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Reformulated Gasoline

The reformulated gasoline program was mandated by Congress in the 1990 Clean Air Act amendments. The CAA intended that RFG would be blended to burn more cleanly than conventional gasoline and would reduce emissions of smog-forming and toxic pollutants. The first phase of the RFG program began in 1995 and the second (current) phase began in 2000.

RFG is required in cities with high smog levels and is optional elsewhere. RFG is currently used in 17 states and the District of Columbia. About 25 percent of gasoline sold in the U.S. is reformulated. In addition, the sale of California Phase 3 RFG is required throughout the entire State of California.

The air quality benefits RFG has achieved since 1995 represent a significant part of the country's smog reduction strategy. The RFG program, combined with other industrial and transportation controls aimed at smog reduction, has contributed to the long-term downward trend in U.S. smog levels. About 75 million people breathe cleaner air now compared to 1995 in part because of RFG. Building on the success of the RFG program, EPA has harmonized requirements that apply to both conventional gasoline (the typical gasoline used in non-RFG areas) and RFG. For example, CG and RFG must both comply with same standards for benzene and sulfur content. This ensures that both CG and RFG provide similar substantial reductions in emissions of toxic pollutants and emissions of nitrogen oxides, which react in the atmosphere to form smog. In addition, RFG continues to provide reductions in emissions of volatile organic compounds (VOCs) from onroad and nonroad sources during the summer due to its lower vapor pressure, which is a measure of how easily gasoline evaporates. VOC emissions also contribute to the formation of smog.

In light of this harmonization between CG and RFG, EPA simplified the RFG summer VOC standards by converting them to a singular 7.4 psi Reid vapor pressure standard as part of its Fuels Regulatory Streamlining rule, which was finalized on December 4, 2020 (see 85 FR 78412). More information is available on the Fuels Regulatory Streamlining <<https://epa.gov/diesel-fuel-standards/fuels-regulatory-streamlining>> page.

Phase II Reformulated Gasoline: The Next Major Step Toward Cleaner Air (pdf) (152 K, November 1999, EPA-420-F-99-042)

Learn more about RFG federal standards <<https://epa.gov/gasoline-standards/federal-gasoline-regulations>>.

The tables below list the RFG covered areas including the counties and independent cities in each area and descriptions of any partial counties in the RFG area.

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Table 1: Nine RFG covered areas required by 42 U.S.C. 7545(k)(10)(D) to implement RFG

Area Designation	State	Counties	Independent Cities
Los Angeles-Anaheim-Riverside	California	Los Angeles, Orange, Ventura, San Bernardino, ¹ Riverside ²	

Area Designation	State	Counties	Independent Cities
San Diego County	California	San Diego	
Greater Connecticut	Connecticut	Hartford, Middlesex, New Haven, New London, Tolland, Windham, Fairfield (only the City of Shelton), Litchfield (all except the towns of Bridgewater and New Milford)	

Area Designation	State	Counties	Independent Cities
New York-Northern New Jersey-Long Island-Connecticut	Connecticut	Fairfield (all except the City of Shelton), Litchfield (only the towns of Bridgewater and New Milford)	
	New Jersey	Bergen, Essex, Hudson, Hunterdon, Middlesex, Monmouth, Morris, Ocean, Passaic, Somerset, Sussex, Union	
	New York	Bronx, Kings, Nassau, New York, Orange, Putnam, Queens, Richmond, Rockland, Suffolk, Westchester	

Area Designation	State	Counties	Independent Cities
Philadelphia-Wilmington-Trenton	Delaware	Kent, New Castle	
	Maryland	Cecil	
	New Jersey	Burlington, Camden, Cumberland, Gloucester, Mercer, Salem	
	Pennsylvania	Bucks, Chester, Delaware, Montgomery, Philadelphia	
Chicago-Gary-Lake County	Illinois	Cook, Du Page, Kane, Lake, McHenry, Will, Grundy (only Aux Sable Township and Goose Lake Township), Kendall (only Oswego Township)	
	Indiana	Lake, Porter	
Baltimore	Maryland	Anne Arundel, Baltimore, Carroll, Harford, Howard	Baltimore

Area Designation	State	Counties	Independent Cities
Houston-Galveston-Brazoria	Texas	Brazoria, Chambers, Fort Bend, Galveston, Harris, Liberty, Montgomery, Waller	
Milwaukee-Racine	Wisconsin	Kenosha, Milwaukee, Ozaukee, Racine, Washington, Waukesha	

¹ That portion of San Bernardino County, CA that lies south of latitude 35 degrees, 10 minutes north and west of longitude 115 degrees, 45 minutes west.

