

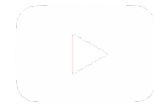


**Planetary & Community Health
Solutions for the Future**

**REPORT &
RECOMMENDATIONS**

NC BREATHE 2025

Post-Conference Report & Recommendations



This report summarizes the key findings and recommendations from the 2025 NC BREATHE conference, held on October 8 – 9, 2025, in Charlotte, North Carolina.

Published: April 8, 2026

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EXECUTIVE SUMMARY

The 10th annual NC BREATHE conference convened community leaders, health professionals, and policymakers to address the inextricable link between planetary health and community resilience.

In a landscape characterized by federal regulatory uncertainty and intensifying climate disasters like Hurricane Helene, North Carolina cannot afford to wait for top-down salvation. Instead, we must look to the real experts—the communities experiencing the greatest impacts—and to cross-sector partnerships to drive state and local innovation.

The following recommendations provide a blueprint for actionable, equitable implementation:

Integrate Environmental Health Data and Community Science

Challenge: North Carolina faces a data-action gap. Despite an abundance of environmental and health data, effective action is impeded by siloed data sources, limited accessibility for communities, and the exclusion of community-sourced data.

Recommendation: We call on the NC General Assembly, the NC Department of Health and Human Services, and the NC Department of Environmental Quality to establish a formal system that integrates clinical, environmental, and community-sourced data into a unified, transparent framework accessible to local health departments and community-based organizations.

- **Define Data Linkage Standards:** Establish secure protocols for linking diverse data sets (both state- and community-sourced) to inform proactive health strategies.
- **Mandate Community Engagement:** Require community input on all data dashboards and tools to ensure they are accessible and incorporate lived experience as valid qualitative data.
- **Leverage Existing Models:** Utilize tools such as the AirKeeper Dashboard as a model for holistic data integration and a collaborative resource for state agencies.

Address Extreme Heat as a Public Health Necessity

Challenge: Extreme heat is an intensifying threat in North Carolina, yet access to cooling resources is frequently dismissed as a luxury rather than a fundamental necessity. This disconnect leaves vulnerable populations exposed to life-threatening conditions during heat events.

Recommendation: We call on state and local governments to formally adopt policies recognizing access to cooling as a public health necessity. This recognition must be operationalized by integrating heat mitigation strategies into city development and infrastructure funding.

- **Reframe the Narrative:** Launch a coordinated public awareness campaign to challenge the “luxury” perception of cooling, reframing it as an essential preventative measure similar to clean water and winter heating.
- **Target Areas of Need:** Commit a defined percentage of infrastructure and mitigation funding specifically to historically underserved areas and identified urban heat islands.
- **Deploy Mobile Cooling Units:** Leverage public-private partnerships to develop and deploy mobile cooling units, bringing relief directly to unhoused individuals, disabled residents, and isolated neighborhoods.
- **Legislative Mandates for Habitability:** Enact legislation requiring utilities and landlords to provide essential cooling solutions and energy-efficient upgrades, ensuring that the right to a cool home does not impose undue financial burdens.

Fund Climate Resilience and Reform Disaster Recovery

Challenge: Recent climate disasters have exposed critical vulnerabilities in North Carolina’s disaster response. Rural and economically disadvantaged areas often face insurmountable barriers, while local input on recovery is frequently marginalized or disregarded.

Recommendation: We call for the establishment of a formal statewide community resilience framework that expands the authority of local leaders to direct recovery efforts, ensuring that state resources are responsive to the actual needs of impacted residents.

- **Scale Local Leadership:** Expand and fund Community Emergency Response Teams (CERTs), with a specific focus on rural areas.
- **Invest in Human Infrastructure:** Allocate dedicated funding to equip and train local response teams, recognizing that trusted local leaders are an essential resource during emergencies.
- **Facilitate Resource Sharing:** Create networks for resource and volunteer sharing between communities during crises.
- **Fund Long-Term Resilience:** Establish a dedicated funding stream to endow community-based organizations to build durable, culturally competent local infrastructure that can withstand future environmental threats.

Integrate Environmental Health into Medical Education

Challenge: Most doctors, nurses, and public health professionals receive little-to-no formal training on environmental health impacts, even as they are increasingly expected to recognize, treat, and discuss these risks with their patients.

Recommendation: We call on medical and nursing schools, professional associations, and health systems to require environmental and climate health as a core component of medical and public health education across North Carolina.

