Ozone Advance Path Forward

Prepared by the City of Albuquerque Environmental Health Department

Air Quality Program

Submitted to the United States Environmental Protection Agency, Region VI

June 2025

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Overview

Ozone Basics

Ozone occurs in both the upper atmosphere and at the ground level on Earth. Tropospheric ozone at ground level is a harmful air pollutant. It is formed photochemically by a reaction between oxides of nitrogen (NOx) and volatile organic compounds (VOCs). Those two pollutants are considered ozone precursors, or the pollutants that make up the photochemical reaction resulting in ground level ozone formation. NOx is largely a biproduct of fossil fuel combustion, and it is no surprise that much of the NOx in the ambient air is due to transport. VOCs come from combustion and industrial processes, such as solvent use. VOCs are also released from many consumer products, and can be biogenic in nature as well. Both NOx and VOCs can come from long range transport.

Common anthropogenic sources are motor vehicles and stationary sources, such as power plants, refineries, manufacturing operations, and chemical plants. The health impacts of ozone include respiratory irritation and inflammation with long term impacts including asthma. EPA regulates ozone (O_3) as a criteria pollutant through the National Ambient Air Quality Standards (NAAQS).

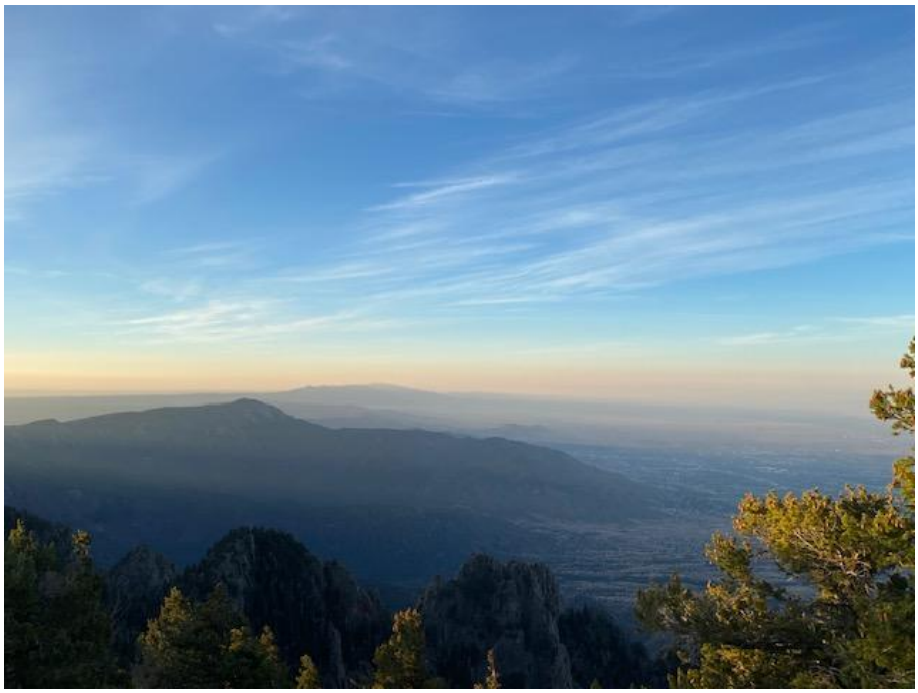
Possible ozone induced damage to tree. Photo Credit: Allen Smith

Ozone Advance Program

In an effort to stay in attainment for the Ozone primary standard and the secondary NAAQS, air regulatory jurisdictions can join EPA's Ozone Advance Program. The voluntary program allows participating jurisdictions to proactively take steps to reduce ozone levels, with the goal of staying in attainment of the NAAQS and avoiding a non-attainment designation. The program provides technical assistance, opportunities for collaboration, and general support to local, state, and tribal governments that want to take proactive actions to reduce ozone. Participating jurisdictions submit an annual update or path forward, highlight current efforts to reduce ozone precursors and ozone formation, and show that steps can be considered or are actively being considered moving forward. This document encompasses the current path forward for Albuquerque-Bernalillo County.

Ozone Design Values in Albuquerque-Bernalillo County

The current primary ozone NAAQS standard is under review. However, as it stands in April of 2025, the standard is 0.70 ppb. Albuquerque-Bernalillo County's design value trends more recently have been hovering right around that point, or right above it, as shown in Tables 1 and II, below. As of now, EPA has not designated Albuquerque-Bernalillo County as a non-attainment area for ozone. Though the risk is certainly there.



Inversion induced brown layer, as seen from the Sandia Crest.
Photo Credit: Allen Smith

If EPA lowers the standard again, it will trigger a new round of designations for the entire country. The primary ozone NAAQS, which is the one we are most concerned with, is intended to provide public health protection. EPA lowers it when new data and studies indicate that ozone is harmful to human health at concentrations that were previously considered safe.

Within two years of setting a revised NAAQS, Title I of the federal Clean Air Act requires EPA to designate areas as meeting (attainment) or not meeting (nonattainment) the standard. A lower standard will increase Albuquerque-Bernalillo County's vulnerability to being designated nonattainment, which will have negative economic impacts and could result in the loss of transportation funding, making it all the more important that we take steps to reduce our ozone levels now. Hence the importance of participation in the Ozone Advance program and taking proactive steps to keep design values under the standard going forward.