² That portion of Riverside County, CA that lies to the west of a line described as follows: beginning at the northeast corner of Section 4, Township 2 South, Range 5 East, a point on the boundary line common to Riverside and San Bernardino Counties; then southerly along section lines to the centerline of the Colorado River Aqueduct; then southeasterly along the centerline of said Colorado River Aqueduct to the southerly line of Section 36, Township 3 South, Range 7 East; then easterly along the township line to the northeast corner of Section 6, Township 4 South, Range 9 East; then southerly along the easterly line of Section 6 to the southeast corner thereof; then easterly along section lines to the northeast corner of Section 10, Township 4 South, Range 9 East; then southerly along section lines to the southeast corner of Section 15, Township 4 South, Range 9 East; then easterly along the section lines to the northeast corner of Section 21, Township 4 South, Range 10 East; then southerly along the easterly line of Section 21 to the southeast corner thereof; then easterly along the northerly line of Section 27 to the northeast corner thereof; then southerly along section lines to the southeast corner of Section 34, Township 4 South, Range 10 East; then easterly along the township line to the northeast corner of Section 2, Township 5 South, Range 10 East; then southerly along the easterly line of Section 2, to the southeast corner thereof; then easterly along the northerly line of Section 12 to the northeast corner thereof; then southerly along the range line to the southwest corner of Section 18, Township 5 South, Range 11 East; then easterly along section lines to the northeast corner of Section 24, Township 5 South, Range 11 East; and then southerly along the range line to the southeast corner of Section 36, Township 8 South, Range 11 East, a point on the boundary line common to Riverside and San Diego Counties.

Table 2: RFG covered areas based on being reclassified as Severe ozone nonattainment areas under 42 U.S.C. 7511(b)

Area Designation	State or District	Counties	Independent Cities
Washington, DC-Maryland-Virginia	District of Columbia	Washington	
	Maryland	Calvert, Charles, Frederick, Montgomery, Prince George's	
	Virginia	Arlington, Fairfax, Loudoun, Prince William, Stafford	Alexandria, Fairfax, Falls Church, Manassas, Manassas Park
Sacramento Metro	California	Sacramento, Yolo, El Dorado (except Lake Tahoe and its drainage area), Placer, ¹ Solano, ² Sutter ³	
San Joaquin Valley	California	Fresno, Kings, Madera, Merced, San Joaquin, Stanislaus, Tulare, Kern ⁴	
Kern County (Eastern Kern)	California	Kern ⁴	

Area Designation	State or District	Counties	Independent Cities
Dallas-Fort Worth	Texas	Collin, Dallas, Denton, Ellis, Johnson, Kaufman, Parker, Rockwall, Tarrant, Wise	
Denver-Boulder-Greeley-Ft. Collins-Loveland	Colorado	Adams, Arapahoe, Boulder, Broomfield, Denver, Douglas, Jefferson, Larimer ⁵ , Weld ⁶	

Note: On October 7, 2022 (87 FR 60926) EPA reclassified the following areas as Severe for the 2008 ozone NAAQS:

New York-N. New Jersey-Long Island, NY-NJ-CT (New York);
Houston-Galveston-Brazoria, TX (Houston);
Dallas-Fort Worth, TX (Dallas);
Denver-Boulder-Greeley-Ft. Collins-Loveland, CO (Denver); and
Morongo Band of Mission Indians, CA

These reclassifications were effective on November 7, 2022. CAA section 211(k)(10)(D) requires that the sale of CG be prohibited in any ozone nonattainment area that is reclassified as Severe beginning one year after the effective date of the reclassification. The sale of RFG is already required in the New York, Houston, and Morongo Band of Mission Indians areas because they are among the original nine areas required to implement RFG as shown above and the sale of RFG continues in these areas. The Morongo Band of Mission Indians area is within the Los Angeles-Anaheim-Riverside RFG area listed in Table 1.

