SIDEBAR

Health Benefits of North Carolina's Transition to Clean Energy

Virginia T. Guidry, Lauren Thie, E. Benjamin Money

As nights become warmer, hurricanes stronger, and flooding more frequent, the health impacts of climate change on North Carolinians become more evident. Extreme heat impacts worker productivity in our agricultural and industrial sectors and is especially threatening to our older adults [1]. Climate change threatens the health of North Carolina's children by increasing risk of exposure to flooding, high heat events, and consequential shortages in food and healthy housing. North Carolina's Climate Risk Assessment and Resilience Plan further emphasizes that the health of the environment impacts the health of all people, cumulative hazards from heat and flooding are diminishing health, and existing inequities are exacerbated by climate change [2].

The challenge of climate change also presents an opportunity. Transitioning to a clean energy economy may provide myriad health benefits, including cleaner air and water and safer indoor environments [3]. Creating clean energy jobs may also provide sustainable economic development for North Carolina.

In October 2018, Governor Roy Cooper signed Executive Order No. 80, titled North Carolina's Commitment to Address Climate Change and Transition to a Clean Energy Economy [4]. This order commits North Carolina to significantly reducing air pollution and transitioning to clean energy sources.

Ranking second in the nation in installed solar capacity and 13th in increased energy efficiency savings, North Carolina has a strong record on clean energy [5, 6]. North Carolina's Clean Energy Plan is a framework for accelerating the state's transition to a clean energy economy [7]. It was developed with more than 160 stakeholder groups, including utilities, policymakers, regulators, universities, nonprofits, industry experts, and the public.

The plan is built on the philosophy that a clean energy economy creates good jobs and a healthy environment. The plan has three goals: 1) Reduce electric power sector greenhouse gas emissions by 70% below 2005 levels by 2030 and attain carbon neutrality by 2050; 2) Foster long-term energy affordability and price stability for North Carolina's residents and businesses by modernizing regulatory and planning processes; and 3) Accelerate clean energy innovation, development, and deployment to create economic opportunities for both rural and urban areas of the state [7].

The Clean Energy Plan focuses on the need to develop a regulatory model that incentivizes business decisions that benefit both the utilities and the public. Recommendations include developing carbon reduction policies that accelerate retirement of uneconomic coal production and increase other market-based and clean energy options [7]. It also recommends the implementation of new policies and tools to better align utility incentives with public interest, grid needs, and state policy [7]. Finally, it recommends modernizing our energy grid to support clean energy resource adoption, resilience, and other public interest outcomes [7].

Increasing clean energy in North Carolina reduces existing harmful health impacts of fossil fuel power generation, protects the health of future generations, and responds to the urgent health impacts of climate change happening now. In 2011, the impacts from coal power on the nation's public health were estimated at $187 billion, with public health costs to the Appalachian region estimated at $75 billion [8]. Shifting to clean energy would result in fewer days with poor air quality, which in turn would reduce health risks for individuals with cardiovascular disease and respiratory conditions like asthma. In fact, the Environmental Protection Agency suggests that the Southeastern United States could see health benefits valued at 1.58-4.15 cents/kilowatt hour from improvements in outdoor air quality associated with increased energy efficiency and renewable energy [9].

Clean energy investment in communities burdened with the greatest amount of heat exposure may reduce heat-related illness among those experiencing energy poverty: the inability to pay for adequate cooling or heating. Many of the communities most vulnerable to heat-related illness

in the state are in the Coastal Plain, receive copious sunlight annually, and could benefit greatly from rooftop solar installation. Some of these same communities have been hit by multiple extraordinary flooding events in recent years, also intensified by climate change. Clean energy in these communities would improve community resilience to extreme precipitation events and increasing heat while also protecting health.

Some affordable housing initiatives are increasing clean energy production to enhance community resilience. Efforts to create sustainable, clean-energy-dependent affordable housing are underway in Chatham County, North Carolina, as in California and other locations [10, 11]. Chatham County Habitat for Humanity installed rooftop solar panels on affordable housing in an area of the state experiencing high levels of heat, a model that could be expandeded in North Carolina [10].

