

Carbon Reduction Strategies for Electric Power Generation Facilities and Environmental Justice in Virginia

From the Virginia Environmental Justice Collaborative*

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*Created in 2015, the Virginia Environmental Justice Collaborative is a network involving Appalachian Voices, Chesapeake Climate Action Network, Faith Alliance for Climate Solutions, Mothers Out Front, Moms Clean Air Force, New Virginia Majority, Southeast CARE Coalition, University of Richmond, Virginia Interfaith Power and Light, Virginia Sierra Club, Virginia Conservation Network, and Virginia Organizing.

Environmental justice (EJ) is the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation and enforcement of environmental laws, regulations and policies.¹

Recommendation: Environmental Justice Advisory Council

Create a statewide Environmental Justice Advisory Council (EJAC) to directly and regularly communicate with the Secretary of Natural Resources, the Department of Environmental Quality, and the Department of Mines, Minerals and Energy. This council will improve engagement of previously underserved and disproportionately burdened populations in addressing legacies of harmful pollution, in building community resiliency and in climate change mitigation. There are at least ten states (California, Maryland, Massachusetts, Minnesota, New Jersey, New Mexico, New York, Oregon, Pennsylvania, and South Carolina) with an environmental justice advisory body for state environmental management agencies. As part of EJAC we recommend convening a Coastal Community Resiliency Task Force to address impacts of sea level rise, as discussed in the next section.

Recommendation: Address Vulnerability of Coastal Communities

Sea level rise contributing to flooding and other economic and physical harm and risks to coastal communities,² particularly in the Hampton Roads area³⁻⁴ and on Tangier Island,⁵ has been well documented and is being worsened by carbon pollution. Convening a Coastal Community Resiliency Task Force as part of EJAC (discussed above) would help identify the most vulnerable low-income, frontline communities impacted by sea level rise, and what policies are needed to protect them today and into the future. This Task Force would be different than the Resilience Consortium and the Hampton Roads Sea Level Rise Adaptation Forum with Old Dominion University because it would focus specifically on environmental justice communities and would include a broader geographical scope (e.g., Accomack County, including Tangier and other islands).

Recommendation: Promote Renewable Energy and Energy Efficiency

We recommend a mass based mitigation plan for greenhouse gases that targets overall emissions and includes present and future emissions.⁶ An important step for the state is to commit to 30X30: 30% reduction in carbon pollution from the electric sector by 2030 (from 2015 levels). This can be done with 20% renewables, plus energy efficiency savings of 1.5% per year. Energy efficiency is the most cost effective way to reduce emissions,⁷ meaning it is a smart investment of state funds. Since low income households devote as much as three times more of their income to energy costs as higher income households, energy efficiency programs targeting the most vulnerable can play a significant role in moving families out of poverty and improving overall

¹Environmental Protection Agency, Learn about Environmental Justice, <https://www.epa.gov/environmentaljustice/learn-about-environmental-justice#meaning>.

² Baptiste, N. 2015. Atlantic surging, Virginia sinking. *The American Prospect*. <http://prospect.org/article/atlantic-surging-virginia-sinking>.

³Montgomery, L. 2014. In Norfolk, evidence of climate change is in the streets at high tide. *Washington Post*. https://www.washingtonpost.com/business/economy/in-norfolk-evidence-of-climate-change-is-in-the-streets-at-high-tide/2014/05/31/fe3ae860-e71f-11e3-8f90-73e071f3d637_story.html?utm_term=.0b3dd97f7c28.

⁴ Kleinosky, L.R. et al. 2007. Vulnerability of Hampton Roads, Virginia to Storm-Surge Flooding and Sea-Level Rise. *Natural Hazards*. 40: 43. doi:10.1007/s11069-006-0004-z.

⁵ Marshall, C. 2015. Virginia islanders could be US first climate change refugees. *Scientific American*. <https://www.scientificamerican.com/article/virginia-islanders-could-be-u-s-first-climate-change-refugees/>.

⁶ States leaning toward mass-based CPP compliance, regional cooperation, <http://www.utilitydive.com/news/states-leaning-toward-mass-based-cpp-compliance-regional-cooperation/407691/>.

⁷ Molina, M. 2014. *The Best Cost for America's Energy Dollar: A National Review of the Cost of Utility Energy Efficiency Programs*; American Council for an Energy Efficient Economy: Washington, DC.

health and well-being.⁸ At the same time, the state policy environment for solar must be improved:⁹ in 2017 Virginia was given a letter grade of a “D” and ranked thirty-eighth out of fifty states.¹⁰ Other states in the mid-Atlantic state have greater use of clean energy.¹¹ Virginia policy-makers need to remove policy impediments that constrain the growth of renewables, such as caps on the use of net metering and restrictions on the use of Power Purchasing Agreements.¹² The state should also improve economic incentives for clean energy and establish a mandatory Renewable Portfolio Standard. From an environmental justice perspective it is particularly important to support multi-unit and community solar to broaden access while reducing overall costs and increasing benefits from solar.¹³ This can also help alleviate the energy burden of low-income populations who spend a disproportionate amount of their income on utilities.