RFG was already required in four counties in the Dallas area because EPA approved a request from Texas to opt those counties into the RFG program. RFG was required to be sold throughout the 10-county Dallas nonattainment area for the 2008 ozone NAAQS

beginning on November 7, 2023. The gasoline sold in 10-county Dallas area is required to comply with the RFG summer RVP standard of 7.4 psi beginning on June 1, 2024, for wholesale purchaser-consumers, and for all other parties beginning on May 1, 2024.

RFG has not previously been required in the Denver area. RFG was required to be sold throughout the Denver nonattainment area for the 2008 ozone NAAQS beginning on November 7, 2023. The gasoline sold in the Denver area is required to comply with the RFG summer RVP standard of 7.4 psi beginning on June 1, 2024, for wholesale purchaser-consumers, and for all other parties beginning on May 1, 2024.

¹ All portions of Placer County except that portion of the County within the drainage area naturally tributary to Lake Tahoe including said Lake, plus that area in the vicinity of the head of the Truckee River described as follows: commencing at the point common to the aforementioned drainage area crestline and the line common to Townships 15 North and 16 North, Mount Diablo Base and Meridian (M.D.B. & M.), and following that line in a westerly direction to the northwest corner of Section 3, Township 15 North, Range 16 East, M.D.B. & M., thence south along the west line of Sections 3 and 10, Township 15 North, Range 16 East, M.D.B. & M., to the intersection with the said drainage area crestline, thence following the said drainage area boundary in a southeasterly, then northeasterly direction to and along the Lake Tahoe Dam, thence following the said drainage area crestline in a northeasterly, then northwesterly direction to the point of beginning.

² That portion of Solano County that lies north and east of a line described as follows: beginning at the intersection of the westerly boundary of Solano County and the 1/4 section line running east and west through the center of Section 34; T. 6 N., R. 2 W., M.D.B. & M.; thence east along said 1/4 section line to the east boundary of Section 36, T. 6 N., R. 2 W.; thence south 1/2 mile and east 2.0 miles, more or less, along the west and south boundary of Los Potos Rancho to the northwest corner of Section 4, T. 5 N., R. 1 W.; thence east along a line common to T. 5 N. and T. 6 N. to the northeast corner of Section 3, T. 5 N., R. 1 E.; thence south along section lines to the southeast corner of Section 10, T. 3 N., R. 1 E.; thence east along section lines to the south 1/4 corner of Section 8, T. 3 N., R. 2 E.; thence east to the boundary between Solano and Sacramento Counties.

³ That portion of Sutter County south of a line connecting the northern border of Yolo Co. to the SW tip of Yuba Co. and continuing along the southern Yuba Co. border to Placer Co.

⁴ The western portion of Kern County is included in the San Joaquin Valley area. The eastern portion of Kern County is a separate ozone nonattainment area. The boundary between the Eastern Kern County area and the western portion of Kern County, which is included in the San Joaquin Valley area generally follows the ridge line of the Sierra Nevada and Tehachapi Mountain Ranges. That portion of Kern County that lies west and