Modeling analysis from ozone episodes in 2014 showed that most of the ozone formation locally was from transport, both within Albuquerque-Bernalillo County as well as highway traffic. Much of the ozone contribution within the county also probably came from outside of the county through long-range transport, such as from wildfires or emissions from oil and gas operations. However, the focus of this program is taking proactive measures to reduce ozone formation from sources within Bernalillo County. While transportation emissions are a large focus, there are many other strategies outlined below that also help reduce the amount of ozone precursors in the county.

Table 1

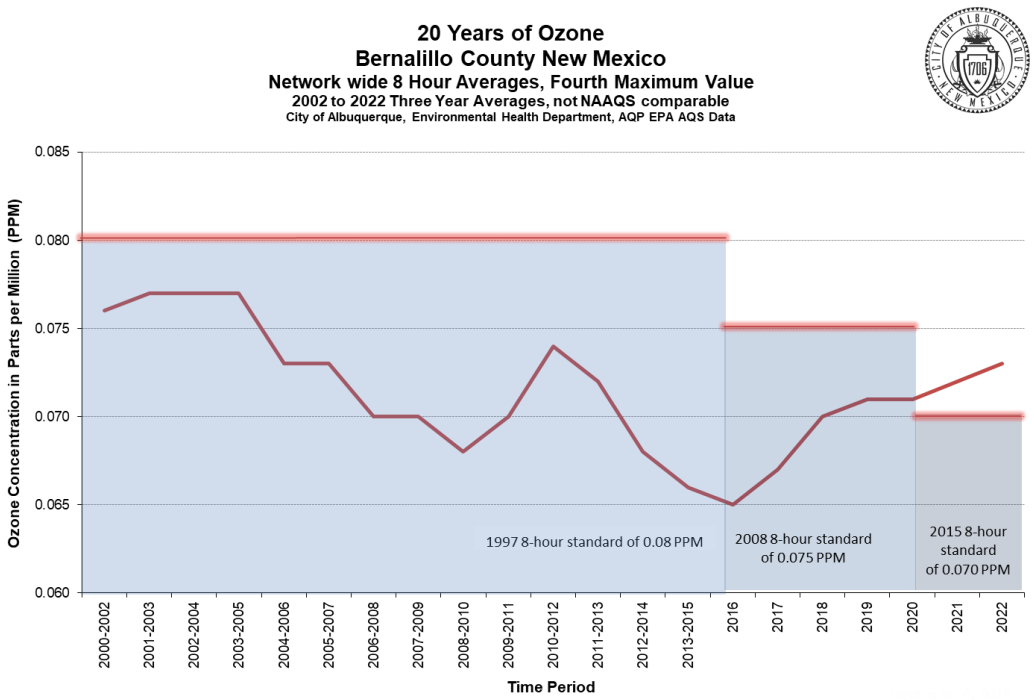
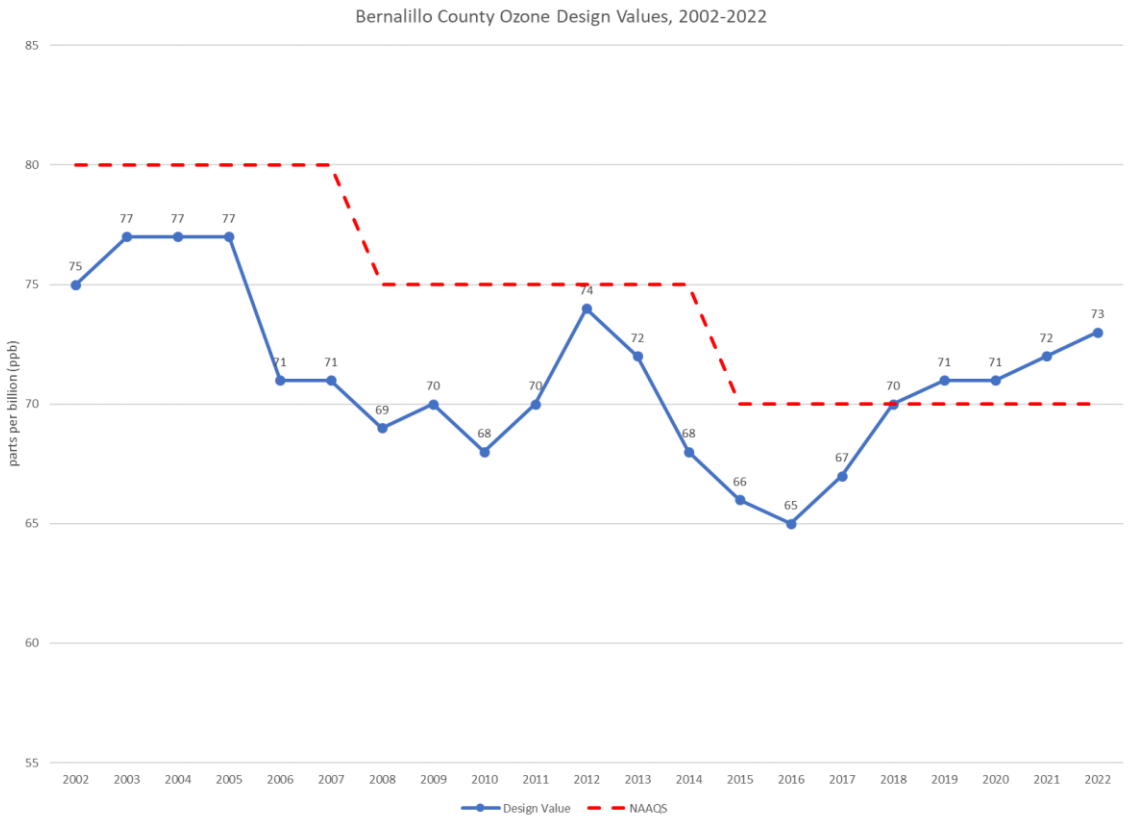