- **Mandate Curriculum Changes:** Require medical and nursing schools to implement coursework covering the physiological impacts of air pollution, climate change, and environmental injustice.
- **Develop Clinical Resources:** Develop and distribute screening tools and conversation guides that help providers identify and discuss environmental risks with their patients.
- **Incentivize Continuing Education:** Actively promote specialized continuing education programs to ensure the current health workforce remains responsive to a shifting climate.

By implementing these recommendations, we can create healthier, more resilient North Carolina communities.



Nearly 200 attendees gathered in Charlotte for NC BREATHE 2025

INTRODUCTION

On October 8 – 9, 2025, CleanAIRE NC hosted the 10th annual NC BREATHE conference to foster conversations around planetary health and community resilience.

For a decade NC BREATHE has served as an essential bridge, bringing together disparate groups whose collaboration is vital for a healthy and sustainable future. Nearly 200 community leaders, health professionals, policymakers, and advocates gathered at the CPCC Harris Center in Charlotte to explore strategies and solutions for healthier communities.

This year's theme, "Planetary & Community Health," was chosen to reflect the inextricable link between the health of our environment and the health of our people. NC BREATHE 2025 featured keynote speeches from Dr. Sacoby Wilson, Dr. Shaneeta Johnson, Charles Lee, and Dr. Undi Hoffler, four nationally respected voices at the forefront of environmental justice, climate, and health.



92 attendees received free lung screenings through AstraZeneca's AIRE Mobile Unit

19 student researchers submitted and presented research posters that explored the links between human health (both physical and mental) and planetary health. [In partnership with AstraZeneca](#), NC BREATHE also provided free on-site lung health assessments to 92 conference attendees through AstraZeneca's innovative AIRE Mobile Unit.

The milestone tenth anniversary of NC BREATHE was not merely a celebration of past progress, but a focused consideration of the next decade's challenges. This report aims to synthesize the dialogues and proceedings of the conference, moving beyond the identification of problems to the proposal of structural, actionable, and achievable solutions.

KEY TAKEAWAYS

A pervasive theme throughout the conference was the recognition that discrimination is a public health threat. Speakers emphasized that **environmental risks are not random; they are concentrated**.¹ Historical redlining and systemic disinvestment have created neighborhoods where residents face compounding vulnerabilities, including industrial pollution and limited green infrastructure.^{2,3,4}

Addressing these challenges will require an evidence-based and collaborative approach. Yet while North Carolina is data-rich, **valuable information is often siloed, inaccessible, or disconnected from the people who need it most**.⁵ Innovative tools like wastewater surveillance and air quality monitors exist, but they often operate in isolation from healthcare databases and public health decision-making.

To create a more complete picture of community health, we must therefore

bridge entrenched divisions between healthcare, environmental science, policy, and community organizing. **No single sector can solve these problems alone.** We must foster ongoing conversations and spaces where diverse perspectives can work together to build collaborative, holistic solutions.

The most effective solutions showcased at the conference shared a common trait: they were **led by the communities most impacted by the problem.** Speakers challenged the traditional hierarchy of scientific access, asserting that community members are the “real experts” on their own environments. Meaningful progress requires moving beyond token consultation to a model where communities drive the research agenda and policy priorities.^{6,7}

All these discussions occurred against a backdrop of significant uncertainty around federal environmental policy. This shifting landscape underscores that **North Carolina must rely on its own state-level and community-driven solutions to safeguard public health.** True resilience is not just about rebuilding roads after a storm; it is also about supporting the human capacity to withstand policy setbacks and continue pushing for justice, regardless of shifting federal priorities.



(left to right): Dr. Shaneeta Johnson, Meharry Medical College; Dr. Sacoby Wilson, University of Maryland



(left to right): Dr. Virginia Guidry, NC Dept. of Health and Human Services; Dr. Karl Welke, Atrium Health; Dr. Maria Jison, AstraZeneca; Dr. Jean Wright, COPD Foundation

RECOMMENDATIONS

Four clear underlying recommendations arose from the conference proceedings and participant discussions.

Integrate Environmental Health Data and Community Science

NC BREATHE highlighted a critical gap between the abundance of available environmental data (on air quality, wastewater surveillance, etc.) and its effective, proactive utilization in public health decision-making.

Fragmented data sources, a lack of standardized integration protocols, and insufficient technical capacity at the local level impede effective action on environmental health disparities.⁵ Furthermore, trust between communities and government agencies is undermined when environmental health data is not transparent, accessible, or reflective of lived experiences.^{8,9}

To overcome this gap, we must establish a formal system integrating fragmented public health, air quality, and clinical data. This would include mandated transparency and accessibility for local health departments and community-based organizations (CBOs).

