ACHIEVING EMISSIONS REDUCTIONS FOR ENVIRONMENTAL JUSTICE COMMUNITIES THROUGH CLIMATE CHANGE MITIGATION POLICY

NICKY SHEATS*

INTRODUCTION

The Clean Power Plan rule is the U.S. Environmental Protection Agency's ("EPA") regulatory method of reducing the nation's carbon dioxide emissions and, by doing so, of fighting climate change.[1] There was very little in the original Clean Power Plan proposal that addressed environmental justice ("EJ")[2] using section 111(d) of the Clean Air Act[3] as authorization; it instead featured averaging carbon dioxide emissions rates[4] and facilitated emissions trading.[5] The EJ advocacy community responded to the Clean Power Plan's failure to address equity by proposing a number of ways that EJ could be incorporated into the proposed rule.[6] The three primary recommendations were: 1) mandated emissions reductions for EJ communities, i.e., communities of color and low-income communities; 2) prioritized use of energy efficiency and renewable energy in EJ communities; and 3) mandatory EJ analyses included in state plans developed pursuant to the Clean Power Plan that demonstrated the implementation of the first two recommendations and determined

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* Ph.D., M.P.P., Esq., Center for the Urban Environment of the John S. Watson Institute for Public Policy at Thomas Edison State University; New Jersey Environmental Justice Alliance.

[1] *See generally* Carbon Pollution Emissions Guidelines for Existing Stationary Sources, 79 Fed. Reg. 34,829 (June 18, 2014) (to be codified at 40 C.F.R. pt. 60).

[2] *Id.*

[3] 42 U.S.C. § 7411(d) (2016).

[4] States can fulfill their obligations under the Clean Power Plan by meeting an average carbon dioxide emissions rate assigned to each state by EPA. *See* Carbon Pollution Emissions Guidelines for Existing Stationary Sources: Electric Utility Generating Units, 80 Fed. Reg. 64,661, 64,667–68, 64,674–75, 64,812, 64,823 (Oct. 23, 2015) (to be codified at 40 C.F.R. pt. 60).

[5] *See id.* at 64,672, 64,674–75, 64,839.

[6] *See* Comment Letter on EPA Clean Power Plan, CENTER FOR EARTH, ENERGY, AND DEMOCRACY (Dec. 1, 2014), http://ceed.org/wp-content/uploads/2015/01/Clean-Power-Plan-Comments-EPA-HQ-OAR-2013-0601.pdf [https://perma.cc/LKL6-3C8C].

the distributive impacts of a state plan on EJ communities within the state.[7] There were other important EJ recommendations such as the recommendation that states should not be able to use carbon trading to fulfill their obligations under the Clean Power Plan.[8] However, the above three suggestions were also usually core recommendations.

The final version of the rule does provide what might best be characterized as an EJ "foothold" by requiring that states interact with EJ communities during development of their state plans[9] and the inclusion of an optional incentive program for the use of energy efficiency in low-income neighborhoods.[10] However, the Clean Power Plan still provides no mandatory substantive protections for EJ communities and does not attempt to incentivize emissions reductions for any particular communities, including EJ neighborhoods.[11]

The Clean Power Plan also places the EJ advocacy community in an awkward position because EJ advocates want to aggressively fight climate change but overwhelmingly do not support carbon trading, a

[7] *See id.*; *see also* Comment Letter on EPA Clean Power Plan, THE ENVIRONMENTAL JUSTICE LEADERSHIP FORUM ON CLIMATE CHANGE (Dec. 1, 2014), http://www.ejleadershipforum.org/wpcontent/uploads/2015/07/Env-Just-Leadership-Forum-on-Climate-Change-_Docket-ID-No.-EPA-HQ-OAR-2013-0602_final.pdf [https://perma.cc/Y499-4NJ8]; Principles of Climate Justice, ENVIRONMENTAL JUSTICE LEADERSHIP FORUM ON CLIMATE CHANGE, http://www.ejleadershipforum.org/wp-content/uploads/2015/07/Principles-of-Climate-Justice.pdf [https://perma.cc/5U4F-XADA] (last visited Jan. 23, 2017); Comment Letter on The Clean Power Plan Proposed Rule, NEW JERSEY ENVIRONMENTAL JUSTICE ALLIANCE (Dec. 1, 2014), http://www.ejleadershipforum.org/wp-content/uploads/2015/07/njeja-cpp-comments-final.pdf [https://perma.cc/8DBX-4MBY].

[8] Comment Letter on The Clean Power Plan Proposed Rule, NEW JERSEY ENVIRONMENTAL JUSTICE ALLIANCE 13–14 (Dec. 1, 2014), http://www.ejleadershipforum.org/wp-content/uploads/2015/07/njeja-cpp-comments-final.pdf [https://perma.cc/5XWA-CAA5].

[9] *See* Carbon Pollution Emission Guidelines for Existing Stationary Sources: Electric Utility Generating Units, 80 Fed. Reg. 64,661, 64,858, 64,916 (Oct. 23, 2015) (to be codified at 40 C.F.R. pt. 60).

[10] The Clean Energy Investment Program (CEIP) incentivizes the use of energy efficiency in low-income communities by awarding extra energy credits or allowances, depending on whether the state is using a rate or mass-based system, to those who implement energy efficiency projects in these areas. The program uses a similar method to incentivize the development of renewable energy in general. For information on the program, *see id.* at 64,675–76, 64,829–32. It is important to note that EPA issued a new proposed rule for the CEIP on June 16 of this year (2016). *See* 81 Fed. Reg. 42,939 (2016). However, this Paper will not discuss this newly proposed rule because the author has not yet had time to examine it.

[11] *See* Clean Energy Incentive Program Design Details, 81 Fed. Reg. 42,939, 42,340 (June 30, 2016) (to be codified at C.F.R. pts. 60 & 62).

policy mechanism the Clean Power Plan at least facilitates, if not promotes.[12] The desire to aggressively fight climate change is based on the belief that EJ communities may be disproportionately affected by a number of detrimental impacts of climate change including increased air pollution,[13] heat waves,[14] increased food prices,[15] and flooding that leaves behind toxic contamination.[16] It may also be especially difficult for residents of EJ communities to recover from extreme weather events.[17]

This Paper focuses on emissions reductions for EJ communities under the Clean Power Plan in particular as well as climate change mitigation policy in general and argues that these reductions should be both mandatory and planned. The next section of the Paper discusses why, from an EJ perspective, equity should be an integral part of climate change mitigation policy; then the need for climate change mitigation policy to produce emissions reductions for EJ communities is discussed; this is followed by an explanation of why neither the Clean Power Plan nor carbon trading programs in general can guarantee emissions reductions for EJ communities in the manner needed; then a specific mechanism for achieving these reductions under the Clean Power Plan is proposed; and the Paper concludes with several final thoughts. Many of the ideas contained in this Paper have been presented before in various forms in comments submitted by this author on behalf of the New Jersey

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[12] *See* Carbon Pollution Emission Guidelines for Existing Stationary Sources: Electric Utility Generating Units, 80 Fed. Reg. at 64,661, 64,858, 64,916; *see also* Clean Energy Incentive Program Design Details, 81 Fed. Reg. at 42,939.

[13] Ethinios Targaris et al., *Potential Impact of Climate Change on Air Pollution–Related Human Health Effects*, 43 ENVTL. SCI. & TECH. 4979 (2009); *see generally* Ethinios Tagaris et al., *Sensitivity of Air Pollution–Induced Premature Mortality to Precursor Emissions under the Influence of Climate Change*, 7 INT'L J. ENVTL. RESEARCH & PUBLIC HEALTH 2222 (2010).