north of a line described as follows: beginning at the Kern-Los Angeles County boundary and running north and east along the northwest boundary of the Rancho La Liebre Land Grant to the point of intersection with the range line common to Range 16 West and Range 17 West, San Bernardino Base and Meridian; north along the range line to the point of intersection with the Rancho El Tejon Land Grant boundary; then southeast, northeast, and northwest along the boundary of the Rancho El Tejon Grant to the northwest corner of Section 3, Township 11 North, Range 17 West; then west 1.2 miles; then north to the Rancho El Tejon Land Grant boundary; then northwest along the Rancho El Tejon line to the southeast corner of Section 34, Township 32 South, Range 30 East, Mount Diablo Base and Meridian; then north to the northwest corner of Section 35, Township 31 South, Range 30 East; then northeast along the boundary of the Rancho El Tejon Land Grant to the southwest corner of Section 18, Township 31 South, Range 31 East; then east to the southeast corner of Section 13, Township 31 South, Range 31 East; then north along the range line common to Range 31 East and Range 32 East, Mount Diablo Base and Meridian, to the northwest corner of Section 6, Township 29 South, Range 32 East; then east to the southwest corner of Section 31, Township 28 South, Range 32 East; then north along the range line common to Range 31 East and Range 32 East to the northwest corner of Section 6, Township 28 South, Range 32 East; then west to the southeast corner of Section 36, Township 27 South, Range 31 East; then north along the range line common to Range 31 East and Range 32 East to the Kern-Tulare County boundary.

⁵ That portion of Larimer County that lies south of a line described as follows: Beginning at a point on Larimer County's eastern boundary and Weld County's western boundary intersected by 40 degrees, 42 minutes, and 47.1 seconds north latitude, proceed west to a point defined by the intersection of 40 degrees, 42 minutes, 47.1 seconds north latitude and 105 degrees, 29 minutes, and 40.0 seconds west longitude, thence proceed south on 105 degrees, 29 minutes, 40.0 seconds west longitude to the intersection with 40 degrees, 33 minutes and 17.4 seconds north latitude, thence proceed west on 40 degrees, 33 minutes, 17.4 seconds north latitude until this line intersects Larimer County's western boundary and Grand County's eastern boundary.

⁶ That portion of Weld County that lies south of a line described as follows: Beginning at a point on Weld County's eastern boundary and Logan County's western boundary intersected by 40 degrees, 42 minutes, 47.1 seconds north latitude, proceed west on 40 degrees, 42 minutes, 47.1 seconds north latitude until this line intersects Weld County's western boundary and Larimer County's eastern boundary.

Table 3: RFG covered areas based on being classified ozone nonattainment areas at the time that the state requested to opt into RFG under 42 U.S.C. 7545(k)(6)(A)(i)

Area Designation at the Time of Opt-in	State	Counties	Independent Cities
Sussex County	Delaware	Sussex	
St. Louis, Missouri-Illinois	Illinois	Jersey, Madison, Monroe, St. Clair	
	Missouri	Franklin, Jefferson, St. Charles, St. Louis	St. Louis
Kentucky portion of Louisville	Kentucky	Jefferson, Bullitt, ¹ Oldham ²	
Kent and Queen Anne's Counties	Maryland	Kent, Queen Anne's	
Statewide	Massachusetts	All	
Strafford, Merrimack, Hillsborough, Rockingham Counties	New Hampshire	Hillsborough, Merrimack, Rockingham, Strafford	
Atlantic City	New Jersey	Atlantic, Cape May	

Area Designation at the Time of Opt-in	State	Counties	Independent Cities
New Jersey portion of Allentown- Bethlehem- Easton	New Jersey	Warren	
Dutchess County	New York	Dutchess	
Essex County	New York	Essex (the portion of Whiteface Mountain above 4,500 feet in elevation)	
Statewide	Rhode Island	All	
Norfolk-Virginia Beach, Newport News (Hampton Roads)	Virginia	James City, York	Chesapeake, Hampton, Newport News, Norfolk, Poquoson, Portsmouth, Suffolk, Virginia Beach, Williamsburg

Area Designation at the Time of Opt-in	State	Counties	Independent Cities
Richmond	Virginia	Charles City, Chesterfield, Hanover, Henrico	Colonial Heights, Hopewell, Richmond

Note: On October 7, 2022 (87 FR 60926), EPA reclassified the Dallas-Fort Worth, TX (Dallas) area as Severe for the 2008 ozone NAAQS. The reclassification was effective on November 7, 2022. CAA section 211(k)(10)(D) requires that the sale of CG be prohibited in any ozone nonattainment area that is reclassified as Severe beginning one year after the effective date of the reclassification (i.e., November 7, 2023). As such, Dallas is now listed in Table 2.