The NC General Assembly (NCGA), in collaboration with state agencies such as the NC Department of Health and Human Services (NCDHHS) and the NC Department of Environmental Quality (NCDEQ), must define and fund standards for securely linking diverse datasets. This includes anonymized clinical healthcare databases, air quality monitoring (including low-cost and community-operated sensors), and wastewater surveillance data. Establishing these standards is essential for creating real-time, cross-sector risk assessments that allow for proactive, preventative health strategies rather than reactive measures.

State agencies must also establish mandatory community engagement protocols for the development and usage of all state data dashboards (such as the [wastewater monitoring dashboard](#) operated by NCDHHS)¹⁰ and data tools. Community engagement is critical to ensure that tools are user-friendly and accessible.^{11,12} Furthermore, they should develop mechanisms for formally integrating community-sourced qualitative data and lived experiences into state-level health and environmental policymaking, ensuring that the data reflects the reality on the ground.

CleanAIRE NC's [AirKeeper Dashboard](#) demonstrates the value of both data integration and public accessibility.¹³ This tool synthesizes air quality readings from both state- and community-operated monitors with layers of contextual data, including pollution sources, neighborhood demographics, and health outcome patterns, to help people visualize and communicate their environmental realities. CleanAIRE NC encourages policymakers and health agencies to not only utilize the AirKeeper Dashboard as a primary resource but to actively collaborate in its expansion.

Address Extreme Heat as a Public Health Necessity

As extreme heat events become more frequent and intense across North Carolina, they pose a significant and growing threat to public health,^{14,15} as well as a major strain on health care costs.¹⁶ A recurring theme throughout the conference was the dangerous disconnect between this physiological reality of heat stress and the societal perception of cooling.



(left to right): Dr. Robyn Byers, City of Charlotte; Dr. Katherine Idziorek, UNC–Charlotte; Bethany Milford, NC Alliance of Public Health Agencies; Dr. Charlene Wong, Duke University

Too often, access to air conditioning and other cooling resources is viewed as a luxury or a comfort rather than a fundamental necessity.¹⁷ Yet in [a recent report](#) from CleanAIRE NC and the North Carolina Public Health Association, Charlotte communities consistently ranked access to cooling resources among the most urgently needed solutions to extreme heat.¹⁸ This gap between need and perception leaves vulnerable populations—including the elderly, low-income families, and those with chronic health conditions—exposed to life-threatening risks.^{19,20}

To confront this crisis, we call on state and local governments to formally adopt policies that recognize access to cooling as a public health necessity. This recognition must move beyond rhetoric by integrating heat mitigation strategies into a framework for city development and infrastructure funding. Achieving this requires a multi-pronged approach involving state legislators, city planners, and public health officials.

State and local health departments, in collaboration with sustainability offices, must develop a coordinated public awareness campaign to challenge the perception of cooling as a luxury. This campaign should use health data to reframe cooling access as a critical preventative health measure,

similar to access to clean water or to heating in the winter.²¹ By shifting this narrative, we can build the public will necessary to support policy changes that prioritize cooling access during extreme heat events.

City and county planning departments must also commit to allocating a defined percentage of green infrastructure funding specifically to historically underserved areas and identified urban heat islands. This targeted investment is essential to dismantling the legacy of redlining and inequitable development that has left many communities hotter and more vulnerable than their neighbors.^{22,23}

Local governments and health departments should utilize mobile cooling centers to reach vulnerable populations who cannot easily access stationary cooling resources. Public-private partnerships (P3) can be effectively employed here, utilizing retrofitted buses or vans to bring relief directly to disabled communities, the unhoused, and isolated neighborhoods during heat emergencies.²⁴



Charles Lee, Howard University School of Law

The NC General Assembly should also enact legislation that incentivizes or mandates utilities and landlords to provide essential cooling solutions for households. Just as landlords are often required to provide heating,²⁵ the changing climate demands that efficient cooling be treated with equal urgency. This legislation should include provisions for energy-efficient upgrades to lower the energy burden on low-income tenants, ensuring that the right to a cool home does not come at the cost of financial hardship.