20 Years of Ozone
Bernalillo County New Mexico
Network wide 8 Hour Averages, Fourth Maximum Value
2002 to 2022 Three Year Averages, not NAAQS comparable
City of Albuquerque, Environmental Health Department, AQP EPA AQS Data
Ozone Concentration in Parts per Million (PPM)
0.085
0.080
0.075
0.070
0.065
0.060
1997 8-hour standard of 0.08 PPM
2008 8-hour standard of 0.075 PPM
2015 8-hour standard of 0.070 PPM
2000-2002
2001-2003
2002-2004
2003-2005
2004-2006
2005-2007
2006-2008
2007-2009
2008-2010
2009-2011
2010-2012
2011-2013
2012-2014
2013-2015
2016
2017
2018
2019
2020
2021
2022
Time Period

Table II


Bernalillo County Ozone Design Values, 2002-2022
parts per billion (ppb)
85
80
75
70
65
60
55
75
77
77
77
71
71
69
70
68
70
74
72
68
66
65
67
70
71
71
72
73
2002
2003
2004
2005
2006
2007
2008
2009
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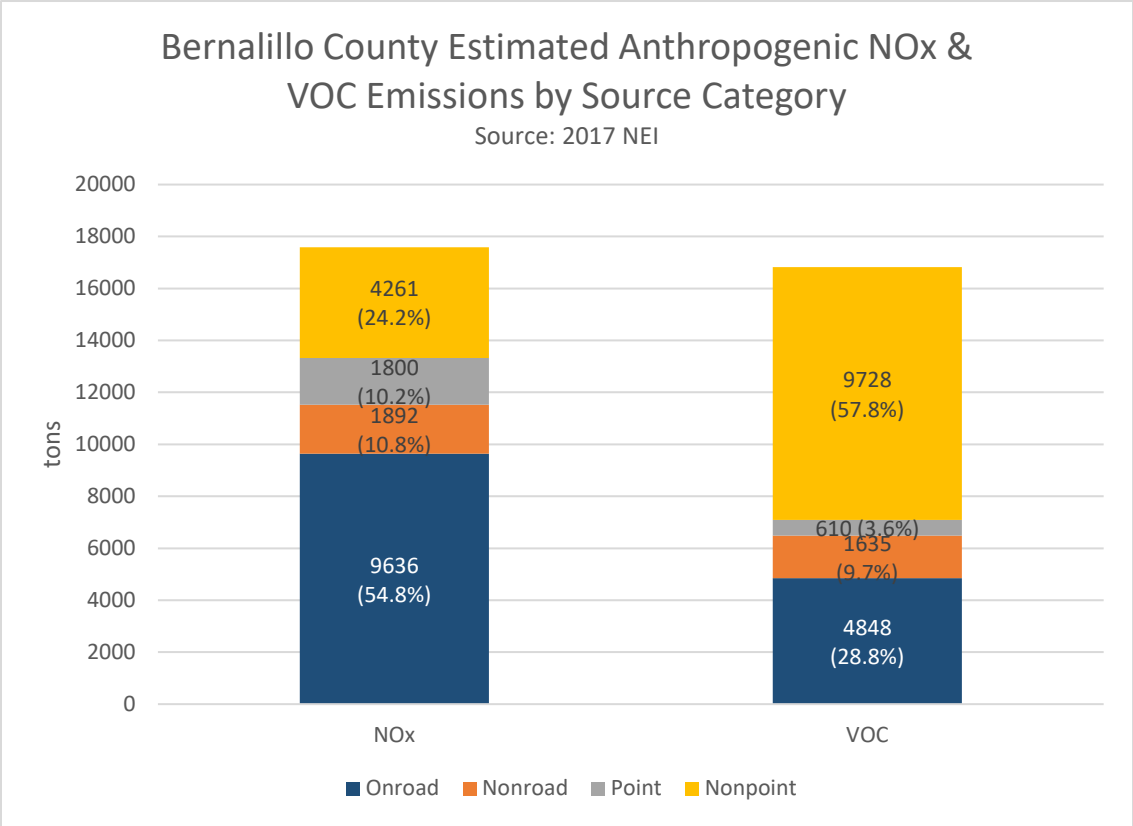
2014
2015
2016
2017
2018
2019
2020
2021
2022
Design Value
NAAQS

Table III



Analysis of ozone episodes in Albuquerque-Bernalillo County by Sonoma Tech also shows that increased strain on the electric grid could result in electric generating units, such as the Reeves Generating Station in North Albuquerque, emitting ozone precursors at their maximum permitted levels. While that scenario won't result in a violation of the NAAQS per se from that facility, it could make ozone episodes throughout the county more severe and increase the cumulative risk, especially during the summer which is the typical ozone season. Thus, strategies to reduce energy consumption and increase the amount of renewable energy will also be important, in addition to demand planning to accommodate an increased electric use as a result of electrification efforts.

Programs Currently in Place in Albuquerque-Bernalillo County

Bike Lanes and Complete Streets

Albuquerque-Bernalillo County has an extensive network of bike lanes as part of ongoing efforts to increase the amount of active transportation options and utilization of those options.