¹ In Bullitt County, KY, beginning at the intersection of Ky 1020 and the Jefferson-Bullitt County Line proceeding to the east along the county line to the intersection of county road 567 and the Jefferson-Bullitt County Line; proceeding south on county road 567 to the junction with Ky 1116 (also known as Zoneton Road); proceeding to the south on KY 1116 to the junction with Hebron Lane; proceeding to the south on Hebron Lane to Cedar Creek; proceeding south on Cedar Creek to the confluence of Floyds Fork turning southeast along a creek that meets Ky 44 at Stallings Cemetery; proceeding west along Ky 44 to the eastern most point in the Shepherdsville city limits; proceeding south along the Shepherdsville city limits to the Salt River and west to a point across the river from Mooney Lane; proceeding south along Mooney Lane to the junction of Ky 480; proceeding west on Ky 480 to the junction with Ky 2237; proceeding south on Ky 2237 to the junction with Ky 61 and proceeding north on Ky 61 to the junction with Ky 1494; proceeding south on Ky 1494 to the junction with the perimeter of the Fort Knox Military Reservation; proceeding north along the military reservation perimeter to Castleman Branch Road; proceeding north on Castleman Branch Road to Ky 44; proceeding a very short distance west on Ky 44 to a junction with Ky 1020 and proceeding north on Ky 1020 to the beginning.

² In Oldham County, KY, beginning at the intersection of the Oldham-Jefferson County Line with the southbound lane of Interstate 71; proceeding to the northeast along the southbound lane of Interstate 71 to the intersection of Ky 329 and the southbound lane of Interstate 71; proceeding to the northwest on Ky 329 to

the intersection of Zaring Road on Ky 329; proceeding to the east-northeast on Zaring Road to the junction of Cedar Point Road and Zaring Road; proceeding to the north-northeast on Cedar Point Road to the junction of Ky 393 and Cedar Point Road; proceeding to the south-southeast on Ky 393 to the junction of county road 746 (the road on the north side of Reformatory Lake and the Reformatory); proceeding to the east-northeast on county road 746 to the junction with Dawkins Lane (also known as Saddlers Mill Road) and county road 746; Proceeding to follow an electric power line east-northeast across from the junction of county road 746 and Dawkins Lane to the east-northeast across Ky 53 on to the La Grange Water Filtration Plant; proceeding on to the east-southeast along the power line then south across Fort Pickens Road to a power substation on Ky 146; proceeding along the power line south across Ky 146 and the Seaboard System Railroad track to adjoin the incorporated city limits of La Grange; then proceeding east then south along the La Grange city limits to a point abutting the north side of Ky 712; proceeding east-southeast on Ky 712 to the junction of Massie School Road and Ky 712; proceeding to the south-southwest and then north-northwest on Massie School Road to the junction of Ky 53 and Massie School Road; proceeding on Ky 53 to the north-northwest to the junction of Moody Lane and Ky 53; proceeding on Moody Lane to the south-southwest until meeting the city limits of La Grange; then briefly proceeding north following the La Grange city limits to the intersection of the northbound lane of Interstate 71 and the La Grange city limits; proceeding southwest on the northbound lane of Interstate 71 until intersecting with the North Fork of Currys Fork; proceeding south-southwest beyond the confluence of Currys Fork to the south-southwest beyond the confluence of Floyds Fork continuing on to the Oldham-Jefferson County Line and proceeding northwest along the Oldham-Jefferson County Line to the beginning.

Table 4: RFG covered areas located in the ozone transport region established by 42 U.S.C. 7511c(a) that a state requested to opt into RFG under 42 U.S.C. 7545(k)(6)(B)(i)(I)

State	Counties
	There are currently no RFG covered areas pursuant to 42U.S.C 7545(k)(6)(B)(i)(I) ¹

¹ On July 12, 2021, EPA approved Maine’s request to opt the Southern Maine Area comprised of Androscoggin, Cumberland, Kennebec, Knox, Lincoln, Sagadahoc, and York counties out of RFG. Pursuant to EPA’s RFG opt-out regulations in 40 CFR 1090.290(d), the effective date of the opt-out was September 30, 2021. As of that date there is no longer a requirement to sell RFG in the Southern Maine Area. This effective date applies to retailers, wholesale purchaser-consumers, refiners, importers, and

distributors. Additional information is available on the “Removal of the Federal Reformulated Gasoline Program from the Southern Maine Area <<https://epa.gov/gasoline-standards/removal-federal-reformulated-gasoline-program-southern-maine-area>>” page.

