May 16, 1996
Las Vegas, NV	3.5 weight % oxygen	64 FR 29573	Jun. 2, 1999
Phoenix, AZ	3.5 weight % oxygen		
Provo-Orem, UT	average 3.1 weight % oxygen		
Spokane, WA	3.5 weight % oxygen as ethanol	62 FR 49442	Sep. 22, 1997

State Oxygenated Gasoline Programs

States have also been allowed to implement oxygenated gasoline programs beyond what is required by the Clean Air Act. Areas redesignated in attainment may continue to require oxygenated gasoline as part of their CO maintenance plan. States may also require oxygenated gasoline in areas that have always been in attainment of the CO NAAQS. For example, the state of **Minnesota** has revised its Statutes to require oxygenated gasoline in all parts of the state throughout the year beginning on October 1, 1997.

Table 6. State Mandated Oxygenated Gasoline Programs				
Control Area	Estimated Population 7/1/96 (thousands)	Control Period		State Agency
		Start	End	
Albuquerque, NM	527	11/1	2/29	Albuquerque/Bernalillo Co. Air Quality Control Board
New York City, CT	969	11/1	2/29	Dept. of Environmental Protection
Minnesota (rest of state)	2,039	1/1	12/31	Pollution Control Agency
Portland, OR	1,411	11/1	2/29	Dept. of Environmental Quality
Tucson, AZ	767	10/1	3/31	Pima Association of Governments
Notes:				
<ul style="list-style-type: none"> • * Minnesota population excludes population of Minneapolis-St. Paul control area. • Tucson, AZ., requires 1.8 percent oxygen by weight. 				

State Regulations

The oxygenated gasoline program is administered and enforced by the individual states (in contrast to the reformulated gasoline program, which is administered by the EPA). State requirements may be found in State Implementation Plans filed with the EPA, or in State laws.

Table 7. State Air Quality Regulations On-Line		
State	Regulation	State Agency
Alaska	Title 18 Chap. 53	Alaska Dept.of Environmental Conservation
Arizona	ARS Title 41, Chap. 15, Article 6	Arizona Dept. of Weights and Measures
California	Title 13 CCR	California Air Resources Board
Colorado	Regulation No. 13	Colorado Dept. of Public Health and Environment
Minnesota	Mn. Statutes Sect. 239.791 State Implementation Plan	Minnesota Pollution Control Agency
Nevada	APC Regs Section 53	Clark County District Board of Health
New Jersey	NJAC, Title 7, Chap. 27, Subchap. 25	N.J. Dept. of Environmental Protection
New York	6 NYRCC Ch. III, Subpart 225-3	N.Y. Dept. of Environmental Conservation
North Carolina	15A NCAC 2D.1300	N.C. Dept. of Environment, Health, and Natural Resources
Ohio	OAC 3745	Ohio Environmental Protection Agency
Oregon	OAR Chap. 340 Div. 22	Oregon Dept. of Environmental Quality
Texas	TAC Title 30 Part I Chap. 114 State Implementation Plan	Texas Natural Resource Conservation Commission
Utah	UAC R307 State Implementation Plan, Section IX Part C	Utah Dept. of Environmental Quality
Washington (Seattle-Tacoma)	PSAPCA Regulation 2.09	Puget Sound Air Pollution Control Agency
Washington (Spokane)	WAC 173-492	Washington State Dept. of Ecology *

Washington (Vancouver)	SWAPCA 492	Southwest Air Pollution Control Authority
Note: * Spokane, WA. program administered by Spokane Country Air Pollution Control Authority		

Endnotes

(1) For studies on the effect of oxygenates on vehicle CO emissions and ambient CO concentrations refer to:

- White House Office of Science and Technology Policy, "[Air Quality Effects of the Winter Oxyfuel Program](#)," July 2, 1997 (*PDF file, 798 KB*).
- Systems Applications International, "[Regression Modeling of Oxyfuel Effects on Ambient CO Concentrations](#)," January 8, 1997 (*PDF file, 102 KB*).

(2) For nonattainment areas not in a CMSA or MSA, the control area is the nonattainment area.

(3) The "57 FR 47853" notation is the citation for the *Federal Register*, volume 57, page 47853.

(4) U.S. Environmental Protection Agency, "[State Winter Oxygenated Fuels Program](#)" (June 16, 1999).



File last modified: July 1, 1999

Contact:

Tancred Lidderdale
Tancred.Lidderdale@eia.gov
Phone: (202) 586-7321
Fax: (202) 586-9753