[14] Marie S. O'Neill et al., *Modifiers of the Temperature and Mortality Association in Seven U.S. Cities*, 157 AM. J. EPIDEMIOLOGY 1074 (2003); ERIC KLINENBERG, HEAT WAVE: A SOCIAL AUTOPSY OF DISASTER IN CHICAGO 17 (2002); *see generally* Christopher K. Uejio et al., *Intra-urban societal vulnerability to extreme heat: the role of heat exposure and the built environment, socioeconomics, and neighborhood stability*, 17 HEALTH & PLACE 498 (2011).

[15] George Luber et al., *Climate Change Impacts in the United States: The Third National Climate Assessment*, U.S. Global Change Research Program, 228 (2014), http://nca2014.globalchange.gov [https://perma.cc/D8UJ-95JB].

[16] *Waterfront Justice Project*, THE N.Y.C. ENVTL. JUSTICE ALLIANCE (NYCEJA), http://www.nyc-eja.org/?page_id=311 [https://perma.cc/YZ69-3X9J] (last visited Jan. 23, 2017).

[17] MANUEL PASTOR ET AL., IN THE WAKE OF THE STORM: ENVIRONMENT, DISASTER AND RACE AFTER KATRINA 3 (2006); ROBERT BULLARD & BEVERLY WRIGHT, RACE, PLACE AND ENVIRONMENTAL JUSTICE AFTER HURRICANE KATRINA 9–10 (2008).

Environmental Justice Alliance.[18] However, additional ideas, discussion, and detail are included here.

Companion papers are being authored that will address other EJ issues connected to the Clean Power Plan and carbon trading. The U.S. Supreme Court has stayed implementation of the Clean Power Plan;[19] however, this Paper is written with the assumption that the rule will ultimately survive in its current form. If the Clean Power Plan must be substantially altered due to a federal court decision then another set of responses from an EJ perspective to these changes could be forthcoming.

I. EQUITY SHOULD BE PART OF CLIMATE CHANGE MITIGATION POLICY

As specific mechanisms for integrating EJ into climate change policy are debated, at times the debaters neglect to ensure that all discussion participants actually agree to the general premise from which particular ideas flow.[20] That premise is that equity and EJ should be an integral part of climate change mitigation policy.[21]

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[18] *See generally* Comment Letter on Federal Plan Requirements for Greenhouse Gas Emissions From Electric Utility Generating Units Constructed on or Before Jan. 8, 2014, N.J. ENVTL. ALLIANCE (Jan. 21, 2016), https://www.regulations.gov/contentStreamer?documentId=EPA-HQ-OAR-2013-0602-22585&attachmentNumber=1&disposition=attachment&contentType=pdf [https://perma.cc/KTC6-4X9X]; Comment Letter on The Clean Power Plan Proposed Rule, N.J. ENVTL. ALLIANCE (Dec. 1, 2014), http://www.ejleadershipforum.org/wp-content/uploads/2015/07/njeja-cpp-comments-final.pdf [https://perma.cc/KVA2-5885]; Comment Letter on Air Quality Management CO2 Budget Trading Program, N.J. ENVTL. ALLIANCE (Sep. 5, 2008), http://www.tesu.edu/watson/institute/documents/njeja_rggi_comments.pdf [https://perma.cc/9XVH-3RFW]. These documents are comments on the proposed Federal Plan, Clean Power Plan proposed rule and Regional Greenhouse Initiative proposed rules, respectively.

[19] *Supreme Court puts Obama's power plant regs on hold*, FOX NEWS (Feb. 9, 2016), http://www.foxnews.com/politics/2016/02/09/supreme-court-puts-obamas-clean-power-plan-on-hold.html [https://perma.cc/RAB2-AY82]; Jonathan H. Adler, *Supreme Court puts the brakes on the EPA's Clean Power Plan*, WASH. POST (Feb. 9, 2016), https://www.washingtonpost.com/news/volokh-conspiracy/wp/2016/02/09/supreme-court-puts-the-brakes-on-the-epas-clean-power-plan/ [https://perma.cc/9N5X-KQJR]; *see generally* Jessica Lyons Hardcastle, *Clean Power Plan Arguments Delayed, Full DC Circuit Court Will Hear the Case*, ENVTL. LEADER (May 17, 2016), http://www.environmentalleader.com/2016/05/17/clean-power-plan-arguments-delayed-full-dc-circuit-court-will-hear-the-case/# [https://perma.cc/D6RA-6W7F].

[20] Alice Kaswan, *Environmental Justice and Domestic Climate Change Policy*, 38 ENVTL. L. REP. 10287, 10287 (2008), http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1077675 [https://perma.cc/HLY8-DNA4].

[21] *Id.*

EJ advocates surely understand that not everybody agrees with this principle[22] but it still remains a critical assertion. This is true because the fight against climate change has the potential to transform our society and in the process could either perpetuate or exacerbate inequalities based on race and income that currently exist. The EJ advocacy community has expressed fears this could occur if equity and EJ considerations are not explicitly integrated into climate change policy but instead are left to be addressed solely through existing policies.[23]

A variety of inequalities based on race and income exist in the U.S., including but not limited to: life expectancy,[24] disease rates,[25] incarceration rate,[26] poverty,[27] and unemployment.[28] However, the inequity that is probably most relevant to the issues discussed in this Paper is the disproportionate number of environmental hazards and unwanted land uses that are sited in EJ communities.[29] There is evidence that the disproportionate number of polluting facilities has led to EJ community residents suffering exposure to a disproportionate amount of air pollution.[30]

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[22] *Id.*

[23] *Id.*

[24] Joyce Manchester & Julie Topoleski, *Growing Disparities in Life Expectancy*, CONG. BUDGET OFFICE (2008), https://www.cbo.gov/sites/default/files/110th-congress-2007-2008/reports/04-17-lifeexpectancy_brief.pdf [https://perma.cc/44EK-W4GM]; Hilary Waldron, *Trends in Mortality Differentials and Life Expectancy for Male Social Security–Covered Workers, by Average Relative Earnings*, U.S. SOCIAL SECURITY ADMIN., ORES Working Paper No. 108 (2007), https://www.ssa.gov/policy/docs/workingpapers/wp108.html [https://perma.cc/LG5H-NQ8P].

[25] *See generally Health, United States, 2012, with Special Feature on Emergency Care*, U.S. DEP'T OF HEALTH & HUMAN SERVICES (2013), http://www.cdc.gov/nchs/data/hus/hus12.pdf [https://perma.cc/X46S-SCXB].

[26] *See generally* Marc Mauer & Ryan S. King, *Uneven Justice: State Rates of Incarceration By Race and Ethnicity*, THE SENTENCING PROJECT (2007), http://www.sentencingproject.org/wp-content/uploads/2016/01/Uneven-Justice-State-Rates-of-Incarceration-by-Race-and-Ethnicity.pdf [https://perma.cc/F3NN-UT3P].

[27] *See generally* Carmen DeNavas-Walt, *Income, Poverty, and Health Insurance Coverage in the United States: 2012*, U.S. Dep't of Commerce, Economics and Statistics Admin., U.S. CENSUS BUREAU (2013), https://www.census.gov/prod/2013pubs/p60-245.pdf [https://perma.cc/8VLD-QJWP].

[28] *Household Data Annual Averages: Employment status of the civilian noninstitutional population by sex, age, and race*, U.S. BUREAU OF LABOR STATISTICS (2012), http://www.bls.gov/cps/aa2012/cpsaat05.pdf [https://perma.cc/L9Q3-Z9NY].

[29] *See generally* Robert D. Bullard et al., *Toxic Wastes and Race at Twenty 1987–2007: Grassroots Struggles to Dismantle Environmental Racism in the United States*, UNITED CHURCH OF CHRIST (2007), https://www.nrdc.org/sites/default/files/toxic-wastes-and-race-at-twenty-1987-2007.pdf [https://perma.cc/YYE7-NB54].

