

Breathing Room

Improving Air Quality Beyond the Ozone Health Standard



[Despite dramatic improvements in local air quality over the last decade](#), Mecklenburg County and the entire Charlotte region only narrowly meet the [health-based standard for ground-level ozone](#). Mecklenburg County Air Quality and the North Carolina Division of Air Quality want to partner with you to put some "breathing room" between our local data and the health standard for ozone.

[The Plan](#)



[Get Involved](#)



[Background](#)



The Plan to Create Breathing Room



The Breathing Room Path Forward is a plan to continue the positive trend of improving air quality in our region.

On September 17, 2019, the [Mecklenburg Board of County Commissions](#) approved the Breathing Room Path Forward, after it was reviewed and endorsed by the [Environmental Stewardship Committee](#) and the [Air Quality Commission](#). The strategies and timeline below, which are part of the Path Forward, were developed based on [community input](#), policy priorities, and available funding.

NOW (2019-2021)

- [Transit Expansion Advocacy](#)
- [School Bus Electrification](#)
- [Greenway Expansion Advocacy](#)
- [Airport Shuttle Electrification](#)
- [Ground-support Equipment Electrification](#)



NEXT (2021-2022)

- [Complete Streets](#)
- [Community Solar](#)
- [Property Assessed Clean Energy Program](#)

FUTURE (2023+)

- [Energy Audit Program](#)
- [Zoning: EV Charging Infrastructure](#)



Air Quality Commission members presented at the Environmental Stewardship Committee meeting.

Breathing Room Website Snapshot – September 21, 2020

On Hold (may be added as time and resources allow)

-  [Cash for Clunkers](#)
-  [Eco-driving Training](#)
-  [Zoning: Eliminate Parking Minimum](#)
-  [Gas Cap and Tire Pressure Check Outreach](#)
-  [Taxi Electrification](#)

Because the Charlotte region has a history of poor air quality, a number of programs are already in place to [reduce air pollution](#). These successful strategies will continue in the region:

- [Industrial source permitting and compliance assistance](#)
- [GRADE](#) (Grants to Replace Aging Diesel Engines)
-  [Air Awareness](#) education and outreach services
- [Smoking vehicle program](#)
- [Idle reduction resources](#)


Get Involved



Thank you to the almost 500 community members who helped shape the region's plan to create Breathing Room! The stakeholders came from across the region ranging from high school youth and college students, to elected officials and city planners, to business and manufacturing leaders and non-governmental organizations.

Using your input, Mecklenburg County Air Quality and the North Carolina Division of Air Quality created a "[path forward](#)," a list of actions we will pursue now, next, and in the future to improve local air quality.

Can you help us create Breathing Room? Here are a few ways you can get involved:

- Be a champion for one or all of the strategies in the [Path Forward](#).
- [Request a presentation](#) to your organization or community group.
-  [Join the Charlotte Air Awareness Business Coalition](#) to access free, turn-key emission reduction program for your worksite.
- [Explore ways you can reduce air pollution](#) in your day-to-day life.



What to discuss other ways to get involved? Contact [Megan Green](#) at 980-314-3368

Background



ADVANCE

A U.S. Environmental Protection Agency Program

As a local air quality agency, Mecklenburg County Air Quality's (MCAQ) goal is not just to maintain compliance with air quality standards, but to continue the positive trend of improving air quality and put some "breathing room" between our local data and the health-based standard. Therefore, MCAQ and the [North Carolina Division of Air Quality](#) (NCDAQ) are partnering through the U.S. Environmental Protection Agency's (EPA) [Advance Program](#) to take proactive steps to reduce ozone-forming air pollution and maintain healthy air quality in the Charlotte region. This is good for public health and decreases the likelihood that our region will violate the health-based standard in the future.

To create Breathing Room, the region must reduce [ozone-forming nitrogen oxide \(NOx\) emissions](#). The pie chart below shows that most of the region's NOx emissions come from [Mobile Sources](#) like cars, trucks, tractors, and other types of vehicles and equipment. So, reducing pollution from vehicles and equipment is especially important to improve local air quality.