(left to right): Dr. Keith McDade, Warren Wilson College; Tiffany Fant, Sol Nation; Gray Jernigan, MountainTrue; Sen. Julie Mayfield, North Carolina State Senate (District 49)

Fund Climate Resilience and Reform Disaster Recovery

Recent climate disasters, such as Hurricane Helene, have exposed critical vulnerabilities in North Carolina's disaster preparedness and recovery systems. Communities, particularly in rural and economically disadvantaged areas, often face insurmountable challenges during both the immediate response and long-term recovery phases.²⁶ Communication gaps, delayed resource allocation, misaligned priorities, and a lack of sustainable funding have left many residents behind.^{27,28} Meanwhile, conference participants who witnessed the Helene response firsthand recounted how input from local communities was often disregarded by outside contractors or inadequately addressed by state lawmakers through recovery bills.

To address these systemic failures, we call on North Carolina to formalize a statewide community resilience framework that is co-led by state agencies and community representatives. By expanding the authority of impacted communities to direct recovery efforts, we can ensure that resources and information are responsive to on-the-ground needs as they develop.

Several North Carolina counties have established Community Emergency Response Teams (CERTs), comprised of volunteers who assist their communities during disasters.²⁹ CERTs could provide a pre-existing foundation for expanding local leadership in directing disaster response. However, North Carolina must commit to allocating more funds to equip, train, and resource these local community response teams. Investing in human infrastructure is as critical as investing in physical infrastructure; local leaders are often the first line of defense when official channels are overwhelmed.³⁰

This model must also be expanded into more communities, particularly in rural areas. Fewer than half of all North Carolina counties currently have an active CERT.³¹ This includes just 18 of the 51 counties identified as “rural” by NCDHHS.³² Community response teams composed of trusted local leaders should be established in every county to manage pre-disaster communication protocols and coordinate immediate relief efforts. An effective community resiliency framework should also facilitate resource sharing between communities during times of crisis. The [Appalachian Design Center](#) developed by MountainTrue could offer an effective model for sharing resources and directing volunteer services to rural communities.³³

We also urge policymakers to establish a dedicated funding stream to support community-led climate projects and long-term recovery. This includes endowing CBOs to create durable local infrastructure—such as flood mitigations and local food security systems—that can withstand future storms. By funding local efforts directly, we ensure that resilience strategies are culturally competent, community-supported, and built to last.

Integrate Environmental Health into Medical Education

Healthcare providers are on the front lines of the climate crisis, witnessing the daily health impacts of air pollution, extreme heat, and changing disease vectors in their patients.

Yet while doctors, nurses, and other health professionals are increasingly

expected to recognize and treat these environmentally-driven conditions, most receive little to no formal training on environmental health impacts during their education.³⁴ This knowledge gap represents a missed opportunity, as trusted health professionals are uniquely positioned to be powerful messengers, capable of educating patients and advocating for healthier environments if properly equipped.^{35,36}

To close this gap, we call for a statewide commitment to require environmental and climate health as a core component of medical and public health education throughout North Carolina.

This should not merely be an optional elective; it must be a fundamental part of the curriculum for the next generation of healers. Achieving this requires the active participation of medical schools, nursing schools, professional medical associations, and major health systems.

First, academic institutions and professional associations must advocate for and implement immediate curriculum changes. Medical and nursing schools should mandate coursework that covers the physiological impacts of air pollution, climate change, and environmental injustice. Integrating this knowledge into core training would better prepare graduating clinicians to diagnose and treat the health burdens of a changing world.³⁷

Health systems and medical associations should also develop and distribute clinical resources, such as screening tools and conversation guides,



Dr. Shaneeta Johnson, Meharry Medical College, addresses NC BREATHE attendees

that equip providers to identify, document, and discuss environmental health risks with their patients. These tools are beneficial for translating environmental considerations into personalized patient care.³⁸

Finally, we urge all North Carolina health systems and medical schools to actively support and incentivize continuing education programs focused on environmental health. This could include participating in initiatives like CleanAIRE NC's new [CleanAIRE Academy](#), which offers specialized training for practicing health professionals.³⁹ Investing in ongoing education will help ensure that our current health workforce remains responsive to changing care needs in a shifting climate.³⁴

CONCLUSION

The 10th annual NC BREATHE conference closed with a profound sense of both urgency and possibility. For a decade, this convening has served as North Carolina's essential bridge between science, policy, health, and community. Yet as the discussions throughout these two days made clear, the next decade demands that we cross that bridge together.

Cultivating resilience is not a passive act of endurance. It is an active, collaborative practice of maintaining our values and staying connected in the face of daunting challenges. As we move forward, it is crucial to maintain momentum and build upon the progress made.