[30] Paul Mohai & Robin Saha, *Racial Inequality in the Distribution of Hazardous Waste: A National-Level Reassessment*, 54 SOCIAL PROBLEMS 343 (2007); *Toxic Wastes and Race*

Many EJ advocates want to use climate change mitigation policy to help reduce this "legacy" air pollution load on EJ communities.[31]

II. THE NEED FOR EMISSIONS REDUCTIONS IN EJ COMMUNITIES

There is evidence that a disproportionate number of environmental hazards, polluting facilities, and other unwanted land uses are located in communities of color and low-income communities.[32] This concentration of polluting facilities and unwanted land uses has almost certainly played an important role in the disproportionate exposure to air pollution experienced by residents of various EJ communities that has been documented in a number of investigations.[33]

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in the United States: A National Report on the Racial and Socioeconomic Characteristics of Communities with Hazardous Waste Sites, UNITED CHURCH OF CHRIST (1987), http://d3n8a8pro7vhmx.cloudfront.net/unitedchurchofchrist/legacy_url/13567/toxwrace87.pdf?1418439935 [https://perma.cc/MV6G-9QJ9]; *Cumulative Impacts: Building a Scientific Foundation*, CAL. ENVTL. PROT. AGENCY, 5–7 (2010), http://oehha.ca.gov/media/downloads/calenviroscreen/report/cireport123110.pdf [https://perma.cc/DCD6-42LJ].

[31] Rachel Morello-Frosch et al., *Understanding the Cumulative Impacts of Inequalities In Environmental Health: Implications for Policy*, 30 HEALTH AFFAIRS 879, 880–81 (2011), http://content.healthaffairs.org/content/30/5/879.full [https://perma.cc/N623-YHWL].

[32] *Toxic Wastes and Race in the United States: A National Report on the Racial and Socioeconomic Characteristics of Communities with Hazardous Waste Sites*, *supra* note 30.

[33] Michael Ash et al., *Justice in the Air: Tracking Toxic Pollution from America's Industries and Companies to Our States, Cities, and Neighborhoods* (2009), https://dornsife.usc.edu/assets/sites/242/docs/justice_in_the_air_web.pdf [https://perma.cc/XW3K-NAAR]; Manuel Pastor et al., *The air is always cleaner on the other side: Race, space, and ambient air toxics exposures in California*, 27 JOURNAL OF URBAN AFFAIRS 127 (2005); Douglas Houston et al., *Structural disparities of urban traffic in Southern California: implications for vehicle-related air pollution exposure in minority and high poverty neighborhoods*, 26 JOURNAL OF URBAN AFFAIRS 565 (2004); Manuel Pastor et al., *Waiting to Inhale: The Demographics of Toxic Air Release Facilities in 21st-Century California*, 85 SOCIAL SCIENCE QUARTERLY 420 (2004); Michael Jarrett et al., *A GIS-environmental justice analysis of particulate air pollution in Hamilton, Canada*, 33 ENV'T & PLANNING A955 (2001); D.R. Wernette & L.A. Nieves, *Breathing Polluted Air*, 18 EPA JOURNAL 16 (1992). *See also California EPA*, *supra* note 30, at 5–17. Criteria air pollutants are six pollutants for which EPA has set ambient air quality standards. These standards set maximum ambient air concentrations for each pollutant that are not to be exceeded. The six pollutants are: PM ($PM_{2.5}$ and PM_{10}), ozone, carbon monoxide, sulfur dioxide (SO_2), nitrogen oxides (NO and NO_2) and lead. For information on criteria air pollutants see the EPA website at: https://www.epa.gov/criteria-air-pollutants [https://perma.cc/3Q25-3RT2]. EPA has designated 187 airborne pollutants as hazardous air pollutants because they can cause serious detrimental health impacts including cancer. An attempt is made to control these pollutants through standards that can include best practices and emission limits. For information on hazardous air pollutants see the EPA website at: https://www.epa.gov/haps [https://perma.cc/MXK9-A9RD].

Based on evidence developed by the New Jersey Department of Environmental Protection ("NJDEP") it appears that the pattern of concentrating unwanted land uses in EJ communities also occurs in New Jersey, the home state of the New Jersey Environmental Justice Alliance ("NJEJA").[34] NJEJA is an EJ organization that has filed comments on both the Clean Power Plan rule and the related Federal Plan rule.[35] Partly, or perhaps largely, due to advocacy by and advice from NJEJA, the New Jersey Environmental Justice Advisory Council, and other organizational allies such as the Ironbound Community Corporation, Clean Water Action, and Eastern Environmental Law Center, NJDEP developed a nascent cumulative impacts screening tool.[36] The concept of cumulative impacts refers to the interaction, and the risks created and effects experienced due to the interaction, of multiple pollutants emitted by multiple polluting facilities located in a neighborhood.[37] It also encompasses the interactions of the pollutants with social vulnerabilities that exist in the community where the facilities are located.[38] NJDEP initially combined nine indicators in a cumulative impacts screening tool to estimate the relative amount of cumulative impacts in every block group in New Jersey.[39] To ascertain if there was a relationship between cumulative impacts, race, and income in New Jersey, NJDEP graphed the relative amount of cumulative impacts

[34] *See* STATE OF NEW JERSEY DEP'T OF ENVTL. PROT., http://www.nj.gov/dep/ej/ejcouncil.html [https://perma.cc/96P6-CLFT] (last visited Jan. 23, 2017).

[35] Comment Letter on The Clean Power Plan Proposed Rule, N.J. ENVTL. JUSTICE ALLIANCE, *supra* note 8.

[36] DEPT. OF ENVTL. JUSTICE ADVISORY COUNCIL, N.J. OFFICE OF ENVTL. PROT., http://www.nj.gov/dep/ej/ejcouncil.html [https://perma.cc/C3N7-2ZZ6] (last updated Sept. 13, 2013); *Our Mission*, IRONBOUND CMTY. CORP., http://ironboundcc.org/ [https://perma.cc/2RA5-FX2L] (last visited Jan. 23, 2017); *Protecting N.J.'s Waters*, CLEAN WATER ACTION, http://web.archive.org/web/20160306061427/http://cleanwateraction.org/njef [https://perma.cc/YD9K-4P7E]; *Our Mission*, EASTERN ENVTL. L. CTR., http://www.easternenvironmental.org/ [https://perma.cc/SL2P-FTSP] (last visited Jan. 23, 2017).

[37] *See* Morello-Frosch et al., *supra* note 31, at 879–80; CAL. ENVTL. PROT. AGENCY, *supra* note 30, at 3; NAT'L ENVTL. JUSTICE ADVISORY COUNCIL, ENSURING RISK REDUCTION IN COMMUNITIES WITH MULTIPLE STRESSORS: ENVIRONMENTAL JUSTICE AND CUMULATIVE RISKS/IMPACTS (2004), at 5.

[38] *See* Morello-Frosch et al., *supra* note 31, at 879–80; CAL. ENVTL. PROT. AGENCY, *supra* note 30, at 3; NAT'L ENVTL. JUSTICE ADVISORY COUNCIL, *supra* note 37, at 5.