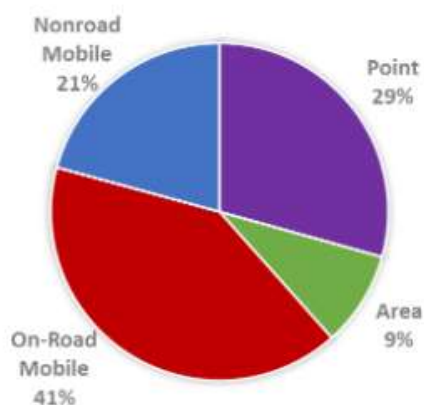
MCAQ leads the Charlotte region's participation in Advance and works with NCDAQ, EPA, stakeholders, and [the public](#) to implement the region's Path Forward. The Path Forward is a plan that will improve air quality while maintaining existing programs that effectively reduce ozone-forming emissions. This plan was provided to the EPA as a demonstration of the Charlotte region's continued commitment to improving air quality.

Progress Reports:

 [August 2018](#)

 [September 2019](#)

Sources of Ozone-forming NOx
Charlotte Region, 2018





Implementation Plan

Transit Expansion

Existing Efforts:

- In November 2006, the Metropolitan Transit Commission (MTC), Charlotte Area Transit System's (CATS) policy board, adopted the 2030 Transit Corridor System Plan, which consists of multiple rapid transit improvements. Progress made thus far include: LYNX Blue Line light rail service in 2007; City LYNX Gold line streetcar service in 2015; LYNX Blue Line extension in 2018; and Bus Rapid Transit along Interstate 77 Corridor in 2019. Future plans include: City LYNX Gold Line expansion, LYNX Silver Line, and LYNX Red Line.
- In April 2017, the Centralina Council of Governments (CCOG), in partnership with the MTC, held a Regional Transit Engagement Series (RTES) to gather input from local government staff, elected officials, private sector representatives, and institutional leaders to better understand transit opportunities and needs for the region. In May 2018, a Regional Transit Summit was held to highlight the RTES's findings and consensus-based next steps, which included a shared vision for a regional transit plan and implementation strategies.
- In September 2019, the CCOG in partnership with the MTC, issued a request for qualifications seeking Consultant Services for the development of a Regional Transit Plan and Implementation Strategies for the 12-county Charlotte region (Anson, Cabarrus, Cleveland, Gaston, Iredell, Lincoln, Mecklenburg, Rowan, Stanly, Union, Lancaster and York). The study will begin by end-of-year 2019.
- In November 2019, the Charlotte City Council approved a \$50 million contract with the engineering firm, WSP USA, to begin preliminary design and environmental work on the 26-mile Silver Line light rail expansion project. The line will extend from Matthews, NC to Belmont, NC.

Stakeholders: Metropolitan Transit Commission; Charlotte Area Transit System; Centralina Council of Governments; Charlotte City Council; Mecklenburg Board of County Commissioners; Charlotte Regional Transportation & Planning Organization; Regional Transit Commissions/Providers/Elected Officials

Funding Opportunity: Federal Transit Administration – Capital Investment Grants, North Carolina Transportation Improvement Program

Next Steps:

- Participate in CATS regional transit stakeholder group when convened.
- Brief Mecklenburg County's MTC representative, Commissioner Susan Harden, on the air quality benefits of transit expansion.
- Meet with other transit providers from the 7-county Charlotte region, as applicable.
- Provide CATS/regional transit providers with Air Quality analysis of operational and/or system changes, upon request.

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The Idea: Transit Expansion

- A regional, interconnected mass transit system will give citizens, especially commuters, ways to reach their destination without the use of a single-occupancy vehicle.

The Action:

- Support efforts to develop an interconnected mass transit system throughout the Charlotte Region
- Quantify the air quality benefits of Mass Transit as an alternative to driving.