Above all, this means harnessing the power of collective action. We must continue to foster partnerships between scientists, healthcare providers, policymakers, community leaders, and individuals. By sharing expertise, resources, and ideas, we can develop innovative solutions and drive meaningful change.

We encourage all NC BREATHE attendees to stay connected and continue to advocate for environmental health. Let's work together towards a healthier and more sustainable future for all.

ACKNOWLEDGEMENTS

CleanAIRE NC would like to thank this year's conference planning committee and the speakers, panelists, participants, exhibitors, staff, and volunteers who made the 2025 NC BREATHE conference such a success. Thank you to Central Piedmont Community College, the Harris Conference Center, and the City of Charlotte for hosting and supporting this year's conference.

The conference organizers would also like to thank our NC BREATHE sponsors and co-organizers, AstraZeneca, Self-Help Credit Union, the Wake Forest University Environmental and Epistemic Justice Initiative, the City of Charlotte, Environmental Justice Community Action Network, the NC Department of Health and Human Services' Division of Public Health, North Carolina Black Alliance, the Davidson College Sustainability Office, Southern Environmental Law Center, the Fields Family, Healthy Charlotte Alliance, Sol Nation, Environmental Defense Fund, Piercing Sun Consulting, the Catawba College Department of Environment and Sustainability, and Fred and Alice Stanback, for their ongoing commitment to public health and the environment.

Special thanks to this year's Platinum Partner, AstraZeneca, for their phenomenal support. The free lung screenings provided to conference attendees through their AIRE Mobile Unit made an invaluable contribution to NC BREATHE 2025 and offers a powerful example of the collaboration and commitment needed for lasting impact.

And thank you to all the student researchers who presented and discussed their work at the conference, including the two winning research posters: "The Decoupled Direct Method as a Tool for Ozone Source Attribution: Case Study from Houston, TX" (by Colin O'Hagerty at the UNC Gillings School of Global Public Health); and "Microplastics Exposure of eSCs in vitro Leads to Changes in Proliferation and Decidualization" (by Julia Froese at the UNC Gillings School of Global Public Health).

REFERENCES

1. Anyanwu C and Beyer KMM. (2024). Intersections among housing, environmental conditions, and health equity: A conceptual model for environmental justice policy. *Social Sciences & Humanities Open* 9, 100845. doi.org/10.1016/j.ssaho.2024.100845
2. Cushing LJ, Li S, Steiger BB, and Casey JA. (2023). Historical redlining is associated with fossil fuel power plant siting and present-day inequalities in air pollutant emissions. *Nature Energy* 8, 52 – 61. doi.org/10.1038/s41560-022-01162-y
3. Motairek I, Chen Z, Makhoul MHE, et al. (2023). Historical Neighborhood Redlining and Contemporary Environmental Racism. *Local Environment* 28(4), 518 – 528. doi.org/10.1080/13549839.2022.2155942
4. Nardone A, Rudolph KE, Morello-Frosch R, and Casey JA. (2021). Redlines and Greenspace: The Relationship between Historical Redlining and 2010 Greenspace across the United States. *Environmental Health Perspectives* 129(1), 17006. doi.org/10.1289/EHP7495
5. Data Strategy Roadmap. *North Carolina Department of Health and Human Services*, December 2019. ncdhhs.gov/ncdhhs-data-strategy2019pdf/open
6. Wilson AM, Polk E, Field CB, and Fendorf S. (2025). Towards environmental justice: A framework and strategic approach for implementing community based participatory research in the earth and environmental sciences. *Environmental Science & Policy* 167, 104036. doi.org/10.1016/j.envsci.2025.104036
7. Spurlock D. Community Engagement: A Necessary Component of Policy Creation. *UNC Institute for the Environment*, May 1, 2017. environmentblog.web.unc.edu/2017/05/community-engagement-a-necessary-component-of-policy-creation