[39] *See* N.J. DEPT. OF ENVTL. PROTECTION, A PRELIMINARY SCREENING METHOD TO ESTIMATE CUMULATIVE ENVIRONMENTAL IMPACTS 2, 2–4 (2009), http://www.state.nj.us/dep/ej/docs/ejc_screeningmethods20091222.pdf [https://perma.cc/CBV7-VNVX]. The nine indicators used were NATA Cancer Risk, NATA Diesel, NJDEP Benzene Estimate, Traffic: All, Traffic: Trucks, Density of Major Regulated Sites, Density of Known Contaminated Sites, Density of Dry Cleaners, and Density of Junkyards.

in block groups[40] against the percentage of block group residents that are of color or impoverished.[41] A clear pattern emerged as the number of color residents in a block group increases, so does the amount of cumulative impacts.[42] This positive correlation also exists between poverty and cumulative impacts: the estimated amount of cumulative impacts increases along with the number of low-income residents in a block group.[43] Several points are worth noting here. First, at least five of the nine indicators used in the screening tool to produce the figures discussed above were related to air pollution, so the relationship between cumulative impacts, race, and poverty can reasonably be taken as an indication that air pollution is an EJ problem in New Jersey.[44] Second, no statistical tests were performed to quantitatively confirm these relationships and the data is from 2009.[45] However, there is no compelling reason to believe that more recent data would demonstrate a different relationship and the evidence presented by the figures is troubling. The relationship between pollution, race, and income demonstrated by these figures and the aforementioned studies that investigated the disproportionate siting of unwanted land uses in EJ communities seemingly violates almost everything the country claims it stands for in terms of equity and justice. This is one reason why many EJ advocates insist that climate change mitigation policy should be used to reduce these environmental inequities.

Power plants that will be regulated by the Clean Power Plan[46] contribute to the pollution load borne by communities by emitting greenhouse gases ("GHGs"), criteria air pollutants, and hazardous air pollutants ("HAPs").[47] Whereas GHGs are considered global pollutants without

[40] Block groups are "statistical divisions" of census tracts defined by the U.S. Census. They are geographical areas that contain between 600 and 3,000 people. *See Geographic Terms and Concepts—Block Group*, U.S. CENSUS BUREAU, https://www.census.gov/geo/reference/gtc/gtc_block.html [https://perma.cc/4CLT-KCJ4].

[41] *See* N.J. DEPT. OF ENVTL. PROTECTION, *supra* note 39, at 5.

[42] *Id.*

[43] *Id.*

[44] *Id.* at 3.

[45] *Id.* at 1–2, 6.

[46] Fossil fuel electric generating units that are steam generating, combined cycle, or combined heat and power and are capable of selling 25 MW to a utility power distribution system will be regulated by the Clean Power Plan. They must also have a base load rating in excess of 260 GJ/h heat input of fossil fuel. *See* Carbon Pollution Emission Guidelines for Existing Stationary Sources: Electric Utility Generating Units, 80 Fed. Reg. 64,661, 64,715–16 (Oct. 23, 2015) (to be codified at 40 C.F.R. pt. 60).

[47] For the fact that these air pollutants are emitted simultaneously by power plants, *see* CHARLES DRISCOLL ET AL., CO-BENEFITS OF CARBON STANDARDS, PART 1: AIR POLLUTION

direct local health impacts,[48] criteria air pollutants and HAPs can have detrimental local health effects.[49] In the context of climate change the criteria pollutants and HAPs are called co-pollutants because they are emitted simultaneously with GHGs,[50] the air pollutants that actually cause climate change.[51] Perhaps the most worrisome of this group of pollutants is fine particulate matter ("PM") and its precursors sulfur dioxide and nitrogen oxides. Fine PM air pollution, all airborne particles less than or equal to 2.5 micrometers in diameter[52] (also known as $PM_{2.5}$), has been connected through numerous studies to a variety of detrimental health impacts including cardiovascular disease,[53] cardiopulmonary disorders,[54] lung

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CHANGES UNDER DIFFERENT § 111(D) OPTIONS FOR EXISTING POWER PLANTS, SYRACUSE UNIVERSITY AND THE CENTER FOR HEALTH AND THE GLOBAL ENVIRONMENT AT THE HARVARD SCHOOL OF PUBLIC HEALTH 2 (2014); *see also* Alice Kaswan, *Controlling Power Plants: The Co-pollutant Implications Of EPA's Clean Air Act § 111(D) Options For Greenhouse Gases*, 32 VA. ENVTL. L. J. 173, 177 (2015).

[48] *See* TODD SCHATZKI & ROBERT N. STAVINS, ANALYSIS GRP., ADDRESSING ENVIRONMENTAL JUSTICE CONCERNS IN THE DESIGN OF CALIFORNIA'S CLIMATE POLICY 2–3 (2009), http://www.climatechange.ca.gov/eaac/comments/2009-11-03_Schatzki_and_Stavins_attachment.pdf [https://perma.cc/SRL6-EMD8].

[49] For information on criteria air pollutants and HAPS, *see* Ash et al., *supra* note 33 and *see* immediately *infra* in text for discussion in the Paper of fine particulate matter, one of the criteria air pollutants.

[50] *See* DRISCOLL ET AL., *supra* note 47, at 2; Kaswan, *supra* note 47, at 177; Richard Toshiyuki Drury et al., *Pollution Trading And Environmental Injustice: Los Angeles' Failed Experiment In Air Quality Policy*, 9 DUKE ENVTL. L. & POL. F. 231, 257 (1999), http://scholarship.law.duke.edu/cgi/viewcontent.cgi?article=1177&context=delpf [https://perma.cc/2EQ4-CGM4].

[51] *See* DRISCOLL ET AL., *supra* note 47, at 2; *see also* Kaswan, *supra* note 47, at 174.

[52] C. Arden Pope & Douglas W. Dockery, *Health Effects of Fine Particulate Air Pollution: Lines that Connect*, 56 J. AIR & WASTE MGMT. ASS'N 709, 710 (2006), http://www.tandfonline.com/doi/abs/10.1080/10473289.2006.10464485 [https://perma.cc/9RTV-C9RH]; THAD GODISH, AIR QUALITY 62 (4th ed. 2003).

[53] *See generally* C. Arden Pope et al., *Cardiovascular Mortality and Long-Term Exposure to Particulate Air Pollution, Epidemiological Evidence of General Pathophysiological Pathways of Disease*, 109 CIRCULATION 71 (2004), http://circ.ahajournals.org/content/109/1/71.long [https://perma.cc/8HSK-7EYM]; *see also* Pope & Dockery, *supra* note 52, at 709–10.

[54] *See generally* Douglas W. Dockery et al., *An Association Between Air Pollution and Mortality In Six U.S. Cities*, 329 NEW ENG. J. MED. 1753 (No. 24) (1993), http://www.scientificintegrityinstitute.org/Dockery1993.pdf [https://perma.cc/AJK3-YWL9]; C. Arden Pope et al., *Lung Cancer, Cardiopulmonary Mortality, and Long Term Exposure to Fine Particulate Air Pollution*, 287 JAMA 1132 (2002), http://jamanetwork.com/journals/jama/fullarticle/194704 [https://perma.cc/XT62-R7DD]; C. Arden Pope et al., *Particulate Air Pollution as a Predictor of Mortality in a Prospective Study of U.S. Adults*, 151 AM. J. RESPIR. CRIT. CARE MED. 669 (1995); *see also* Pope & Dockery, *supra* note 52, at 709–10.

cancer,[55] and premature death.[56] The most ominous finding with respect to fine PM is probably the number of premature deaths with which it has been associated: an MIT study estimated it caused 200,000 premature deaths in the U.S. in the year 2005 alone.[57] Sulfur dioxide and nitrogen oxides have direct local health impacts and are also of concern because they are gaseous precursors for PM.[58] Nitrogen oxides are also a precursor for ozone.[59]

One aspect of fine PM air pollution that has important implications for the type of climate change mitigation policy discussed in this Paper is the apparent absence of a lower threshold for health benefits connected to the reduction of fine PM concentrations.[60] In other words, the lower the concentration of fine PM, the greater the amount of health benefits. This fact provides an incentive to drive down fine PM concentrations as low as possible.