Recommendation: *Clean Energy Jobs for Unemployed and Underemployed*

We support policies and actions to promote renewable energy and energy efficiency jobs and training to increase participation by women, people of color, low-income communities, and immigrants. Several states have successful green job training programs targeting rehabilitation of ex-convicts.¹⁴ Programs can improve access for disadvantaged or underserved groups to participate in clean energy and weatherization training programs.¹⁵ We suggest creation of a local clean energy business support network as part of EJAC (discussed above) to help facilitate training and employment objectives.

Recommendation: *Consider Cumulative Impacts in Permitting Decisions*

Scientific research demonstrates the need to consider cumulative and synergistic impacts of exposures from multiple sources to protect the health of overburdened communities.¹⁶ By measuring combined levels of criteria pollutants coming from different sources in the same area we can reduce overall emissions to safe levels.¹⁷ Geospatial laboratories on university campuses can employ Geographic Information Systems (GIS) and other social analysis and mapping tools to identify cumulative impacts. For example, the Environmental Protection Agency’s EJSCREEN helps identify locations of environmental justice communities using demographic data combined with levels of contaminants (e.g., ozone, lead, PM2.5, etc.) and risks for cancer, respiratory disease, and other health concerns.

Recommendation: *Target Reductions of Pollutants in Heavily Burdened Communities*

Air and water pollution often cause disproportionate harm in environmental justice communities.¹⁸ Out of 26 energy facilities in Virginia, 85% are located in areas where minority and low-income populations are higher than the state average.¹⁹ A significant portion of Criteria Air Pollutants are linked to fossil fuel combustion and these emissions contribute to respiratory disease.²⁰ Babies, children, and pregnant women are most vulnerable to harm.²¹ Richmond has consistently been listed as one of the top “asthma capitals” of the country due to environmental conditions, the number of people suffering, and the types of care that are affordable and

⁸ American Council for an Energy Efficient Economy. 2016. Report: “Energy Burden” on Low-Income, African American, & Latino Households up to Three Times as High as Other Homes, More Energy Efficiency Needed. <http://aceee.org/press/2016/04/report-energy-burden-low-income>.

⁹ Zullo, R. 2016. Major companies call for more renewable energy options in Virginia. *Richmond Times-Dispatch*. http://www.richmond.com/business/article_57df1b1e-8e36-5786-b15e-b582771772d1.html.

¹⁰ Solar Power Rocks. 2017. <https://solarpowerrocks.com/virginia/>.

¹¹ Ramsey, J. 2015. Virginia solar power development lags neighboring states. http://www.richmond.com/news/virginia/article_8e545711-1356-52f2-9600-6c16035bfeca.html.

¹² Toscano, D. 2017. Solar power continues to grow in Virginia. <http://davidtoscano.com/blog/solar-power-continues-to-grow-in-virginia>.

¹³ Michauld, G. 2016. Community Shared Solar in Virginia: Political and Institutional Barriers and Opportunities. *Politics, Bureaucracy and Justice*. 5(1): 1-15.

¹⁴ Hinch-Ownby, M. 2010. Green Jobs for Ex-Cons. <http://www.forbes.com/2010/09/03/green-jobs-solar-technology-prisons.html>.

¹⁵ Finley-Brook, M. and E.L. Holloman. 2016. Empowering Energy Justice. *International Journal of Environmental Research and Public Health*. 13(9): 926. doi:10.3390/ijerph1309092.

¹⁶ Soloman, G.M. et al. 2016. Cumulative environmental impacts: Science and policy to protect communities. *Annual Review of Public Health*. 37: 83-96.

¹⁷ Behles, D. 2010. Examining the air we breathe: EPA should evaluate cumulative impacts when it promulgates National Ambient Air Quality Standards. *Pace Environmental Law Review*. 28(1): 200-236.

¹⁸ Environmental Protection Agency, EJ SCREEN, <https://ejscreen.epa.gov/mapper/>.

¹⁹ Environmental Protection Agency. 2015. EJ Screening Report for the Clean Power Plan. <https://www.epa.gov/cleanpowerplan/ej-screening-report-clean-power-plan>.

²⁰ Smith, K.R. et al. 2013. Energy and human health. *Annual Review of Public Health*. 34: 159-188.