The long-range Metropolitan Transportation Plan[1], recently approved by the Transportation Coordinating Committee as part of the Mid-Region Council of Governments, focuses heavily on this. Some projects that have been approved and begun include the Albuquerque Rail Trail, the Alameda Drain Trail, the Louisiana Blvd. Vision Zero Project, the North Diversion Channel Trail Rehabilitation, the Paseo del Norte widening that includes bicycle and pedestrian improvements, an AMPA-wide Youth Bicycle/Pedestrian Safety Education Program, Coors Blvd. SW Pedestrian Safety improvements, the 4th Street Revitalization Project, and the 4th Street Road Diet Project.

Additionally, in August of 2022, the Metropolitan Transportation Board passed a resolution directing the MRMPO to prioritize safety in planning efforts going forward. Statewide, legislation was passed and signed by the governor to allow cyclists to yield instead of come to a complete stop at stop signs[2], improving the riding experience as well as safety. The City of Albuquerque also offers a bike share program. Numerous scooters have been made available as well to offer alternative modes of transportation to automobiles.

Some policies and ordinances related to active transportation include a Complete Streets Ordinance for both the City of Albuquerque and Bernalillo County. The Complete Streets Ordinance[3] requires all streets to be designed and built to serve all users, including pedestrians, cyclists, transit riders, and motorists, and to make streets safe for all modes of transportation. These strategies can include wider sidewalks, street trees, on-street parking, bicycle lanes, traffic calming, and protected mid-block crossings.

[1] https://www.mrcog-nm.gov/264/Metropolitan-Transportation-Plan
[2] https://www.nmlegis.gov/Sessions/25%20Regular/bills/senate/SB0073.HTML
[3] https://www.cabq.gov/council/documents/o-64enacted-6.pdf

The Bosque Bike Path, a safe and beautiful way to bike in Albuquerque-Bernalillo County. Photo Credit: Allen Smith

Vision Zero

The Vision Zero Program is part of a comprehensive approach the City of Albuquerque is taking to improve safety, and increase the amount of people utilizing active transportation options. One of the biggest barriers to getting more people to walk and bike in Albuquerque is not feeling safe to do so. Traffic incident data for the city and county back that up. Thus, it is key to engage in a variety of strategies to improve safety, such as dedicated pedestrian crossings and separated bike lanes.

The Vision Zero Action Plan was updated in 2023[4]. The city also hosts events such as Bike to Anywhere Day, and Bike Through Burque Week. These events celebrate cycling in Albuquerque and promote utilization of the bike infrastructure available throughout the city. Another event is ABQ CiQlovia, held annually, where city streets are closed to cars and open to people on foot and bike. This encourages people to appreciate the benefits of active transportation and reducing reliance on vehicles. Other events include a monthly critical mass bike ride from the University of New Mexico, and various events hosted by organizations such as Bike ABQ that encourage more of the public to bike regularly.

E-Bikes

The City of Albuquerque city council passed O-24-14 in 2024[5], which allows for the use of e-bikes on paved and unpaved trails throughout the city, and is regulated by City Parks & Recreation. This will help reduce emissions from the transportation sector.

Renewable Energy

The City of Albuquerque has a goal of utilizing 100% solar energy for government operations by 2025[6]. Currently, the city has achieved over 90% progress towards that goal.

In 2021, a statewide Community Solar Act[7] was signed into law that authorized 200 MW of community solar projects, enough to power 38,000 homes, and expand access to solar energy for many. Additionally, the Community Solar Act allocates 30% of the power generated by community solar projects for low-income households and organizations that serve low-income populations. The main electric utility in New

[4] https://www.cabq.gov/vision-zero/documents/albuquerque-vision-zero-year-in-review-2023-_final.pdf
[5] https://www.cabq.gov/parksandrecreation/news/albuquerques-e-bike-law-takes-effect
[6] https://www.cabq.gov/sustainability/energy/solar-resources#our-solar-commitment
[7] https://www.prc.nm.gov/wp-content/uploads/2021/09/SB00843.pdf

Mexico, Public Service Company of New Mexico (PNM), offers programs to allow more customers to connect their energy to renewables, and offers rebates for solar installation and battery storage.

The city also created a $95 million industrial revenue bond to help create a New Mexico stand alone battery energy storage system[8], which will further help expand use and access to renewable energy on the grid.

The City of Albuquerque Air Quality Program recently permitted a 160-acre site for Maxeon Solar Technologies, a 3 GW solar cell and panel manufacturing facility. This will help many new solar installations source key components locally, and will increase jobs in the renewable energy sector. It is expected that this facility will help serve the distributed generation rooftop solar market, which is an efficient way to connect buildings to solar energy without having to rely on transmission over long distances.

In addition to Albuquerque, the State of New Mexico has a number of incentives for the installation of solar panels. The state offers a 10% tax credit that can be applied to solar installations for homeowners, businesses, and farms[9]. New Mexico also offers net metering and a sustainable building tax credit for solar installation pursuant to certification with the US Green Building Council.

Overall, the more renewable energy capacity throughout the county, the less reliance on the burning of fossil fuels, and the less ozone precursors that have to be emitted. Thus, any and all momentum around renewable energy is generally helpful.

Energy Efficiency & Buildings

The City of Albuquerque aims to reduce energy consumption going forward to achieve emission and renewable energy goals. With much of the power in Albuquerque-Bernalillo County still coming from natural gas, any reduction in energy consumption will help reduce emissions of ozone precursors. A modeling study by Sonoma Tech in 2017 indicated that if the Reeves and Rio Bravo Generating Stations were operating at their permitted levels as a result of high demand, it would make the ozone events in the county more severe. Thus, energy efficiency is key to avoiding that outcome.