III. THE GENERAL POLICY: MANDATORY EMISSIONS REDUCTIONS FOR EJ COMMUNITIES

Taken together, the facts discussed above would seem to support the recommendation by this Paper and others for mandatory emissions

[55] *See* Pope et al., *supra* note 54, at 1132; Dockery et al., *supra* note 54, at 1753; *see also* Pope & Dockery, *supra* note 52, at 709–10.

[56] Fabio Caiazzo et al., *Air Pollution and Early Deaths in the United States. Part I: Quantifying the Impact of Major Sectors in 2005*, 79 ATMOSPHERIC ENV'T 198 (2013); *see also* Michael Jerrett et al., *Spatial Analysis of Air Pollution and Mortality in Los Angeles*, 16 EPIDEMIOLOGY 727 (2005), http://www.scientificintegrityinstitute.org/Jerrett110105.pdf [https://perma.cc/GR7T-BUKP]; *see also* Pope et al., *supra* note 53, at 71; Pope et al., *supra* note 54, at 1132; Pope et al., *supra* note 54, at 669; Dockery et al., *supra* note 54, at 1753; Pope & Dockery, *supra* note 52, at 709–10.

[57] Caiazzo et al., *supra* note 56, at 198.

[58] Short-term exposure to sulfur dioxide has been linked to increased asthma symptoms, bronchoconstriction, and other respiratory problems. *See Sulfur Dioxide Basics*, EPA, https://www.epa.gov/so2-pollution/sulfur-dioxide-basics#effects [https://perma.cc/L6K3-KLC4]. Short-term exposure to nitrogen dioxide (one of the primary nitrogen oxides; the other is nitric oxide) has been associated with inflammation of the airway and increased respiratory symptoms. *See Basic Information About NO2*, EPA, https://www.epa.gov/no2-pollution/basic-information-about-no2#Effects [https://perma.cc/ZY3E-7R4F].

[59] *See Basic Information About NO2*, *supra* note 58.

[60] *See* 80 Fed. Reg. 64,995, 65,047 (2015)(to be codified at 40 C.F.R. pt. 60); 79 Fed. Reg. 34,829, 34,941–42 (2014). EPA states that it assumed no lower concentration threshold for the health benefits associated with reductions in $PM_{2.5}$ concentrations based on the report entitled *Integrated Science Assessment for Particulate Matter*, which was produced by the Agency. EPA further states that this document came to this conclusion based on an evaluation of the significant amount of scientific literature that investigated the relationship between $PM_{2.5}$ concentrations and health impacts. 79 Fed. Reg. 34,829, 34,941–42 (2014).

reductions in EJ communities. Those facts are: 1) EJ communities suffer from a disproportionate number of unwanted land uses[61] and a corresponding disproportionate exposure to air pollution;[62] 2) numerous studies have shown that air pollution, in particular fine PM air pollution, has detrimental health impacts;[63] 3) there are health benefits to driving down concentrations of fine PM air pollution as low as possible;[64] and 4) power plants contribute locally harmful GHG co-pollutants to the pollution loads of nearby communities.[65]

Ideally, the emissions reductions policy would be to intentionally develop strategies that maximize the reductions of co-pollutants while achieving a specified GHG reduction goal. This would be coupled with mandatory emissions reductions from power plants located in EJ communities. This policy should result in the reduction of harmful co-pollutants in EJ communities.

However, even if GHG reduction strategies were not intentionally developed to also maximize co-pollutant emissions reductions,[66] as is the case with the Clean Power Plan, the next best policy would be to require mandatory emissions reductions of GHGs from polluting power plants located in EJ communities. This policy would benefit EJ communities because even without the intentional maximization of co-pollutant reduction, there should be incidental co-pollutant reductions as GHGs are being reduced.[67] This incidental co-pollutant reduction should improve the health of local communities.

The primary focus of the policy suggested in this Paper is to ensure emissions reductions in EJ communities as part of climate change

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[61] *See Toxic Wastes and Race in the United States: A National Report on the Racial and Socioeconomic Characteristics of Communities with Hazardous Waste Sites*, *supra* note 30.

[62] *See supra* Section II.

[63] *See supra* Section II.

[64] *See supra* Section II.

[65] *See generally supra* Section II; *see also* Kaswan, *supra* note 47.

[66] SCHATZKI & STAVINS, *supra* note 48, at 19, would go the other direction and strengthen existing policies that primarily address GHG co-pollutants but that also yield GHG emissions reductions.

[67] The public health co-benefits linked to the reduction of these co-pollutants can be extensive. *See* MANUEL PASTOR ET AL., MINDING THE CLIMATE GAP, WHAT'S AT STAKE IF CALIFORNIA'S CLIMATE LAW ISN'T DONE RIGHT AND RIGHT AWAY 4 (2010), https://dornsife.usc.edu/assets/sites/242/docs/mindingthegap.pdf [https://perma.cc/BRR5-LW49]. *See also* L. Cifuentes et al., *Hidden Health Benefits of Greenhouse Gas Mitigation*, 293 SCI. 1258 (No. 5533) (2001), https://cfpub.epa.gov/ncer_abstracts/index.cfm/fuseaction/display.files/fileID/13022 [https://perma.cc/ZBW8-4R5T] for some quantification of the health benefits of co-pollutant reductions. *See also infra* Section V, discussing EPA touting the co-benefits produced by the Clean Power Plan due to co-pollutant reduction.

mitigation policy whether the policy is a regulatory approach, the current version of the Clean Power Plan, or some type of carbon-trading policy. However, one fear expressed by the EJ advocacy community is that the Clean Power Plan, or some carbon-trading program, will actually result in an increase in emissions in some EJ communities.[68] This possibility will be discussed in more detail below. A minimally protective policy would be to ensure, at the very least, that the Clean Power Plan, or any other climate change policy, would not result in increased emissions for EJ communities.

At times, the primary EJ climate change position has been characterized as the desire to prevent increased emissions in EJ communities under a carbon-trading program.[69] However, while increased emissions are certainly a concern, the EJ advocacy community has consistently also talked about the need for emissions reductions[70] and this Paper emphasizes the need to use climate change policy to actually achieve emissions reductions for EJ communities and not to settle only for preventing emissions increases. Climate change mitigation policy presents our country with an unprecedented opportunity to drive down concentrations of fine PM and other air pollutants to levels that have not been achieved by using other sections of the Clean Air Act alone.[71] The political and societal will that has developed to fight climate change should also be harnessed to reduce pollution in EJ communities. If we do not use climate change mitigation policy in an intentional and planned fashion to help

[68] *See* Comment Letter on Federal Plan Requirements for Greenhouse Gas Emissions From Electric Utility Generating Units Constructed on or Before Jan. 8, 2014, *supra* note 18, at 6–7; *see also* Comment Letter on The Clean Power Plan Proposed Rule, *supra* note 18, at 5–6.

[69] *See, e.g.*, Evan J. Ringquist, *Trading Equity for Efficiency in Environmental Protection? Environmental Justice Effects from the SO_2 Allowance Trading Program*, 92 SOC. SCI. Q. 297, 2 (No. 2) (2011), http://www.eenews.net/assets/2011/03/30/document_pm_01.pdf [https://perma.cc/3C3D-VXHH]; Jason Corburn, *Emissions Trading and Environmental Justice: Distributive Fairness and the USA's Acid Rain Program*, 28 ENVTL. CONSERV. 323, 323 (No. 4) (2001), https://www.researchgate.net/publication/231923515_Emissions_trading_and_environmental_justice_Distributive_fairness_and_the_USA's_Acid_Rain_Programme [https://perma.cc/S6TG-B7WZ].

[70] *See* Comment Letter on Federal Plan Requirements for Greenhouse Gas Emissions From Electric Utility Generating Units Constructed on or Before Jan. 8, 2014, *supra* note 18, at 6–7; *see also* Comment Letter on The Clean Power Plan Proposed Rule, *supra* note 18, at 5–6.