The Pollution Source: 23 % of NO_x comes from passenger vehicles¹

The Cost-effectiveness: Unknown

The Factors:

- Transit only reduces pollution if commuters use the service.
- Transit can mitigate traffic congestion on main commuter routes.
- Some services (light rail and streetcar) are powered by electricity, not gas or diesel.
- Particulate Matter – Low co-benefits
- Greenhouse Gases – Medium co-benefits



¹ 19.37 tons/day of NO_x. Passenger vehicles includes both passenger cars and trucks. Source: Revised Maintenance Plan For The Charlotte-Gastonia-Salisbury, North Carolina 2008 8-Hour Ozone Marginal Nonattainment Area (July 2018)



Implementation Plan

School Bus Electrification

Existing Efforts:

- In February 2019, Air Quality staff organized an electric bus information session for local school district fleet managers. At the event, Thomas Built Buses (of High Point, NC) demonstrated their new, fully-electric “Jouley” school bus, including capabilities of a cleaner, quieter electric school bus.
- Air Quality staff have worked with local school districts and the N.C. Department of Public Instruction (DPI) to gauge interest in, and identify funding for, electric school buses in the Charlotte region.

Stakeholders: Regional School Districts, N.C. Department of Public Instruction, N.C. Division of Air Quality

Funding Opportunity: VW Settlement Funds

Next Steps:

- Assist local school districts with applying for VW funding, in consultation with DPI.
- Research other grant funding options and assist with applications as necessary.

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The Idea: School Bus Electrification

- Replace diesel-powered school buses with electric buses.
- The first electric school buses will be manufactured in 2019.

The Action:

- Identify and secure funds to defray the cost of new electric school buses and charging infrastructure.
- Work with local school systems to develop a bus replacement schedule that prioritizes the highest emitting buses for replacement first.

The Pollution Source: 0.1% of NO_x come from school buses¹

The Cost-effectiveness: \$4,695/lb of NO_x²

The Factors:

- Reduces children's exposure to diesel emissions. Children are a "sensitive" population.
- Each project has a larger impact than a passenger vehicle but less than a transit bus.
- There are fewer school buses than cars, but more school buses than transit buses.
- Public-facing project that could spread awareness/information to residents.
- As the power grid changes to lower emission/renewable fuels, overall emissions will decrease further.
- PM – Low co-benefits
- GHG – Medium co-benefits



¹ 0.07 tons/day or NO_x. Source: Revised Maintenance Plan For The Charlotte-Gastonia-Salisbury, North Carolina 2008 8-Hour Ozone Marginal Nonattainment Area (July 2018)

² Based on one year of NO_x reductions; assuming \$200,000 per bus (this is a new technology that does NOT have a definite price at this time).



Implementation Plan

Greenway Expansion Advocacy

Existing Efforts:

- Previous Park and Recreation Master Plans have prioritized expansion and development of greenways due to public interest. Currently there are 50 miles of multi-use greenway trails and 200 miles of nature trails.
- Mecklenburg County Park and Recreation is working to acquire land and get zoning for parks and greenway use.
- Mecklenburg County Health Department is working on including public health priorities into built environment planning, for example, increasing active transportation, connecting greenways to business and entertainment centers (creating connectors), and equitable dispersion of greenway trails.
- The City of Charlotte is gathering public comment for the Charlotte Future 2040 Comprehensive Plan which incorporates greenway expansion and park distribution.
- Kick-off of 2020 Park and Recreation Master Plan.
 - Meck Playbook has completed public outreach to get community input.

Stakeholders: Mecklenburg County Park and Recreation, City of Charlotte, Mecklenburg County Health Department, Carolina Thread Trail

Funding: [Mecklenburg County Capital Improvement Program](#); N. C. Transportation Improvement Program, FHWA Congestions Mitigation and Air Quality funding

Next Steps:

- Participate in Meck-Playbook Stakeholder Committee.
- Present Air Quality information and act as a resource to citizen Greenway Advisory Council.
- Act as a bridge for our partners at Charlotte Area Transit and Mecklenburg County Park and Recreation, integrating the Breathing Room strategy of “Transit Expansion Advocacy” into greenway expansion efforts.

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The Idea: Greenway Advocacy

- Greenways are protected, multi-use paths that connect people to parks, retail, neighborhoods and restaurants without the use of vehicles.
- Increasing citizens access to greenways can result in fewer vehicle miles traveled, less air emissions and less traffic congestion.

The Action:

- Advocate for using and continuing to develop greenways throughout the Charlotte Region.
- Prioritize construction of greenways that connect people with activity centers.
- Quantify and actively communicate the air quality benefits of greenway use as an alternative to driving.

