Health & Medicine | Sep 29, 2026 | 10 min read | By Bryan White

North Carolina at a Crossroads: Science, Health, and the 2026 Elections

Environment * Climate Change * Public Health

Introduction: Constitutional Tension and Environmental Governance in North Carolina

North Carolina sits at the center of an institutional conflict over environmental regulation, public health administration, and the constitutional separation of powers. Throughout 2025 and most of 2026, state policy was shaped by structural friction between the executive branch under Governor Josh Stein and a veto-proof Republican supermajority in the General Assembly[1]. That institutional divide governed scientific and regulatory trajectories across synthetic chemical remediation in the Cape Fear River basin, utility decarbonization timelines, coastal wetland hydrology, and Medicaid expansion financing entering the November 3, 2026 legislative elections, which subsequently flipped the House of Representatives to Democratic control and broke the Republican Senate supermajority[30][31].

Emerging Contaminants: PFAS Toxicology, Remediation Engineering, and Policy

Per- and polyfluoroalkyl substances (PFAS) in the Cape Fear River basin -- drinking water source for over 1.5 million residents impacted by upstream Chemours discharges -- pose a major environmental engineering challenge[2]. Driven by high-energy carbon-fluorine bonds that resist degradation, legacy PFOA and PFOS and short-chain replacements like GenX bioaccumulate in tissues[2][3]. Epidemiological studies link exposure to immunosuppression, thyroid disease, dyslipidemia, reduced fertility, and kidney, testicular, and prostate cancers, prompting the U.S. EPA to set drinking water Maximum Contaminant Levels (MCLs) at 4.0 parts per trillion for PFOA/PFOS alongside a cumulative Hazard Index for GenX, PFNA, and PFHxS[2][3].

Because conventional oxidation cannot cleave carbon-fluorine bonds, utilities evaluated Granular Activated Carbon (GAC) adsorption, Reverse Osmosis (RO) filtration, and novel targeted ionic fluorogel resins developed under UNC's NC PURE initiative[4][5][6][7]. Following pilot studies at the Sweeney Water Treatment Plant, the Cape Fear Public Utility Authority (CFPUA) commissioned a $46 million, three-million-pound GAC facility in late 2022 that reduces PFAS to non-detectable levels without the energy penalty or 15-20% water rejection of RO[4][8].

| Remediation Technology | | Operating Mechanism | | Capital Cost Estimate (Sweeney Pilot) | | Advantages | | Limitations |

| Granular Activated Carbon (GAC) | | Physical adsorption onto high-surface-area porous carbon media | | 46 million dollars | | Lower capital and operational costs; minimal raw water waste; complements existing biofiltration. | | Susceptible to saturation by competing organic matter; requires frequent media replacement; earlier breakthrough for short-chain PFAS. |

| Reverse Osmosis (RO) | | High-pressure mechanical filtration across a semi-permeable membrane | | 150 million dollars | | Removes over 99% of all PFAS variants, including highly mobile short-chain compounds. | | Exorbitant energy demand; generates a highly concentrated liquid waste stream; rejects 15% to 20% of raw water intake. |

| Novel Targeted Resins (NC PURE) | | Selective electrostatic and fluorous interactions | | Currently in research and pilot phases | | Highly selective for PFAS, ignoring background organic matter; reduces frequency of media replacement. | | Requires further scale-up testing to determine commercial viability and life-cycle costs. |

While the Department of Environmental Quality (NCDEQ) deployed over USD 469 million in water infrastructure grants -- including USD 17 million for CFPUA extensions to polluted well owners -- Governor Stein and Attorney General Jeff Jackson formally opposed a proposed USD 450 million EPA settlement with Chemours as inadequate for river cleanup and ratepayer relief, before North Carolina and impacted local governments finalized a USD 590 million settlement with Chemours, DuPont, and Corteva in September 2026 and NCDEQ directed Chemours on November 9, 2026 to remedy deficiencies in its Fayetteville Works PFAS cleanup plans[9][10][32][33]. Conversely, the General Assembly's 2026 Water Safety Act (SB 257) directs the NC Policy Collaboratory to study PFAS sources using total oxidizable precursor (TOP) and adsorbable organic fluorine (AOF) assays while barring NCDEQ from using Phase 1 data for enforcement and shielding facility identities[11].