[71] *See* Kaswan, *supra* note 47, at 177, 192 (commenting that the Clean Power Plan should deliver emissions reductions that are in addition to those yielded by other Clean Air Act programs).

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EJ communities now, we will miss an opportunity to help these communities that might never re-emerge.[72]

IV. WHY THE CLEAN POWER PLAN AND CARBON-TRADING PROGRAMS DO NOT ENSURE EMISSIONS REDUCTIONS FOR EJ COMMUNITIES

A state can meet its obligations under the Clean Power Plan by having its affected fleet of power plants[73] collectively meet an average carbon dioxide emissions rate assigned to it by EPA.[74] For the purposes of this Paper, the important point to be made here is that the Clean Power Plan does not force any particular polluting facility to meet a certain carbon dioxide emissions rate.[75] However, the Clean Power Plan, in part, derives the states' average rates by setting subcategory rates that for the

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[72] PASTOR ET AL., *supra* note 17, at 4–5, also makes this argument about lost opportunity if climate change mitigation policy is not used to decrease emissions in the neighborhoods that need these reductions the most.

[73] *See* Carbon Pollution Emission Guidelines, *supra* note 46 for a definition of affected power plants, i.e., power plants that will be regulated by the Clean Power Plan.

[74] For average emission rate goals *see* 80 Fed. Reg. 64,661, 64,824 (2015) (40 C.F.R. § 60, Table 2 (2015)). A state can also fulfill its obligations under the Clean Power Plan by having the appropriate facilities collectively meet the subcategory emissions rates for natural gas plants and coal plants. 80 Fed. Reg. 64,833–34 (40 C.F.R. § 60.5855 (2015)).

[75] For example, EPA notes that a state could meet its obligation under the Clean Power Plan by simply imposing the appropriate subcategory rate on each of its affected electric generating units (EGUs), but then notes further that "[a]lternatively, a state may impose standards with differing degrees of stringency on various sources, and in fact may be more stringent overall than its state goal requires." 80 Fed. Reg. 64,661, 64,727 (2015). It stands to reason that if some EGUs in a state have a more stringent emission rate than the state average then others may have a rate that is less than that average. This would seem to be especially true, since EPA also states that an affected EGU does not necessarily have to reduce its actual emissions. 80 Fed. Reg. 64,779. EPA also states that "[f]urthermore, as a practical matter, states are free to apportion reductions in a way that reflects any subcategories of their choosing when determining the emission standards for individual affected EGUs," 80 Fed. Reg. at 64,791, and "[a]lternatively, a state may establish emissions standards for affected EGUs at different levels from the uniform subcategory-specific emission performance rates, provided that when implemented, the emission standards achieve the CO_2 emission performance rates or state rate- or mass-based CO_2 emission goal set forth by the EPA for the state," 80 Fed. Reg. 64,827, and "[a]lternatively, if a state chooses, it could apply rate-based emission standards to individual affected EGUs, or to categories of affected EGUs, at a lb CO_2/MWh rate that differs from the CO_2 emission performance rates or the state's rate-based CO_2 goal. In this case, compliance by affected EGUs with their emissions standards would not necessarily ensure that the collective, weighted average CO_2 emission rate for these affected EGUs meets the CO_2 emission performance rates or the state's rate-based CO_2 goal. Under this approach, therefore, the state would be required to include a demonstration, in the state plan submittal, that its plan would achieve the CO_2 emission performance rates or applicable state rate-based CO_2 goal." 80 Fed. Reg. 64,833–34 (40 C.F.R. § 60.5855 (2015)).

most part correspond to coal plants (steam generating units) and natural gas combined cycle ("NGCC") facilities,[76] and states can also meet their obligations under the Clean Power Plan by imposing the appropriate subcategory rate on each of their affected facilities.[77] A state could also create other subcategory rates as long as the state's fleet of affected plants collectively meets the average rate set by EPA.[78] A state can also choose to implement a rate-based or mass-based trading program.[79] In a rate-based trading program, a facility can meet its assigned rate, in whole or in part, by buying emissions reductions credits in addition to, or instead of, actually reducing their emissions rate.[80] An emissions reduction credit allows its holder to claim a certain amount of electricity production with no related emissions[81] and can be used to lower the official carbon dioxide emissions rate of a facility.[82] A state is also allowed to convert this rate-based trading system to a mass-based trading system[83] under which facilities can meet their emissions obligations by not only reducing their own emissions but also by purchasing allowances.[84] An allowance provides its holder with the authority to emit a certain amount of carbon dioxide.[85] In a mass-based system, no carbon dioxide can be emitted without an allowance that authorizes its release into the atmosphere.[86]

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[76] For the fact that state average CO_2 emissions rates are derived from the subcategory rates, *see* 80 Fed. Reg. 64,674. For the fact that subcategory rates generally correspond to coal plants and NGCC facilities, *see* EPA, COMPONENTS OF THE CLEAN POWER PLAN: SETTING STATE GOALS TO CUT POLLUTION 1 (2015), https://www.epa.gov/sites/production/files/2015-08/documents/fs-cpp-state-goals.pdf [https://perma.cc/HSR8-8QMM]. *But see* EPA, OVERVIEW OF THE CLEAN POWER PLAN: CUTTING POLLUTION FROM POWER PLANTS 3 (2015), https://www.epa.gov/sites/production/files/2015-08/documents/fs-cpp-overview.pdf [https://perma.cc/KWB4-48D2] (indicating that steam generating units also generally include oil plants in addition to coal plants). The subcategory rate for steam-generating units is 1,305 lb CO_2/MWh and for NGCC plants is 771 lb CO_2/MWh. 80 Fed. Reg. 64,812.

[77] For the fact that states can meet their obligations under the Clean Power Plan by applying the appropriate subcategory rate to their affected EGUs, *see* 80 Fed. Reg. 64,667–68, 64,674, 64,812.

[78] 80 Fed. Reg. 64,827, 64,833–34.

[79] 80 Fed. Reg. 64,727.

[80] 80 Fed. Reg. 64,779.

[81] EPA has defined an energy reduction credit as a "... tradable compliance unit representing one MWh of electric generation (or reduced electricity use) with zero associated CO_2 emissions." 80 Fed. Reg. 64,834 (40 C.F.R. § 60.5790(c) and 60.5880 (2015)).

[82] 80 Fed. Reg. 64,779 (40 C.F.R. § 60.5790(c) (2015)).

[83] 80 Fed. Reg. 64,727, 64,834–35 (40 C.F.R. § 60.5815, 60.5820 and 60.5825 (2015)).

[84] 80 Fed. Reg. 64,779, 64,835 (40 C.F.R. § 60.5825 and 60.5880 (*see* definition of allowance system) (2015)).

[85] *Id.*

[86] David Doniger, *Understanding the EPA's Clean Power Plan*, NATURAL RESOURCES

To reiterate, the Clean Power Plan does not guarantee emissions reductions by any plant at any particular location within a state. This is true whether or not a state chooses to implement a trading system to meet its Clean Power Plan obligations. Carbon-trading systems, in general, do not guarantee emissions reductions from any particular plant at any particular location.[87] Typically carbon-trading programs set an overall reduction goal and attempt to issue, through either auctions or a free distribution to polluting facilities, the appropriate number of emissions allowances to attain that goal, and then allow facilities to trade or buy allowances from each other.[88] This type of carbon-trading program not only does not ensure emissions reductions at any specific location, it can even allow increases in emissions at some locations.[89] This is also true of the Clean Power Plan. In the draft Clean Power Plan rule, final Clean Power Plan rule, and related draft Federal Plan, EPA concedes this is a possibility.[90] For example, in the final rule, EPA states that a "relatively small number of coal fired plants" and "a number of the highest-efficiency" natural gas plants may experience emissions increases.[91]

DEFENSE COUNCIL (Aug. 11, 2015), https://www.nrdc.org/experts/david-doniger/understanding-epas-clean-power-plan [https://perma.cc/7X4F-7MBA].