8. Delgado D and LoMonte FD. Access to Data: The “Under-the-Radar” Environmental Justice Issue. *Human Rights Magazine*, October 30, 2024. americanbar.org/groups/crsj/resources/human-rights/2024-october/access-to-data
9. What Role Does Transparency Play in Environmental Trust? *Sustainability Directory*, December 15, 2025. pollution.sustainability-directory.com/question/what-role-does-transparency-play-in-environmental-trust
10. Wastewater Monitoring Dashboard. *North Carolina Department of Health and Human Services*. Accessed December 19, 2025. covid19.ncdhhs.gov/dashboard/wastewater-monitoring
11. Chau D, Parra J, Santos MG, et al. (2023). Community engagement in the development of health-related data visualizations: a scoping review. *Journal of the American Medical Informatics Association* 31(2), 479 – 487. doi.org/10.1093/jamia/ocad090
12. Community Engagement Is Crucial for Successful Data Efforts. *Data Quality Campaign*, June 2025. dataqualitycampaign.org/wp-content/uploads/2025/06/DQC-Community-Engagement.pdf
13. AirKeeper Dashboard. *CleanAIRE NC*. Accessed December 19, 2025. cleanairenc.org/airkeeper-dashboard
14. Oróñez-Lancet J, Smith J, and Kelly C. Climate Change is Subjecting More Americans to Unbearable Extreme Heat. *Center for American Progress*, July 31, 2025. americanprogress.org/article/climate-change-is-subjecting-more-americans-to-unbearable-extreme-heat
15. Matthews T, Raymond C, Foster J, et al. (2025). Mortality impacts of the most extreme heat events. *Nature Reviews Earth & Environment* 6, 193 – 210. doi.org/10.1038/s43017-024-00635-w
16. Krist A, Chapman D, Morina J, et al. (2023). Extreme Heat Threatens Health, Health Care, and the Economy: Combining Health and Claims Data to Understand Climate Change. *Annals of Family Medicine* 21(Suppl 3), 5027. doi.org/10.1370/afm.22.s1.5027

17. Stewart E. (2024). Necessity or Luxury? Air Conditioning and Support for Utility Assistance in the Context of Climate Change. *Socius: Sociological Research for a Dynamic World* 10, 1 – 11. doi.org/10.1177/23780231241278540
18. Exploring the Potential of Heat Solutions for Heat Mitigation in High-Exposure Areas. (2025). *CleanAIRE NC and North Carolina Public Health Association*. cleanairenc.org/release-alert-the-heat-mitigation-report
19. Hsu A, Sheriff G, Chakraborty T, and Manya D. (2021). Disproportionate exposure to urban heat island intensity across major US cities. *Nature Communications* 12, 2721. doi.org/10.1038/s41467-021-22799-5
20. Chen S, Lund K, Murphy-Dunning C, and Seto KC. (2024). More extremely hot days, more heat exposure and fewer cooling options for people of color in Connecticut, U.S. *npj Urban Sustainability* 4, 47. doi.org/10.1038/s42949-024-00186-5
21. Gracia C. Landlords in NC are not required to provide AC. Why not? *WUNC*, August 21, 2025. wunc.org/environment/2025-08-21/landlords-cooling-standards-ac-extreme-heat
22. Anderson M. Racist Housing Practices From The 1930s Linked To Hotter Neighborhoods Today. *National Public Radio*, January 14, 2020. npr.org/2020/01/14/795961381/racist-housing-practices-from-the-1930s-linked-to-hotter-neighborhoods-today
23. Pasche M. Mitigating Extreme Heat Risk in Historically Redlined Areas. *Enterprise Community Partners*, April 29, 2024. enterprisecommunity.org/story/mitigating-extreme-heat-risk-historically-redlined-areas
24. Beating the Heat: How States Are Tackling Extreme Temperatures with Resilience Funding. *Sesame Solar*, August 18, 2025. sesame.solar/blog/tackling-extreme-temperatures-with-resilience-funding
25. Moore E. Winter is coming. Are landlords required to provide heat for North Carolina renters? *The Charlotte Observer*, October 11, 2022. charlotteobserver.com/news/local/article266745741.html