Grid Modernization, Load Growth, and the Carbon Plan Evolution

Whereas House Bill 951 (2021) mandated that Duke Energy cut electricity carbon dioxide emissions 70% below 2005 levels by 2030 and reach net-zero by 2050, Senate Bill 266 (2025) repealed the interim 2030 target while retaining the 2050 mandate[12][13]. Driven by hyperscale data centers and manufacturing surging from 1,800 GWh to 25,000 GWh, Duke Energy's 2025/2026 Carolinas Resource Plan projects 16-60% net load growth over fifteen years[13][14]. Under a "replace-before-retire" strategy, the utility proposes five Combined Cycle (CC) and seven Combustion Turbine (CT) natural gas plants totaling 9,650 MW by 2033, delayed coal retirements, and reduced near-term solar procurement (~770 MW/year in 2026-2028)[13][15]. Analysts warn that expanding fossil fuels exposes ratepayers to gas price spikes -- responsible for 67% of recent rate hikes -- even as solar averages $13.76/MWh cheaper than gas, prompting Governor Stein to demand that data centers fund their own grid upgrades[13][16][14].

| Generation Technology | | Proposed Capacity Additions and Strategic Timelines (2025/2026 CPIRP) |

| Natural Gas (Combined Cycle) | | 5 new facilities totaling 6,825 MW by 2033; expanding to 8,200 MW by 2040. |

| Natural Gas (Combustion Turbine) | | 7 new facilities totaling 2,825 MW by 2032; expanding to 4,100 MW by 2040. |

| Solar and Storage | | Near-term solar additions reduced to ~770 MW/year post-2025. Total battery storage expanded to 5,600 MW, heavily focused on standalone

deployments. |

| Coal Fleet Retirements | | Delayed timelines under a "replace-before-retire" strategy. Major units like Marshall and Belews Creek delayed into the mid-to-late 2030s. |

| Advanced Nuclear | | Target in-service date for 3,351 MW of new Small Modular Reactors (SMRs) or Large Light Water Reactors (LLWRs) set for 2037. Pursuing Subsequent License Renewals for existing fleet. |

| Long-Duration Storage / Wind | | Offshore wind procurement halted for the 2026-2028 window. Bad Creek II pumped-hydro storage indefinitely delayed. |

Wetland Hydrology and Deregulation After Sackett v. EPA

North Carolina's wetlands provide vital ecosystem services: hydric soils store one million gallons of floodwater per acre, anaerobic bacteria drive microbial denitrification converting nitrate runoff into inert nitrogen gas (N2) to prevent estuarine eutrophication, and coastal marshes act as high-capacity carbon sinks[35]. Following the U.S. Supreme Court's 2023 Sackett v. EPA ruling limiting Clean Water Act jurisdiction to wetlands with continuous surface water connections, the General Assembly overrode Governor Cooper's veto to pass the 2023 Farm Act (SL 2023-63), tying state rules to the federal definition and stripping protections from 2.5 million acres (7% of state landmass)[35][17][36]. Valuation models show coastal wetlands prevented USD 625 million in Hurricane Sandy flood damages, whereas upstream wetland loss since 1985 has added USD 10.1 billion in National Flood Insurance Program claims[18][19].

| Ecosystem Service / Economic Metric | | Valuation and Impact Data |

| Hydrological Storage Capacity | | 1 acre of wetland stores approximately 1 million gallons of floodwater. |

| Hurricane Sandy Flood Mitigation | | Coastal wetlands prevented an estimated 625 million dollars in direct property damage across the Eastern Seaboard. |

| National Flood Insurance Claims | | Upstream wetland loss since 1985 is directly correlated with a 10.1 billion dollar increase in downstream NFIP claims. |

| Average Protective Value | | Coastal wetlands confer an average annual economic protection value of 1.8 million dollars per square kilometer. |

| Unprotected North Carolina Acreage | | Session Law 2023-63 removed protections from 2.5 million acres, roughly 7% of the state's landmass. |

Medicaid Expansion, Separation of Powers, and the 2026 Electoral Crucible

Implementing ACA Medicaid expansion in December 2023 lifted total enrollment to 3.14 million in FY 2025, cutting non-acute emergency department use, boosting Federally Qualified Health Center Medicaid revenue by 44%, and lowering uninsured rates at rural providers like Blue Ridge Health from 38% to 18%[20][21][22][23]. Because older and disabled enrollees (21% of enrollment) drive 54% of spending, the 2025-2026 budget (SL 2026-41) required a USD 319 million General Fund

rebase[24][25]. Meanwhile, after SB 512 and SL 2026-41 stripped the Governor of 84 appointments -- including control over the 15-member Environmental Management Commission (EMC) -- the NC Supreme Court heard consolidated oral arguments in Stein v. Berger and Stein v. Hall on November 10, 2026[26][27][28][34]. Heading into November 2026, flipping four Senate or five House seats was required to break the Republican supermajority and restore the executive veto; on November 3, 2026, Democrats flipped control of the House of Representatives and narrowed the Republican Senate margin to end the supermajority in both chambers[1][29][30][31].