[87] For fuller descriptions of the operations of a carbon-trading system, *see* Lily N. Chinn, *Can The Market Be Fair And Efficient? An Environmental Justice Critique of Emissions Trading*, 26 ECOLOGY L.Q. 80, 87–89 (1999), http://scholarship.law.berkeley.edu/cgi/viewcontent.cgi?article=1602&context=elq [https://perma.cc/9KC5-EGVP]; Alice Kaswan, *Environmental Justice and Domestic Climate Change Policy*, 38 ENVTL. L. REP. 10287, 10291–93 (2008), http://elr.info/news-analysis/38/10287/environmental-justice-and-domestic-climate-change-policy [https://perma.cc/M52R-TTSZ]; Drury et al., *supra* note 50, at 237–39.

[88] Kaswan, *supra* note 87, at 10293.

[89] *Id.*

[90] The draft Federal Plan contains model rate-based and mass-based trading programs. EPA will finalize one of the trading programs as the state plan that will be imposed on a state if it does not develop its own plan. *See* Federal Plan Requirements for Greenhouse Gas Emissions From Electric Utility Generating Units, 80 Fed. Reg. 64,965 (Oct. 23, 2015) (to be codified at 40 C.F.R. Pt. 60, 62, 78). Both types of trading programs will probably be available for states to adopt or customize to their own needs if they so choose.

[91] EPA says that the natural gas plants have low emissions of conventional pollutants but concedes that these pollutants "contribute to adverse health effects in nearby communities and regionally." 80 Fed. Reg. 64,670. EPA seems to be indicating that emissions from these plants could have local effects since it goes on to discuss "localized increases" and "localized impacts." *Id.* In the draft Clean Power Plan, EPA commented that: ". . . as part of a state's CAA section 111(d) plan, the state may require an affected EGU to undertake a physical or operational change to improve the unit's efficiency that results in an increase in the unit's dispatch and an increase in the unit's annual emissions of GHGs and/or other regulated pollutants. A state can take steps to avoid increased utilization

However, EPA also hints that these increased emissions and perhaps even existing levels of emissions for some pollutants may be "negligible" if they are released by NGCC plants.[92] There is a real-life example in New Jersey that indicates emissions from NGCC plants can be significant, especially when considered in the context of EJ communities that are already overburdened with pollution.[93] The Newark Energy Center is a relatively new NGCC facility located in the EJ community of Newark, NJ.[94] The facility's permit allows it to emit approximately 1.82 million pounds of GHG co-pollutants per year, including 139 tons of nitrogen oxides, 97.65 tons of fine PM, and 19.73 tons of sulfur dioxide.[95]

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of particular EGUs and thus avoid any significant increases in emissions including emissions of other regulated pollutants whose environmental effects would be more localized around the affected EGU. To the extent that states take this path, there would be no new environmental justice concerns in the areas near such EGUs." Carbon Pollution Emission Guidelines for Existing Stationary Sources: Electric Utility Generating Units, 79 Fed. Reg. 34,829, 34,949 (Oct. 23, 2015) (to be codified at 40 C.F.R. 60).

Obviously EPA is aware that increased emissions could harm nearby communities thus raising potential EJ issues. In the proposed Clean Power Plan rule, EPA also commented on the potential local impacts of emissions increases when it stated: "Such plants would have more hours in the year in which they operate and emit pollutants, including pollutants whose environmental effects if any would be localized rather than global as is the case with GHG emissions. 79 Fed. Reg. 34,950.

In the draft Federal Plan, EPA commented that increased utilization of some NGCC facilities could affect concentrations of fine PM, ozone and nitrogen oxides by making "periods of relatively high concentrations more frequent". Federal Plan Requirements for Greenhouse Gas Emissions From Electric Utility Generating Units, 80 Fed. Reg. 65,051.

[92] In the proposed rule and Federal Plan, EPA cites a previous EPA action and studies that either assert or assume that emissions or impacts of certain pollutants (HAPs, SO_2, PM, and mercury) released by natural gas plants are negligible. Federal Plan Requirements for Greenhouse Gas Emissions From Electric Utility Generating Units, *supra* note 91, at 65,051; Carbon Pollution Emission Guidelines for Existing Stationary Sources: Electric Utility Generating Units, *supra* note 91, at 34,950.

[93] *See* NJDEP Fact Sheet *infra,* note 94.

[94] The NJDEP Fact Sheet for the then-proposed Hess Newark Energy Center NGCC plant indicated that, at the time, the City of Newark was 85.7% of color and the comparable percentage for the entire state was 34.0%. The Fact Sheet also indicated the City was disproportionately low-income since it showed that 28.5% of Newark residents lived below the poverty line whereas the comparable percentage for the entire state was 8.5%. *See* STATE OF NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION, Fact Sheet For Hess Newark Energy Center, Doremus Avenue and Delancy Street, Program Interest Number 08857, Permit Activity Number BOP11000, Application For Air Pollution Control Operating Permit and Federal Prevention of Significant Deterioration (PSD) of Air Quality Permit and Acid Rain Permit, at 19.

[95] The permit also allows emissions of 34.99 tons per year of volatile organic compounds, 483.7 tons per year of carbon monoxide, 67.17 tons per year of total suspended particulates,

NJDEP seems to believe that, in addition to being an EJ community, Newark is also a community with a relatively high level of cumulative impacts as evidenced by its comment that the city is an " . . . area where the NJDEP has recognized there are disproportionate impacts from multiple sources of pollution."[96] From an EJ perspective, a potential two million pounds of co-pollutants each year released into an overburdened EJ community is certainly a significant amount of pollution and any increases in this emissions load should be prevented by the Federal Plan offered by EPA and by state plans developed pursuant to the Clean Power Plan.

Of course, this Paper has argued that one of the EJ goals with respect to state plans under the Clean Power Plan should go beyond preventing emissions increases and ensure emissions reductions for EJ communities. The Clean Power Plan is probably the most important rule ever promulgated by EPA, but, as it is currently constructed, does not ensure emissions reductions for the communities that arguably need them the most. Most EJ advocates believe that the Clean Power Plan will certainly deliver reductions to a number of EJ communities but important questions remain, including how many EJ communities will receive

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101.27 tons per year of PM_{10}, 8.22 tons per year of hazardous air pollutants, 10.57 tons per year of sulfuric acid, 119 tons per year of ammonia, and 2,000,000 tons per year of carbon dioxide equivalents. *See Air Pollution Control Permit Minor Modification and Preconstruction Approval, Permit Activity Number: BOP140001, Program Interest Number: 08857, Section C*, pp. 10–11. The total amount of GHG co-pollutants was calculated by adding up most of the different amounts of GHG co-pollutants contained in tables on pages 10 and 11 of the permit. Three different totals were calculated in an attempt to avoid the possible double counting of pollutants. A total of 1,833,160 pounds of co-pollutants was calculated by totaling all of the co-pollutants listed above (and in the text) except $PM_{2.5}$ and TSP (total suspended particles). These two pollutants were excluded because it is possible that both pollutants are accounted for by the amount of emissions listed for PM_{10}. $PM_{2.5}$ is a part of PM_{10} by definition. (The definition of PM_{10} is airborne particles less than or equal to 10 micrometers). *See Particulate Matter (PM) Basics*, EPA https://www.epa.gov/pm-pollution/particulate-matter-pm-basics#PM [https://perma.cc/D5CP-C3NG] (defining PM_{10} as airborne particles less than or equal to 10 micrometers). In this instance NJDEP believes that PM_{10} is a more accurate measure of PM emissions from the plan than TSP (author communication with NJDEP). If both PM_{10} and TSP are included in the calculation and only $PM_{2.5}$ is excluded then the total amount of co-pollutants emitted increases to 1,907,500. Another calculation was performed to account for the possibility that the total amount listed for volatile organic compounds included hazardous air pollutants (HAPs). This calculation excluded HAPs $PM_{2.5}$, and TSP, and yielded a total of 1,816,720 pounds of co-pollutants. Because it is a GHG, methane was also excluded from the calculations even though it was listed in one of the tables.