26. After Disaster Hits, Rural Communities Face Unique Challenges in Recovering. *United States Government Accountability Office*, January 28, 2025. [gao.gov/blog/after-disaster-hits-rural-communities-face-unique-challenges-recovering](https://www.gao.gov/blog/after-disaster-hits-rural-communities-face-unique-challenges-recovering)
27. Doran W and Hagel J. FEMA ‘our biggest obstacle’ as Helene recovery drags on, NC disaster leaders tell lawmakers. *WRAL*, September 23, 2025. [wral.com/story/fema-our-biggest-obstacle-as-helene-recovery-drags-on-nc-disaster-leaders-tell-lawmakers/22172102](https://www.wral.com/story/fema-our-biggest-obstacle-as-helene-recovery-drags-on-nc-disaster-leaders-tell-lawmakers/22172102)
28. Rural Barriers to Emergency Preparedness and Response. *Rural Health Information Hub*. Accessed December 5, 2025. ruralhealthinfo.org/toolkits/emergency-preparedness/1/rural-barriers
29. CERT – Community Emergency Response Team. *North Carolina Emergency Management*. Accessed January 14, 2026. readync.gov/get-involved/cert-community-emergency-response-team
30. Community Support Networks That Strengthen Disaster Preparedness. *Ecozoi*, March 13, 2025. ecozoi.com/blogs/blog/community-support-networks-that-strengthen-disaster-preparedness
31. North Carolina CERT Programs. *North Carolina Emergency Management*. Accessed January 15, 2026. readync.gov/nc-cert-programs-2025pdf/open
32. North Carolina Metropolitan (Urban) and Non-Metropolitan (Rural) Counties. *North Carolina Department of Health and Human Services*, May 31, 2019. ncdhhs.gov/documents/files/appendix-d-urban-rural-county-designation-0/download
33. Appalachian Design Center. *MountainTrue*. Accessed January 15, 2026. mountaintrue.org/what-we-do/healthy-communities/adc
34. Wellbery C, Sheffield P, Timmireddy K, et al. (2018). It’s Time for Medical Schools to Introduce Climate Change Into Their Curricula. *Academic Medicine* 93(12), 1774 – 1777. doi.org/10.1097/ACM.0000000000002368

35. Maxwell J and Blashki G. (2016). Teaching About Climate Change in Medical Education: An Opportunity. *Journal of Public Health Research* 5(1), 673. doi.org/10.4081/jphr.2016.673
36. Kotcher J, Patel L, Wheat S, et al. (2024). How to communicate about climate change with patients. *BMJ* 385, e079831. doi.org/10.1136/bmj-2024-079831
37. Bell EJ. (2010). Climate change: what competencies and which medical education and training approaches? *BMC Medical Education* 10, 31. doi.org/10.1186/1472-6920-10-31
38. Communicating on climate change and health: Toolkit for health professionals. *World Health Organization*, March 22, 2024. who.int/publications/i/item/9789240090224
39. CleanAIRE Academy. *CleanAIRE NC*. Accessed December 12, 2025. cleanairenc.org/academy



19 student researchers presented posters exploring the connections between human health and planetary health at NC BREATHE 2025



APPENDIX I: DAY 1 AGENDA

- 8:00 AM • REGISTRATION & BREAKFAST
- 9:15 AM • WELCOME & LAND ACKNOWLEDGEMENT
Presenter: Kassidy Plyler, *Catawba Nation*
- 9:20 AM • ASTRAZENECA RECOGNITION
- 9:30 AM • CLIMATE AND HEALTH EQUITY – A CLINICAL PERSPECTIVE ON REBUILDING RESILIENCE
Keynote Speaker: Dr. Shaneeta Johnson, *Meharry Medical College*
- 10:15 AM • UNDERSTANDING ENVIRONMENTAL DETERMINANTS OF RESPIRATORY HEALTH
Moderator: Dr. Steve Justus, *Town of Davidson*
Panelist: Dr. Karl Welke, *Atrium Health*
Panelist: Dr. Maria Jison, *AstraZeneca*
Panelist: Dr. Virginia Guidry, *NC Department of Health and Human Services*
Panelist: Dr. Jean Wright, *COPD Foundation*
- 10:45 AM • BREAK
- 11:00 AM • COMMUNITY ENVIRONMENTAL HEALTH & WELL-BEING: BRIDGING THE DIVIDE
Keynote Speaker: Dr. Sacoby Wilson, *University of Maryland*
- 12:00 PM • WORKING LUNCH & STUDENT POSTER VIEWING
- 1:00 PM • STUDENT RESEARCH LIGHTNING TALKS
Presenter: Rafi Vaca-Tricerri, *CleanAIRE NC*
- 1:20 PM • YOUTH LEADERSHIP FORUM
Moderator: Dr. Melissa Haithcox-Dennis, *Fayetteville State University (FSU)*
Student Panelists: Taleah Meadows, *FSU*; Kayla Halliburton, *FSU*;
 Jessica Booker, *FSU*; Victoria Hightower, *FSU*; Moarashad Gibson, *FSU*
- 2:00 PM • LEARNING FROM THE PAST & PLANNING FOR THE FUTURE
Moderator: Crystal Dixon, *Wake Forest University*
Panelist: Dr. Sacoby Wilson, *University of Maryland*
Panelist: Dr. Shaneeta Johnson, *Meharry Medical College*
Panelist: Charles Lee, *Howard University School of Law*
Panelist: Jasmine Washington, *Southern Environmental Law Center*
- 3:00 PM • REFLECTIONS ON DAY 1 & BREAKOUT INTRODUCTION
- 3:15 PM • CONCURRENT BREAKOUT SESSIONS (choose one track)
Track 1: Eco-Trauma & Healing: Supporting Community Mental Health
 Sharisse McGill, *Tranquil Quietude*
Track 2: Health Equity, Policy, and Data: Driving Informed Action
 Dr. Shaneeta Johnson, *Meharry Medical College*; Dr. Virginia Guidry, *NC DHHS*;
 Dr. Arlinda Ellison, *Alamance County Health Department*
- 4:45 PM • NETWORKING RECEPTION