| Legislative Chamber | | Total Seats | | Current Republican Seats | | Current Democratic Seats | | Net Flips Required to Break Supermajority | | Key 2026 Battleground Districts |

| NC State Senate (Pre-Election Baseline) | | 50 | | 30 (Supermajority broken Nov. 3, 2026) | | 20 | | 4 | | SD-11, SD-18, SD-34, SD-42 |

| NC State House (Pre-Election Baseline) | | 120 | | 71 (Majority flipped to Democrats Nov. 3, 2026) | | 47 (2 Independent) | | 5 | | HD-25, HD-35, HD-105, HD-115 |

Conclusion: Institutional Balance and Regulatory Trajectories

North Carolina's climate and health policies sit at the intersection of environmental science and constitutional authority. While GAC filtration and Medicaid expansion have delivered measurable gains, legislative mandates favoring gas expansion, wetland deregulation, and delayed PFAS enforcement reflect supermajority control. With the November 2026 elections having restored the Governor's veto power through a Democratic House majority and broken the Senate supermajority, the NC Supreme Court's pending rulings in Stein v. Berger and Stein v. Hall will now determine whether executive agencies regain appointment autonomy entering the 2027 legislative session[31][34].

Updates... (Nov 22, 2026): Updated the U.S. EPA WOTUS / Sackett v. EPA implementation page date from its 2017 legacy creation timestamp to its verified update date (Oct 14, 2026); all November 2026 election, PFAS settlement, and NC Supreme Court references remain current.

References & Primary Sources

* [1] MultiState Elections (2026). North Carolina State Elections Overview. -- https://www.multistate.us/elections/state?st=NC

* [2] University of North Carolina at Chapel Hill (Sep 12, 2019). The known unknowns: PFAS research in North Carolina. -- https://www.unc.edu/discover/the-known-unknowns/

* [3] North Carolina Department of Environmental Quality (NCDEQ) (Oct 1, 2026). Understanding PFAS. -- https://www.deq.nc.gov/news/key-issues/emerging-compounds/understanding-pfas

* [4] Cape Fear Public Utility Authority (CFPUA) (2018). Black & Veatch Sweeney Water Treatment Plant PFAS Pilot Final Report. -- https://www.cfpua.org/DocumentCenter/View/11274/BlackVeatch_FinalReport

* [5] Cape Fear Public Utility Authority (CFPUA) (Sep 29, 2022). PFAS Frequently Asked Questions. -- https://www.cfpua.org/780/Frequently-Asked-Questions

* [6] U.S. Environmental Protection Agency (EPA) (Aug 23, 2018). Reducing PFAS in Drinking Water with Treatment Technologies. -- https://www.epa.gov/sciencematters/reducing-pfas-drinking-water-treatment-technologies

* [7] North Carolina Health News (Apr 9, 2024). PFAS research lauded as activists call for regulatory action. -- https://www.northcarolinahealthnews.org/2024/04/09/pfas-research-laud/

* [8] Cape Fear Public Utility Authority (CFPUA) (2022). Sweeney Treatment Enhancements Project. -- https://www.cfpua.org/775/Sweeney-Treatment-Enhancements-Project

* [9] North Carolina Department of Environmental Quality (Feb 21, 2025). Governor Stein, NCDEQ Announce $265M for Drinking Water and Wastewater Infrastructure. -- https://www.deq.nc.gov/news/press-releases/2025/02/21/governor-stein-north-carolina-department-environmental-quality-announce-

* [10] North Carolina Department of Environmental Quality (2025). Governor Stein, DEQ Secretary Wilson Announce $17 Million in Grants to Address PFAS. -- https://www.deq.nc.gov/node/14966

* [11] Williams Mullen Legal News (Jul 8, 2026). North Carolina's Statewide PFAS Discharge and Biosolids Studies. -- https://www.williamsmullen.com/insights/news/legal-news/north-carolinas-statewide-pfas-discharge-and-biosolids-studies

* [12] North Carolina League of Conservation Voters (Aug 8, 2024). Duke Energy Must Follow the Law. -- https://nclcv.org/aa-duke-energy-must-follow-the-law/

* [13] NC Sustainable Energy Association (Jan 23, 2026). Analyzing Duke Energy's 2025/26 Proposed Carbon Plan. -- https://www.energync.org/blog/analyzing-duke-energys-2026-proposed-carbon-plan/

* [14] Office of the Governor of North Carolina (Feb 16, 2026). North Carolina Energy Policy Task Force 2026 Report. -- https://governor.nc.gov/documents/files/nc-energy-policy-task-force-2026-report/open

* [15] Environmental Defense Fund (EDF) (Sep 20, 2026). An Electricity Resource Plan for Duke Energy Comprising Clean and Cost-Effective Resources. -- https://library.edf.org/AssetLink/kuu881yi046318h1u5bdqb37acc4l832.pdf

* [16] Environmental Defense Fund (EDF) (Apr 24, 2026). NC Utilities Commission Order Delaying Low-Cost Solar. -- https://www.edf.org/media/nc-utilities-commission-order-delaying-low-cost-solar-insult-injury-customer-bills-soar-and