The Pollution Source: 23% of NO_x comes from passenger vehicles¹

The Cost-effectiveness: Unknown

The Factors:

- Greenways only reduces pollution if they are used to make trips that otherwise would have been made by motor vehicle.
- Particulate Matter – Low co-benefits
- Greenhouse Gases – Medium co-benefits



¹ 19.37 tons/day of NO_x. Passenger vehicles includes both passenger cars and trucks. Source: Revised Maintenance Plan For The Charlotte-Gastonia-Salisbury, North Carolina 2008 8-Hour Ozone Marginal Nonattainment Area (July 2018)



Implementation Plan

Airport Shuttle Electrification

Existing Efforts:

- Charlotte-Douglas International Airport (CLT) staff have committed to converting their transit bus fleet of 70 buses to fully electric models within the next 8 years using their current budgeting.
 - City Council has approved and budgeted for the purchase of five electric shuttle buses plus charging infrastructure in FY20.
- Concord Regional Airport staff are interested in purchasing electric transit buses.

Stakeholders: CLT Airport, Concord Regional Airport, N.C. Division of Air Quality

Funding Opportunity: VW Settlement Funds

Next Steps:

- Assist CLT with applying for VW funding to accelerate the acquisition of electric buses.
- Assist Concord Regional Airport staff with applying for VW funding to pilot electric buses.
- Research other grant funding options and assist with applications as necessary.

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The Idea: Airport Shuttle Electrification

- Replace diesel and gas shuttle buses with electric shuttles at regional airports like Charlotte-Douglas International Airport.
- Electric shuttles will have zero tailpipe emissions.

The Action:

- Identify and secure funding to defray the cost of new electric shuttles and charging infrastructure.
- Work with local airports to create a shuttle replacement schedule that prioritizes the highest emission shuttle(s) for replacement first.

The Pollution Source: 0.1% of NO_x comes from transit buses (which includes airport shuttles)¹

The Cost-effectiveness: \$418.06/lb of NO_x²

The Factors:

- Airport shuttles have high usage, which means that each shuttle has high emissions.
- There aren't very many airport shuttles in the region, so large-scale emission reductions aren't likely.
- Public-facing project that could spread awareness/information to the city and its visitors.
- Emissions generated from charging the vehicles will decrease as renewable energy is adopted into the power grid.
- Particulate Matter – Low co-benefit
- Greenhouse Gas – Medium co-benefit



¹ 0.11 tons/day of NO_x. Source: Revised Maintenance Plan For The Charlotte-Gastonia-Salisbury, North Carolina 2008 8-Hour Ozone Marginal Nonattainment Area (July 2018)

² Assuming \$700,000 per bus



Implementation Plan

Ground Support Equipment Electrification

Existing Efforts:

- Since 2008, Piedmont Airlines and US Airways have replaced 101 pieces of older, dirtier diesel ground-support equipment (GSE) with newer, cleaner electric GSE. These conversions were made possible by funding from Mecklenburg County Air Quality's (MCAQ) Grants to Replace Aging Diesel Engines (GRADE) program.
- In 2019, the U.S. Environmental Protection Agency (EPA) awarded \$1.2 million to help replace up to 120 pieces of GSE with electric-GSE through *AeroGRADE*.

Stakeholders: Piedmont Airlines, American Airlines, other local carriers, CLT Airport, EPA, Federal Aviation Administration (FAA)

Funding Opportunity: EPA - Diesel Emission Reduction Act, FAA – Voluntary Airport Low Emission (VALE)

Next Steps:

- Identify diesel to electric GSE conversion projects for *AeroGRADE* funding
- Advocate for CLT Airport and airlines to install the charging infrastructure required for eGSE fueling.
- Assist stakeholders with VALE and other grant applications.

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The Idea: Ground Support Equipment Electrification

- Replace diesel ground support equipment (GSE) with electric GSE (eGSE) at airports in the region.
- Charlotte Douglas International Airport has approximately 330 pieces of diesel GSE. ¹

The Action:

- Identify new funding for AeroGRADE, Mecklenburg County Air Quality's "Grants to Replace Aging Diesel Engines" program targeting airport equipment.
- Work with local airports to fund the installation of required charging infrastructure for electric GSE.