APPENDIX II: DAY 2 AGENDA

- 8:00 AM • REGISTRATION & NETWORKING BREAKFAST
- 9:00 AM • RECAP OF DAY 1 & VISION FOR DAY 2
- 9:15 AM • ADVANCING ENVIRONMENTAL AND COMMUNITY HEALTH THROUGH POLICY AND PRACTICE
Keynote Speaker: Charles Lee, *Howard University School of Law*
- 10:15 AM • NC HEALTH & COMMUNITY RESILIENCE – A CASE STORY
Moderator: Dr. Keith McDade, *Warren Wilson College*
Panelist: Julie Mayfield, *North Carolina State Senate*
Panelist: Gray Jernigan, *MountainTrue*
Panelist: Tiffany Fant, *Sol Nation*
- 10:50 AM • BREAK
- 11:00 AM • CONCURRENT BREAKOUT SESSIONS (choose one track)
Track 1: The Future of Environmental Health & Access: Solutions for Community Practice
 Charles Lee, *Howard University*; Sherri White-Williamson, *EJCAN*;
 Dr. Arlinda Ellison, *Alamance County*; Maia Hutt (moderator), *SELC*
Track 2: Advocacy 101 for Health Professionals & Community Leaders
 Brittany L. Griffin, *CleanAIRE NC*; Dr. Ciara Zachary, *UNC-Chapel Hill*;
 Ryan Carter, *Catawba Riverkeeper Foundation*; Dr. Jovita Lee, *NC Black Alliance*;
 Will Hendrick (moderator), *NC Conservation Network*
- 12:10 PM • LUNCH & STUDENT POSTER VIEWING
- 1:00 PM • STUDENT RESEARCH LIGHTNING TALKS
Presenter: Sherri White-Williamson, *EJCAN*
- 1:20 PM • FROM AWARENESS TO ACTION: STUDENTS AS LEADERS FOR ENVIRONMENTAL QUALITY
Keynote Speaker: Dr. Undi Hoffler, *North Carolina Central University*
- 2:10 PM • HEAT MITIGATION: LISTENING TO COMMUNITY & CREATING SOLUTIONS
Moderator: Kennedy Williams, *CleanAIRE NC*
Panelist: Dr. Robyn Byers, *City of Charlotte Sustainability*
Panelist: Dr. Katherine Idziorek, *University of North Carolina at Charlotte*
Panelist: Dr. Charlene Wong, *Duke University*
Panelist: Bethany Milford, *NC Alliance of Public Health Agencies*
- 2:50 PM • CLOSING REFLECTIONS
Speaker: Dr. Virginia Guidry, *NC Department of Health and Human Services*
- 3:00 PM • ADJOURN



APPENDIX III: PLANNING COMMITTEE

GERALD BABAO

Deputy Director
CleanAIRE NC

JASMINE BAMLET, CAPM

Event Manager

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MADISON FRAGNITO

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*George Barth Geller Professor in Cancer
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WILLIAM ROSS JR., JD

Attorney of Council
Brooks Pierce

BRAYNDON STAFFORD

Environmental Justice Coordinator
NC Black Alliance

RAFI VACA-TRICERRI

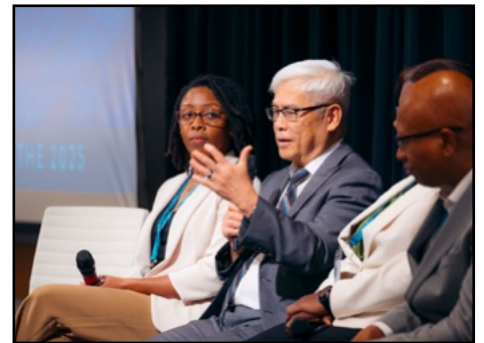
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KARL WELKE, MD, MS

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