* [17] Smith Environment Blog (Oct 30, 2023). Wetlands Protection Update in North Carolina. -- https://www.smithenvironment.com/wetlands-protection-update/

* [18] Narayan, S., Beck, M. W., Wilson, P., Thomas, C. J., Guerrero, A., et al. (Aug 31, 2017). The Value of Coastal Wetlands for Flood Damage Reduction in the Northeastern USA. Scientific Reports, 7, 9463. -- https://doi.org/10.1038/s41598-017-09269-z

* [19] Environmental Defense Fund (EDF) (Jun 1, 2026). New Study Shows Wetlands Loss Has Increased Residential Flood Insurance Claim Payments by $10 Billion. --

https://www.edf.org/media/new-study-shows-wetlands-loss-has-increased-residential-flood-insurance-claim-payments-10

* [20] HealthInsurance.org (Dec 1, 2023). Medicaid Eligibility and Enrollment in North Carolina. -- https://www.healthinsurance.org/medicaid/north-carolina/

* [21] USAFacts (Sep 19, 2025). How Many People Are on Medicaid in North Carolina? -- https://usafacts.org/answers/how-many-people-are-on-medicaid-in-the-us/state/north-carolina/

* [22] Gupta, A., Berner, M. M., & Ilaiwy, A. (Jul 8, 2026). The Impact of North Carolina Medicaid Expansion on Emergency Room Visits per County. North Carolina Medical Journal, 87(4). -- https://doi.org/10.18043/001c.163876

* [23] Greenwell, T. (Dec 23, 2025). How North Carolina's Medicaid Expansion Has Affected Finances for Safety-Net Organizations. North Carolina Medical Journal. -- https://doi.org/10.18043/001c.154041

* [24] North Carolina General Assembly (2026). Session Law 2026-41 (SB 257). -- https://www.ncleg.gov/EnactedLegislation/SessionLaws/HTML/2025-2026/SL2026-41.html

* [25] North Carolina General Assembly Fiscal Research Division (2026). Medicaid Enrollment & Financial Update. -- https://webservices.ncleg.gov/ViewDocSiteFile/105332

* [26] North Carolina Chamber (July 15, 2026). NC Supreme Court to Hear Separation-of-Powers Cases. -- https://ncchamber.com/2026/07/15/nc-supreme-court-to-hear-separation-of-powers-cases/

* [27] North Carolina Department of Environmental Quality (NCDEQ) (Oct 1, 2026). Boards and Commissions. -- https://www.deq.nc.gov/about/boards-and-commissions

* [28] Court of Appeals of North Carolina (Jan 8, 2026). Opinion No. COA25-745 (Stein v. Hall). -- https://www.theassemblync.com/wp-content/uploads/2026/01/STEINVHALL-COA.pdf

* [29] The Assembly (Nov 6, 2026). Bills, Bills, Bills: What Can We Divine About House Dems' Priorities? -- https://www.theassemblync.com/news/politics/legislation/north-carolina-state-house-democrats-legislation/

* [30] The Assembly (Nov 18, 2026). What We Learned From Democrats' Gains in Rural North Carolina. -- https://www.theassemblync.com/news/politics/democrats-gains-rural-north-carolina-midterms-2026/

* [31] Anderson, B. (Nov 13, 2026). How Lame-Duck Republicans Could Spend the Final Weeks of 2026. The Assembly. -- https://www.theassemblync.com/news/politics/lame-duck-nc-republican-lawmakers-2026/

* [32] North Carolina League of Conservation Voters (Sep 14, 2026). NC Settles PFAS Claims for $590 Million. -- https://nclcv.org/cib09142026-nc-settles-pfas-claims/

* [33] North Carolina Department of Environmental Quality (November 9, 2026). NCDEQ Directs Chemours to Address Deficiencies in Its Plans to Clean Up PFAS Contamination. -- https://www.deq.nc.gov/news/press-releases/2026/11/09/ncdeq-directs-chemours-address-deficiencies-its-plans-clean-pfas-contamin

* [34] NC Political News (November 12, 2026). NC Supreme Court Hears Arguments Over

Governor's Appointment Powers (Stein v. Berger and Stein v. Hall). -- https://ncpoliticalnews.com/news/nc-supreme-court-arguments-governor-appointment-powers/

* [35] U.S. Environmental Protection Agency (EPA) (Updated Oct 14, 2026). About Waters of the United States (Sackett v. EPA Implementation). -- https://www.epa.gov/wotus/about-waters-united-states

* [36] North Carolina General Assembly (Jul 1, 2023). Session Law 2023-63 (SB 582, 2023 Farm Act). -- https://www.ncleg.gov/EnactedLegislation/SessionLaws/HTML/2023-2024/SL2023-63.html