²¹ Perera, F.P. 2016. Multiple threats to child health from fossil fuel combustion: Impacts of air pollution and climate change. *Environmental Health Perspectives*. doi:10.1289/EHP299.

available.²² This is an environmental justice issue because poverty and lack of access to proper medical attention contributes to higher than average emergency visit rates and crude death rates for asthma. We recommend the creation of an Environmental Justice Emissions Reduction Incentive Program (i.e., tax credits) for power facilities and other industrial and manufacturing sites that reduce emissions in heavily burdened communities.

Recommendation: *Climate Justice*

Avoid use of carbon mitigation and energy transition strategies that increase emissions for communities of color.²³ For example, cap and trade programs need to be designed so they do not increase emissions in heavily burdened areas.²⁴ As another example, while natural gas contributes less air pollution than coal, releases from compressor stations can negatively impact public health during regular operations and intermittent blowdowns. Compressor stations generally release nitrogen oxides, carbon monoxide, particulate matter, volatile organic compounds, benzene, formaldehyde, ethylbenzene, toluene, and xylene,²⁵ all with significant health risks. Resource managers and researchers increasingly employ Life Cycle Assessments (LCA) or cradle-to-grave analysis, including all steps from raw material acquisition to end use, to quantify greenhouse gas (GHG) emissions from gas projects.²⁶ Research increasingly documents high levels of methane emissions from compressor stations and natural gas pipelines²⁷ which connects to devastating climate change impacts, particularly for coastal communities and vulnerable populations.²⁸ For example, a recent study estimates the GHG emissions of the Atlantic Coast Pipeline using a life cycle assessment to be nearly 68 million metric tons per year, equivalent to 20 coal plants.²⁹ With other state governments Virginia has an ethical obligation to improve how we quantify, regulate, and reduce methane leaks from natural gas infrastructure; current federal and state regulations either exempt greenhouse emissions or are simply not doing enough.³⁰ Furthermore, it is necessary to prepare for wide-ranging public health impacts of the natural gas supply chain, including hazards from increases in earthquakes and tremors as a result of injections used in the process of hydraulic fracturing.³¹

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²² Asthma and Allergy Foundation of America. Asthma Capitals 2015. <http://www.aafa.org/media/Asthma-Capitals-Report-2015-Rankings.pdf>.

²³ Paben, J.M.Z. 2014. Green power and environmental justice: Does green discriminate? *Texas Tech Law Review*. 46: 1067-1110; Wright, B. and E. Nance. 2012. Toward equity: Prioritizing vulnerable communities in climate change. *Duke Forum Law Social Change*. 4: 1-21.

²⁴ Farber, D.A. 2012. Pollution markets and social equity: Analyzing the fairness of cap and trade. *Ecology Law Quarterly*. 39: 1-56.

²⁵ Cloczko, N. 2015. A brief review of compressor stations.

<http://www.environmentalhealthproject.org/files/A%20Brief%20Review%20of%20Compressor%20Stations%2011.2015.pdf>.

²⁶ National Energy Technology Laboratory. 2011. Life Cycle Greenhouse Gas Inventory of Natural Gas Extraction, Delivery and Electricity Production. https://fossil.energy.gov/programs/gasregulation/authorizations/2011_applications/exhibits_11-128-LNG/31_skone_2_NG-GHG-LCI.pdf; National Energy Technology Laboratory, US Department of Energy. 2014. Life Cycle Greenhouse Gas Perspective on Exporting Liquefied Natural Gas from the United States. <https://energy.gov/sites/prod/files/2014/05/f16/Life%20Cycle%20GHG%20Perspective%20Report.pdf>

²⁷ Subramanian, R. et al. 2015. Methane Emissions from Natural Gas Compressor Stations in the Transmission and Storage Sector. Measurements and Comparisons with the EPA Greenhouse Gas Reporting Program Protocol. *Environmental Science and Technology*. 49(5): 3252-3261.

²⁸ National Renewable Energy Laboratory. 2015. Controlling Methane Emissions in the Natural Gas Sector: A Review of Federal & State Regulatory Frameworks Governing Production, Gathering, Processing, Transmission, and Distribution. <http://www.nrel.gov/docs/fy15osti/63416.pdf>.

²⁹ Oil Change International and Bold Alliance. 2017. The Atlantic Coast Pipeline: Greenhouse Gas Emissions Briefing. http://priceofoil.org/content/uploads/2017/02/atlantic_coast_pipeline_web_final_v3.pdf.

³⁰ Alvarez, R.A. et al. 2010. Greater focus needed on methane leakages on natural gas infrastructure. *Proceedings of the National Academy of Sciences*. 109(17): 6435-6440.

³¹ Ellsworth, W.L. 2013. Injection-Induced Earthquakes. *Science*. 341(6142). DOI: 10.1126/science.1225942.