The Pollution Source: 0.4% of NOx comes from airport support equipment²

The Cost Effectiveness: \$29.78/lb NOx

The Factors:

- GSE are being operated almost 24 hours per day, 365 days per year; emission decreases are compounded through high usage.
- Past eGSE projects have significantly reduced emissions.
- This equipment is concentrated in Mecklenburg County.
- Particulate Matter – Medium co-benefits
- Greenhouse Gases – Medium co-benefits



¹ There are already 101 pieces of electric GSE at CDIA.

² 0.33 tons/day of NOx. Source: Revised Maintenance Plan For The Charlotte-Gastonia-Salisbury, North Carolina 2008 8-Hour Ozone Marginal Nonattainment Area (July 2018)



Implementation Plan

Property Assessed Clean Energy (PACE)

Existing Efforts:

- Senate Bill 493 was introduced on March 29, 2017 to enable Commercial PACE (C-PACE) at the state level. The bill would allow municipalities to opt-in and help setup PACE programs locally. The bill made it through the 2017 session's crossover deadline but was not heard in the committee. The bill was flagged by the NC Treasurer's offices as being unconstitutional, based on how the program works by enabling a local government to serve as a "go-between" for the property tax assessment/lien that is used by a tax paying entity to finance energy efficiency, renewable energy or other property upgrades.¹
- North Carolina Building Performance Association (NCBPA) continues to do research on support and opposition in the North Carolina Senate and House with key stakeholder organizations to further advance the bill. Efforts also include obtaining lobbying funds, educating supporters, finding case studies for viable C-PACE projects, and proving the constitutionality of the program in North Carolina. The bill could be re-introduced in the 2020 legislative session, making way for it to be passed into law in 2020 and for local governments to sign-on to offer programs in late 2020 or early 2021.²
- North Carolina Department of Environmental Quality has identified the inability to finance C-PACE as a major barrier addressed this as part of their Clean Energy Plan.³
- There is currently no legislation for Residential PACE.

Stakeholders: NC Legislature, NC Department of Environmental Quality, and NCBPA.

Funding: Until PACE is approved at the state level, no funding can be allocated for projects. If legislation were enacted, the North Carolina General Assembly would provide guidance on eligible projects, qualified PACE financing institutions, and proper funding allocation.

Next Steps:

- Continue following C-PACE legislation; next steps will be determined when enabling legislation is passed.

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¹ Senate Bill 493. "North Carolina General Assembly." <https://www.ncleg.gov/BillLookup/2017/s493>.

² Commercial PACE Financing. "North Carolina Building Performance Association." <http://buildingnc.org/strategic-initiatives/cpace/>.

³ Clean Energy Plan. "North Carolina Department of Environmental Quality." <https://deq.nc.gov/energy-climate/climate-change/nc-climate-change-interagency-council/climate-change-clean-energy-16>.



The Idea: Property Assessed Clean Energy (PACE)

- Functions like a public-sector loan.
- Municipalities use public money¹ to cover the up-front cost of clean energy or energy efficiency improvements at private commercial or residential² properties.
- The cost of the improvements becomes a property lien and the municipality recovers those costs over time through a multi-year special tax assessment.
- North Carolina session law 2009-525 provides authority to local municipalities to implement this type of program.

The Action:

- Research the legal requirements for a PACE program.
- Partner with local municipalities to develop and implement PACE programs in the region.

The Pollution Source: 11% of NOx comes from Electricity Generation³

The Cost-effectiveness: \$359/lb of NOx⁴

The Factors:

- It takes significant, sustained reductions in energy demand to decrease production by power plants.
- While customers see energy off-sets on their bill, that doesn't directly translate into emissions avoided from power generation.
- Particulate Matter – Low co-benefit
- Greenhouse Gas – Medium co-benefit



¹ Revenue or general obligation bonds, project development financing debt instruments, or general revenues.

² Currently, Federal Housing Finance Agency guidance makes it difficult to pursue residential PACE projects with a first-lien special assessment.

³ 9.08 tons/day of NOx. Source: Revised Maintenance Plan For The Charlotte-Gastonia-Salisbury, North Carolina 2008 8-Hour Ozone Marginal Nonattainment Area (July 2018)

⁴ Based on one year of emission reductions.

Photo: SolarWorld, Witherspoon Distillery, Lewisville, TX