Climate change is happening now, as the country sees hotter days, as well as more intense precipitation and flooding events [12]. Transitioning to a clean energy economy has support from state leadership and the ability to improve the health of the state's current residents and future generations. The time to support the health of North Carolinians by transitioning to clean energy is now. NCMJ

Virginia T. Guidry, PhD branch head, Occupational and Environmental Epidemiology Branch, Division of Public Health, North Carolina Department of Health and Human Services, Raleigh, North Carolina.
Lauren Thie, MPH environmental program consultant, Occupational and Environmental Epidemiology Branch, Division of Public Health, North Carolina Department of Health and Human Services, Raleigh, North Carolina.
E. Benjamin Money, Jr., MPH deputy secretary for health services, North Carolina Department of Health and Human Services, Raleigh, North Carolina.

Acknowledgments

This article was funded in part by CDC Climate and Health Cooperative Agreement 1 NUE1EH001316-01.

Potential conflicts of interest. The authors report no conflicts of interest.

References

1. Watts N, Amann M, Arnell PN, et al. The 2019 report of The Lancet Countdown on health and climate change: ensuring that the health of a child born today is not defined by a changing climate. Lancet. 2019;394(10211):1836-1878.
2. North Carolina Department of Environmental Quality. North Carolina Risk and Resiliency Report. Raleigh, NC: NC DEQ; 2020.
3. American Public Health Association. Climate Changes Health: Clean Energy Overview. APHA website. https://www.apha.org/topics-and-issues/climate-change/clean-energy. Accessed June 11, 2020.
4. North Carolina Governor Roy Cooper. Executive Order NO. 80: North Carolina's Commitment to Address Climate Change and Transition to a Clean Energy Economy. Raleigh, NC: North Carolina Governor's Office; 2018. https://files.nc.gov/governor/documents/files/EO80-%20NC%27s%20Commitment%20to%20Address%20Climate%20Change%20%26%20Transition%20to%20a%20Clean%20Energy%20Economy.pdf. Published October 29, 2018.. Accessed July 14, 2020.
5. Solar Energies Industry Association. North Carolina Solar. SEIA website. https://www.seia.org/state-solar-policy/north-carolina-solar. Published June 11, 2020. Accessed June 11, 2020.
6. Weissman G, Sargent R, Fanshaw B. Renewables on the Rise 2018: A Decade of Progress Toward a Clean Energy Future. Raleigh, NC: Environment North Carolina; 2018. https://environmentnorthcarolina.org/sites/environment/files/reports/NCE_Renewables-on-the-Rise_Jul18-Web.pdf. Published July 2018. Accessed June 11, 2020.
7. North Carolina Department of Environmental Quality. North Carolina Clean Energy Plan. NC DEQ website. https://deq.nc.gov/energy-climate/climate-change/nc-climate-change-interagency-council/climate-change-clean-energy-16. Published October 2019. Accessed June 11, 2020.
8. Epstein PR, Buonocore J, Eckerle K, et al. Full cost accounting for the life cycle of coal. Annal N Y Acad Sci. 2011;1219:73-98. doi: 10.1111/j.1749-6632.2010.05890.x
9. Environmental Protection Agency. Estimating the Health Benefits per-Kilowatt Hour of Energy Efficiency and Renewable Energy. EPA website. https://www.epa.gov/statelocalenergy/estimating-health-benefits-kilowatt-hour-energy-efficiency-and-renewable-energy#Screening-level%20regional%20estimates. Published 2018. Accessed June 11, 2020.
10. Kirkpatrick G. The Solar in Your Community Challenge: Chatham Habitat for Humanity Providing Solar Power For Homes. Habitat NC website. https://habitatnc.org/news/the-solar-in-your-community-challenge-chatham-habitat-for-humanity-providing-solar-power-for-homes/. Published February 5, 2018. Accessed June 11, 2020.
11. Habitat for Humanity California. Solar Panel Update. https://www.habitatca.org/legislative/solar-panel-update/#head-message. Accessed June 11, 2020.
12. American Meteorological Society. Explaining Extreme Events from a Climate Perspective. AMS website. https://www.ametsoc.org/ams/index.cfm/publications/bulletin-of-the-american-meteorological-society-bams/explaining-extreme-events-from-a-climate-perspective/. Published 2019. Accessed June 11, 2020.

Electronically published September 2, 2020.

Address correspondence to Virginia T. Guidry, 1912 Mail Service Center, Raleigh, NC 27699-1912 (virginia.guidry@dhhs.nc.gov).

N C Med J. 2020;81(5):334-335.
0029-2559/2020/81514