At least 3% of the City of Albuquerque's capital improvement funding has been allocated to energy efficiency upgrades every year. This includes installation of more renewable energy connections for city buildings. In 2024, the 2021 International Energy Conservation Code was adopted by reference into the New Mexico Administrative Code and applies statewide[10]. This helps improve energy efficiency standards for new

[8] https://www.cabq.gov/economicdevelopment/news/albuquerque2019s-energy-grid-gets-major-capital-investment
[9] https://clean.energy.nm.gov/landing/solar/
[10] https://www.cabq.gov/planning/building-safety-division/current-building-codes

residential construction, and also requires infrastructure to accommodate electric vehicles.

Overall, the more energy efficient buildings are in the county, the less emissions of ozone precursors will ultimately be emitted. Thus, energy efficiency is a key strategy in staying in attainment for ozone.

Sustainability Resolution

In June of 2024, the City of Albuquerque city council passed a Sustainability Resolution[11] (R-2024-030) and it was signed by Mayor Tim Keller. The resolution touches numerous sectors, including sustainable economic development, energy, transportation, the built environment, sustainable materials management, nature-based solutions, and sustainable procurement practices.

The procurement piece requires all incentive packages to consider community and environmental impacts including energy efficiency and environmental social governance practices. The 2021 City of Albuquerque Climate Action Plan also states that the city shall give preference to companies in the energy efficiency, renewable and alternative energy product manufacturing industry.

The resolution also encourages job training and opportunities in careers such as renewable energy, energy efficiency, electrification of buildings, modernization of the energy grid, EV charging station installation and maintenance, and transportation efficiency.

Some of the energy efficiency measures outlined in the resolution include requiring the city to implement efficient HVAC controls, optimize lighting systems, integrate battery storage systems, and upgrade new and existing municipal buildings. Equity was a priority by mandating accessibility for low-income communities through the Community Energy Efficiency Project and Community Energy Efficiency Development Block Grant Program. Free audits and upgrades, including weatherization, may be part of those programs.

The resolution also outlines the importance of tree planting efforts to reduce the urban heat island effect and make the city more resilient to the impacts of climate change, with a goal of planting 100,000 trees.

The resolution also says the city is to prioritize renewable energy conversation in municipal buildings, support community solar programs and micro-grid establishment, and transition to low or zero emission vehicles going forward while developing a plan and cost benefit analysis. Prioritization of higher density development that is transit

[11] https://www.cabq.gov/environmentalhealth/documents/fs-r-34enacted-2.pdf

oriented is also mentioned. The goal being to reduce vehicle miles traveled by providing access to key amenities within a walkable or bikeable distance of residences and limit the amount of development that is sprawled outward. More walkable and dense cities have numerous other co-benefits as well, such as easier access to services, less time spent commuting, and improved health and quality of life.

Transportation is a major component of the resolution, which calls for transitioning city vehicles to low or zero emission where possible, and encourages public awareness campaigns and educational materials to encourage the purchase of low or zero emission vehicles. The city is also to encourage ridesharing and carpooling, as well as increased use and access to public transportation. Other methods to reduce emission from transportation from the resolution include intelligent transportation systems to optimize traffic flow and reduce idling, and the expansion of electric vehicle charging networks in more places throughout the city.

All of the goals in the Sustainability Resolution help reduce emissions and keep levels of ozone precursors down.

Climate Action Plan

The City of Albuquerque is working on improving its current Comprehensive Climate Action Plan[12]. The plan covers sectors such as the built environment, energy efficiency, renewable energy, urban heat mitigation, waste, sustainable food systems, transportation, and land use. Currently, efforts are underway through funding from the Climate Pollution Reduction Grant (over $1 million awarded to the city) to expand outreach to the greater Albuquerque Metropolitan Statistical Area and update the plan, which is due to EPA in December of 2025. Efforts are underway to engage as many stakeholders as possible, including frontline communities that have traditionally been left out of the decision-making process. Six climate strategy workshops covering sectors such as transportation, energy & buildings, and land use are currently underway. The workshops also cover general best practices and cross-cutting/implementation strategies.

The 2017 greenhouse gas (GHG) inventory for the City of Albuquerque (has since been updated) shows that commercial, institutional, and residential buildings emit the highest amount of GHGs, followed by the transportation sector. This equates generally to ozone precursors, with NOx and VOCs being emitted significantly by both of these sectors. Thus, strategies to reduce emissions of GHGs also generally help to reduce emissions of ozone precursors.

[12] https://www.cabq.gov/sustainability/climate-action-plan

Many goals outlined in the Sustainability Resolution are mentioned in the Climate Action Plan as well, especially with regards to energy efficiency, renewable energy, and transportation.

Transportation

The City of Albuquerque has improved its public transportation infrastructure significantly over the years. The Albuquerque Rapid Transit (ART) system, completed in 2019, serves users along the Central corridor. ABQ Ride busses have routes throughout the city and continue to expand. Both ABQ Ride and ART are zero fare services, which help improve accessibility. ABQ Ride currently has five fully electric busses and plans to add 20 more in the next two years as a result of a $18.2 million grant from the Low or No Emission Vehicle Program. Most city busses that aren't electric run on compressed natural gas (CNG), which is lower emitting than diesel or diesel hybrids.

One of the barriers to electric busses is the cost (roughly $1.2 million per bus). CNG busses are also expensive (roughly $650,000 per bus). Thus, the more funding that can be obtained to make the transition to electric bus fleet, the lower the emissions.

Additionally, the city's vehicle fleet is moving more toward electric and low emission (hybrid) vehicles, with a policy of moving to those vehicles once current vehicles have reached the end of their life. The city also offers an electric vehicle rideshare program.