A note about federal RFG requirements in California:

All counties implement a version of the California Reformulated Gasoline Program, not just those listed here as CAA-required areas. Standards differ from EPA’s RFG requirements, and compliance periods vary by air basin. Please refer to the California Air Resources Board website for additional details: Federal Reformulated Gasoline [🔗](https://ww2.arb.ca.gov/resources/documents/federal-reformulated-gasoline-rfg) <<https://ww2.arb.ca.gov/resources/documents/federal-reformulated-gasoline-rfg>>.

Table 5: Areas where EPA has approved a state’s request to “opt-out” of RFG
Maine
<p>The Southern Maine Area comprised of Androscoggin, Cumberland, Kennebec, Knox, Lincoln, Sagadahoc, and York counties.</p> <p>Maine voluntarily opted the Southern Maine Area into the RFG program in 2015.</p> <p>In August 2020, the Commissioner of the Maine Department of Environmental Protection submitted an RFG opt-out petition.</p> <p>EPA approved the opt-out petition which became effective on September 30, 2021. Maine also opted out of the RFG program before the program went into effect in 1995. More information is provided below.</p>
Kentucky

Kentucky portion of the Cincinnati-Hamilton, Ohio-Kentucky-Indiana maintenance area for the 2008 ozone NAAQS (Northern Kentucky Area)

Boone County

Campbell County

Kenton County

Kentucky voluntarily opted into the RFG program (for the Northern Kentucky Area) in 1995.

In April 2017, the Secretary for Kentucky's Energy and Environment Cabinet submitted an RFG opt-out petition.

Arizona

Phoenix, AZ nonattainment area

Maricopa County (partial)

- Phoenix opted into the RFG program in 1997; retail stations were required to supply RFG by August 4, 1997.
- In September 1997, the Governor of Arizona submitted an RFG opt-out petition for purposes of adopting a more stringent state RFG program in Phoenix.
- EPA approved the opt-out petition which became effective on June 10, 1998.

Maine

Androscoggin County

Cumberland County

Hancock County

Kennebec County

Knox County

Lincoln County

Sagadahoc County

Waldo County

York County

These "Opt-Out" areas withdrew from the RFG program before it went into effect on January 1, 1995. However, on February 6, 2015, EPA published a final rule approving Maine's request that seven of these counties (Androscoggin, Cumberland, Kennebec, Knox, Lincoln, Sagadahoc, and York counties) opt into the RFG program beginning on May 1, 2015 (see 80 FR 6658).

New York
<p>Albany County</p> <p>Erie County</p> <p>Greene County</p> <p>Jefferson County</p> <p>Montgomery County</p> <p>Niagara County</p> <p>Rensselaer County</p> <p>Saratoga County</p> <p>Schenectady County</p> <p>A proposed rule to remove the above "opt-out" areas from the RFG program was published June 14, 1995. On January 1, 1995, a temporary exemption of the RFG requirements in these areas went into effect. On July 1, 1995, this stay was extended until EPA took final action.</p> <p>The final rule, published on July 8, 1996 [61 FR 35673], formally removed these areas from the list of RFG covered areas and provided states with general opt-out procedures.</p> <p>The July 8 final rule was superseded by a final rule published on October 20, 1997 [62 FR 54552], revising the opt-out procedures.</p>
Pennsylvania

Adams County	Lackawanna County
Allegheny County	Lancaster County
Armstrong County	Lebanon County
Beaver County	Lehigh County
Berks County	Luzerne County
Blair County	Mercer, PA
Butler County	Monroe County
Cambria County	Northampton County
Carbon County	Perry County
Columbia County	Somerset County
Cumberland County	Washington County
Dauphin County	Westmoreland County
Erie County	Wyoming County
Fayette County	York County

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