On a statewide level, the City of Albuquerque Air Quality Program was involved in a 2023 joint rulemaking with the Environment Improvement Board and Air Quality Control Board to adopt California vehicle emission standards, known as Advanced Clean Vehicles[13]. The rules phase in an increasing amount of light and medium duty zero emission vehicles that manufacturers must deliver to dealerships through 2032, and also calls for an increased amount of zero emission heavy duty vehicles. These rules apply state-wide, including Albuquerque-Bernalillo County. Throughout New Mexico, the Advanced Clean Vehicle rules are expected to reduce greenhouse gas emissions by 130,000 tons and ozone precursors (NOx and VOCs) by at least 3,500 tons prior to 2040.

Recently, the Mid Region Council of Governments MRMPO has developed a long-range Metropolitan Transportation Plan (MTP) through 2045. The MTP includes a number of key strategies such as electrification of the city and county fleet, traffic efficiency, bike lanes, and infrastructure. The efforts outlined in that plan will also help to keep emissions down and maintain the county in attainment status.

Stationary Sources

[13] https://www.cabq.gov/airquality/regulation-development/clean-vehicles-regulation-documents

Albuquerque-Bernalillo County has few large sources with notable emissions compared to many other parts of the country. The county has a total of seven Title V sources. One of these sources, GCC Rio Grande in Tijeras, NM, on the eastern edge of the county, is a large emitter of NOx. GCC is a large cement manufacturing plant with old equipment and challenges regulating temperature in the kilns that are fired to form clinker, a marketable product that is foundational for cement. The NOx emissions from GCC can contribute to the formation of ground-level ozone in Bernalillo County.

As part of the Regional Haze SIP for the second planning period, GCC Rio Grande was screened in as a source required to conduct a four-factor analysis to determine if any controls were cost effective and thus should be required. That analysis led to the air program requiring dry sorbent injection for SO_2 control and selective non-catalytic reduction (SNCR) for NOx control, with appropriate emission limits.

While it will take some time to get those controls up and running, SNCR is expected to reduce NOx emission by 326 tons per year once operational. GCC Rio Grande will also be installing a continuous emissions monitoring system for SO_2 and NOx to get a better sense of what the actual emissions are, rather than relying on stack test data. Even though regional haze is focused on Class 1 Areas in New Mexico, any emission reductions from the facility will only help the emissions picture within Albuquerque-Bernalillo County.

Another large major source of emissions is the Reeves Generating Station, located in the northern part of Albuquerque. NOx emissions have steadily increased over the years. The 2023 emissions inventory of actual emissions shows 514 tons of NOx emitted that year, up from just 189 tons of NOx in emissions inventory year 2021. Any increased strain on the grid will cause Reeves to emit more NOx and worsen ozone events within the county.

Potential Projects to Consider to Reduce Ozone

Stationary Sources

It may be worth considering measures that might be appropriate for the PNM Reeves Generating Station to reduce its NOx emissions, including some type of cost benefit analysis on potential controls that are well-established technically, such as selective catalytic reduction (which can reduce NOx emissions by up to 90%), flue gas recirculation, or updated equipment. Easier to prioritize first is smart demand management planning to avoid higher emission scenarios. PNM is already doing this through Time-of-Day pricing, which the utility estimates can save customers $431 annually.

At GCC, controls as part of the regional haze SIP are helpful, though it is worth noting that Sandia National Labs is doing a lot of research on concentrated solar for high heat manufacturing. If feasible, it could reduce or eliminate the need for coal and gas fired kilns. They have begun some pilot studies and GCC Rio Grande potentially could be a helpful partner in those efforts; successful implementation in a way that doesn't compromise plant operations would be compatible with GCC's Sustainability Plan. GCC Rio Grande has also increased their production of blended cement, which reduces the amount of clinker used and uses alternative materials such as limestone. GCC Rio Grande should continue efforts to reduce emissions and embodied carbon of their products without compromising on quality and client needs.

Other facilities have some notable emissions, but GCC and Reeves combined had the most emissions of ozone precursors. Overall, while regulation of stationary sources currently takes place through new source review permitting, there is some room for improvement to get those emissions down a bit more, if those facilities can agree to take some voluntary actions. However, given the relatively small role stationary sources play in the county in terms of the overall emissions picture, it is likely most efficient from a time and energy standpoint to focus more on mobile sources within Bernalillo County.

Solvent Use

Emissions inventory data from the last decade show that commercial and consumer solvent use is a relatively small, but increasing, contributor to VOCs. Solvents are important for many processes and it is not technically feasible to eliminate their use. However, reductions and control of the release of solvents can be helpful. Public awareness of consumer products that release less VOCs, and an increased use of them over the higher VOC products, both in residential and commercial settings, can help reduce the cumulative impact of all VOC sources in the country. Industrial processes that use solvents regularly, such as degreasing operations for cleaning, paint and coating manufacturing, extraction and synthesis of chemicals; can utilize methods to recapture many of the solvents for recycled use, such as through distillation or solvent recovery systems.

Lawn and Garden Equipment

Emissions inventory data from the last decade shows that non-road equipment, both gas and diesel powered, contribute a small but notable amount of ozone precursors to the ambient air in addition to other criteria pollutants. The two-stroke engines used in much of the lawn equipment available are inefficient and higher emitting. Programs that encourage the use of electric or non-motorized lawn and garden equipment or policies that limit the use of gas and diesel-powered equipment, especially during ozone season, can lower the cumulative burden of ozone precursors in the county. A buyback or rebate

program to encourage transitioning from gas-powered lawn and garden equipment to electric would be beneficial.

Left unregulated, gas powered lawn and garden equipment can produce up to 36 tons of VOCs per day and 7.5 tons of NOx per day[14]. Thus, it is important to shift to electric or non-motorized equipment where feasible. Many jurisdictions have banned the use of gas-powered lawn equipment.

Colorado has adopted Regulation 29[15], which prohibits state agencies from using any hand-held lawn and garden equipment with an internal combustion engine smaller than 19 kw (25 horsepower) during ozone season (June 1-August 31). It applies in counties that are in non-attainment for ozone. A similar type of regulation in Bernalillo County could be effective as a preventative measure to help stay in attainment, and the limited scope would make it more politically feasible.

Diesel and Gas-Powered Generators

Diesel and gas-powered generators could contribute a greater percentage of NOx and VOC emissions in Bernalillo County in the future, especially if more cloud computing data centers start appearing in the county or surrounding areas. Facilities that rely on back up generators for reliable electricity should explore the feasibility of using solar generators or inverter technology, consider installing controls such as SCR on the generators that rely on combustion engines, or start using more fuel-efficient models.

Natural Gas Boilers

Emissions inventory data from the last decade show an increasing percentage of NOx emissions from natural gas fired boilers. Boilers are important and are used in a variety of commercial and residential settings. However, their emissions add up and contribute to the total amount of ozone precursors in the airshed. Strategies such as low excess air firing, burner modifications, flue gas recirculation, SCR, and water/steam injection can help reduce emissions of ozone precursors from boilers. For residential boilers, alternatives such as heat pumps can address many of the heating needs in a variety of contexts. Incentives should be encouraged and pursued to encourage more retrofits.

Heavy Duty Trucks

While efforts are underway to get an increased percentage of low and zero emission heavy duty trucks in service, it will take some time get all of the supporting infrastructure in place. In the meantime, it is important to find ways to make truck travel

[14] https://cdphe.colorado.gov/emissions-from-business-and-industry/lawn-and-garden-equipment-requirements
[15] Id.

more efficient and reduce emissions from activities like idling. The City of Albuquerque EHD is an affiliate of US EPA's Smart Way program[16], which encourages voluntary action to reduce emissions and improve efficiency from the truck sector.

Idling of heavy-duty trucks is a concern in Bernalillo County, which contains the intersection of two major highways and the I-40 Tradeport Corridor. Throughout the United States, it is estimated that idling of long-haul trucks burns nearly a billion gallons of diesel fuel a year, releasing significant amounts of ozone precursors. Clean Cities, a non-profit branch of the US Department of Energy, has worked across the country to provide electric plug-in outlets at truck stops (also known as shore power) so truckers can run AC and heat without having to idle. Funding from the Diesel Emissions Reduction Act or Volkswagen Settlement Fund can also help provide that infrastructure. It is worth investigating the feasibility of providing more of this type of infrastructure at truck stops in Bernalillo County to reduce idling, which could help reduce a sizeable amount of unnecessary emissions while improving the health of truck drivers.

The I-40 Tradeport Corridor[17] is expected to increase the amount of electric plug-in options available as efforts expand to build-out energy efficient and clean technology infrastructure in the future, including a data tracking platform to better pinpoint congestion. Overall, any and all efforts to increase shore power plug-in options and education about this strategy will improve efficiency and help reduce idling.

Light and Medium Duty Vehicles

Efforts to expand access to electric vehicles and hybrid vehicles should continue, including building all the necessary infrastructure to make that happen. As mentioned earlier, the City of Albuquerque does have a policy to transition to low or zero emission vehicles when old vehicles are in need of replacement[18]. Bernalillo County is also exploring efforts to electrify their fleet. As of 2023, the City of Albuquerque has adopted 106 low and zero emission vehicles into its municipal fleet. The Albuquerque International Sunport has worked to electrify equipment where feasible and has finalized a purchase order to implement the use of electric shuttle busses.

Federal money from the Inflation Reduction Act and Infrastructure Investment and Jobs Act helped expand the number of EV chargers throughout New Mexico, including in Bernalillo County. Other funding sources can help further expand those efforts and reduce emissions from light and medium duty vehicles. PNM offers rebates for EV chargers[19], which should continue or be expanded.

[16] https://www.epa.gov/smartway/smartway-affiliates-list
[17] https://i40tradeportcorridor.com/clean-and-efficient/
[18] https://www.cabq.gov/sustainability/transportation/transportation-resources#local-projects-and-programs
[19] https://ev.pnm.com/

The City of Albuquerque Air Quality Program operates a vehicle inspection and maintenance (I&M) program for gasoline vehicles through the Vehicle Pollution Management Division. Updates to the City of Albuquerque Motor Vehicle Emissions Ordinance are needed to support further changes to 20.11.100 NMAC- Motor Vehicle Inspection.

The amendments currently being considered would update inspection requirements to focus on on-board diagnostic checks, and potentially allow for penalties for vehicles with tampered emission controls. The program is also exploring the possibility of expanding the I&M program to diesel powered vehicles as well, which would help further reduce ozone precursors in the county. A subcommittee consisting of air program staff meets biweekly and focuses on the next steps for updating the Motor Vehicle Emissions Ordinance and 20.11.100 NMAC.

Energy Efficiency

Federal and state incentives for electrification, such as induction stoves and heat pumps, are helpful in reducing reliance on natural gas or diesel and should continue or be expanded where feasible. With more pressure on the grid through increased electrification, it is more important than ever to keep high demand in check. High electricity demand means the generating stations are more likely to emit at a greater level. As mentioned earlier, PNM offers time of use pricing to encourage more electricity usage during non-peak hours with lower rates[20]. Greater education and outreach regarding this program would help improve load management and overall efficiency.

The City of Albuquerque Energy & Sustainability Management Office also operates the Balanced Resource Acquisition and Information Network (B.R.A.I.N.)[21], which monitors electricity use throughout the city, and can help target where improvements in energy usage are most needed. The Energy & Sustainability Office has also worked to expand renewable energy connections and electric vehicle charging stations throughout the city. Collaboration with the Energy & Sustainability Management Office would help the Air Quality Program identify where further energy efficiency improvements should be focused.

Renewable Energy

Albuquerque-Bernalillo County should continue to expand renewable energy where feasible, as this is one proven way to reduce emissions of ozone precursors.

[20] https://www.pnm.com/timeofday

[21] https://www.cabq.gov/generalservices/energy-sustainability-management/energy-sustainability-management-brain

Albuquerque was ranked 13th of the EPA's list of Top Green Power users. As of 2023, the city is using more than 55 million KW of green power annually.

The city is incorporating solar energy from 32 solar sites on city facilities as well as the PNM Solar Direct facility. Efforts to expand access to rooftop solar, distributed generation, and community solar should increase.

Tree Planting and Urban Greening

Efforts should continue to plant more trees and increase the number of greening initiatives throughout the city and county. Trees, plants, and other urban green spaces can help absorb ozone and reduce the impacts of urban heat islands. Tree New Mexico is a non-profit organization that hosts many tree-planting events within Bernalillo County, as well the rest of New Mexico. Recent planting efforts included the International District and Wells Park neighborhoods. The city has also added a "green wall" next to a parking lot downtown[22]. Greening initiatives need to be increased, and diverse funding sources secured, to make sure these planting efforts continue to expand. Such efforts help when it comes to ozone and mitigating urban heat effects, and should be continued in areas where it makes sense from a technical and cost perspective.

Tree NM tree planning event in the Wells Park neighborhood near downtown Albuquerque. Photo Credit: Allen Smith

Education and Outreach

[22] https://www.cabq.gov/artsculture/news/bringing-new-life-to-a-downtown-parking-garage

The City of Albuquerque Air Quality Program has worked to expand public outreach efforts to various organizations, including Albuquerque Public Schools. Campaigns such as the Abuela Campaign have helped raise awareness about activities that contribute to ground level ozone formation and encourage behavior changes such as filling up gas early in the morning or late at night, and avoiding idling.

The Air Quality Program and Environmental Health Department (EHD) have also issued numerous press releases and social media posts educating the public about ozone[23], and will issue health alerts if ozone levels are very high. EHD has also tabled at events such as the State of the City address and Earth Fest. Efforts to expand communication and outreach to the public should be continued, because they are critically important to supporting a more informed public that will do its part to reduce emissions of ozone precursors going forward.

2024 Earth Fest at Balloon Fiesta Park in North Albuquerque.
Photo Credit: Allen Smith

Environmental Justice

Many initiatives mentioned in this Path Forward document contain an equity component and prioritize improvements, such as energy efficiency upgrades or tree planting efforts, in frontline communities. In thinking about control strategies going forward, environmental justice and how it relates to a given strategy should be key considerations. For example, efforts to reduce idling from trucks at truck stops could

[23] https://www.cabq.gov/airquality/news/tips-to-reduce-ozone-as-the-season-heats-up

benefit communities that routinely experience more emissions from highway traffic. Tree planting projects can serve communities that bear a higher amount of urban heat effects or emissions from other industrial activities.

Ozone Committee

The State of New Mexico also has a Path Forward plan and is a participant in the Ozone Advance program. As part of that plan, NMED mentions working groups for the Four Corners and Permian Basin regions. NMED also participates in a Joint Advisory Committee geared toward the Paso del Norte region and involving cooperation between New Mexico, Texas, and Mexico.

Albuquerque-Bernalillo County would likely benefit from a working group or advisory committee geared toward ozone reduction efforts, convening a variety of key stakeholders to discuss effective approaches to reduce ozone and stay in attainment. This possibility should be discussed and explored further.

Annual Updates

The Path Forward is to be updated on an annual basis. While it can take some time to move many key projects forward, annual updates, even if brief, help keep the public informed about progress made as part of the Advance program. Annual updates would also serve to keep the Air Quality Program accountable for moving key efforts along at a reasonable pace.

Conclusion

A wide variety of activities contribute to ground level ozone formation in Albuquerque-Bernalillo County. Most notable are emissions from the transportation sector. However, every action adds up to help the county stay in attainment for the National Ambient Air Quality Standard (NAAQS) for ozone. Thus, where efforts are feasible and cost effective, and the buy in exists from the necessary parties to make those efforts succeed, those efforts should move forward.

With recent design values nearing or exceeding the national standard for ozone, more attention and proactive efforts are needed in order to avoid a non-attainment designation, which would pose significant costs for Albuquerque-Bernalillo County. Thus, the recommendations in this Path Forward plan will hopefully serve as a guide on where to further explore the possibility of more emission reductions. Coordination with other departments, such as Planning or Sustainability, will be key. Recommendations developed in the Climate Action Plan can help serve as a valuable guide as well.

Many efforts take a lot of time and involve a great amount of coordination and procedure. The sooner that concrete steps on many of these strategies can begin, the sooner the city and county will benefit.