[96] NJDEP Fact Sheet, *supra* note 94, at 24.

reductions, which EJ communities will receive reductions, and what will be the extent of the reductions.[97] Many in the EJ advocacy community also believe that if EJ and equity are actually the priority as claimed by so many, including policymakers and the environmental community, then these questions should not be left to be answered by the market alone but should be subjected to intentional planning.[98]

V. A SPECIFIC MECHANISM FOR ACHIEVING EMISSIONS REDUCTIONS IN EJ COMMUNITIES

Perhaps the most direct and simplest way to achieve emissions reductions in EJ communities under the Clean Power Plan is to force polluting facilities located in EJ communities to meet a reduced carbon dioxide emissions rate without the use of emissions credits and thus achieve an absolute reduction in emissions. States could choose between one of two carbon dioxide emissions rates to impose on identified facilities: 1) a 25% reduction from its 2012 rate, or 2) the appropriate subcategory rate as set by the Clean Power Plan as long as this rate represents at least a 25% reduction from its 2012 rate.[99] The subcategory rates are 771 lbs CO_2/MWh for NGCC facilities and 1305 lbs CO_2/MWh for coal burning facilities.[100] It is assumed a state would choose to impose the rate it believes is the easiest to administer. Whichever rate is chosen must yield at least a 25% absolute reduction in emissions for EJ communities. Therefore, a state would have to calculate the actual mass of carbon dioxide emitted by each plant in an EJ community in 2012 and ensure that the reduced rate resulted in an actual 25% reduction in emissions for each plant in question for the year in question. What needs to be prevented is a plant in an EJ community achieving the reduced emission rate but not actually achieving a 25% reduction in the amount of emissions because its hours of operation may have changed. Similarly, a state using a mass-based system would also ensure that each plant in an EJ community achieved a 25% reduction in the total amount of carbon dioxide emissions it released in 2012.

As with any new proposal, there are several issues connected to this recommendation that need to be explored. One of the most important

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[97] SCHATZKI & STAVIN, *supra* note 48, at 2.

[98] Chinn, *supra* note 87, at 87–90, 113.

[99] *See The Clean Power Plan: Key Topics and Issues*, EPA 5, https://www.epa.gov/sites/production/files/2015-11/documents/cpp-key-topics.pdf [https://perma.cc/WU22-CGEJ] (stating that 2012 is the year EPA used for its baseline emissions calculations).

[100] *See generally* COMPONENTS OF THE CLEAN POWER PLAN, *supra* note 76.

is defining an EJ community. It is recommended that stakeholder groups be created to answer this question. A federal stakeholder group could be created by EPA to provide guidance for all states. Then each state could form its own stakeholder group who would have the authority to make a binding decision for that particular state. Another issue could be what to do about power plants that are not actually located in an EJ community but that affect one or more EJ communities. The resolution of this issue would be left up to the stakeholder group that defined an EJ community for the state. The best way to proceed might be to model emissions from the plants in question to determine their impact on the EJ community; then the stakeholder group would decide if that impact is enough to warrant that the plants be forced to meet the emissions rate that state chose for plants operating in EJ communities. Yet another issue might be that a NGCC plant located in an EJ community might have difficulty decreasing its emission rate if it is already operating at maximum efficiency. Such a plant might be forced to reduce its hours of operation in order to reduce its emissions. This could force a plant in another part of the state or elsewhere to increase its hours of operation in order to fill an electricity generation gap. Increased emissions would probably follow an increase in operating hours and this could present a dilemma: in attempting to reduce pollution in EJ neighborhoods, emissions could be increased elsewhere. This is very nearly the set of circumstances that EPA foresees may cause local increases in emissions under the Clean Power Plan.[101] There could be several ways to address this problem. The best-case scenario would be that renewable energy and energy efficiency could be used to prevent a generation gap and there would actually be no increases in emissions. Alternatively, a plant could be chosen for increased operation that is in a relatively unpopulated area or in an area with a relatively low amount of total pollution or low number of pollution sources. Stakeholder groups could be called upon to provide input in such a situation or actually decide which, if any, plant should run more.

But the most important question may be why the emissions reduction goal for EJ communities is set at 25%. EPA has estimated that the Clean Power Plan, when fully implemented, will achieve a 32% reduction in carbon dioxide emissions.[102] In order for the Clean Power Plan to be equitable, a comparable amount of emissions reduction should be achieved for EJ communities. The goal for EJ communities is set below

[101] *See* discussion, *supra* Section III.

[102] EPA estimates that by 2030 The Clean Power Plan if fully implemented should achieve a 32% reduction below 2005 carbon dioxide emissions levels. Fed. Plan Requirements for Greenhouse Gas Emissions From Electric Utility Generating Units, 80 Fed. Reg. 64,679.

32% in order to make it easier to attain and therefore to give states more flexibility in how they achieve it. The local stakeholder group could advise its state on measures that could be taken by plants and states to meet the reduced amount of emissions.

Perhaps the most important aspect of this recommendation is that the decisions surrounding the efforts to reduce emissions in EJ communities would be made purposely and intentionally. In other words, they would be planned and not left totally to the operation of the market.

Others have made similar proposals.[103] For example, in one of her papers, Professor Alice Kaswan discusses the possibility of having all facilities reduce emissions to some extent before allowing trading.[104] She[105] and other authors[106] also discuss the idea of restricting trading in EJ and overburdened neighborhoods in an effort to protect these areas from increased emissions.[107] It should be noted, however, that depending on the initial allocation of allowances in a mass-based system, or the initial facility emissions rate in a rate-based system, restricting trading will not necessarily result in emissions reductions for those areas.[108] But even a discussion of trade restrictions displays what at least some in the EJ community might consider a healthy willingness to explore restricting the private market in order to address EJ issues.[109]

Another method that could be used in an attempt to address emissions reductions in EJ residential communities, but that would be much less preferred by the EJ advocacy community than the policy discussed above, would be an EJ emissions reductions incentive program. Unlike the CEIP, this program created from an EJ perspective would provide incentives that would not necessarily reinforce a carbon-trading system.[110]

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[103] Kaswan, *supra* note 20, at 10304.
[104] *Id.*
[105] *Id.* at 10305.
[106] *See, e.g.*, PASTOR ET AL., *supra* note 67, at 23; Drury et al., *supra* note 50, at 285; David E. Adelman, *The Collective Origins of Toxic Air Pollution: Implications for Greenhouse Gas Trading and Toxic Hotspots*, 88 IND. L.J. 273, 328–31 (2013), http://ilj.law.indiana.edu/articles/88/88_1_Adelman.pdf [https://perma.cc/ZD89-3CPN]. It should be noted, however, that Professor Adelman believes the occurrences of "hotspots" would be rare. Adelman, *supra*, at 328; *see also* James K. Boyce & Manuel Pastor, Cooling the Planet, Clearing the Air: Climate Policy, Carbon Pricing, and Co-Benefits, 47–54 (Economics for Equity and the Environment Network, 2012), https://dornsife.usc.edu/assets/sites/242/docs/Cooling_the_Planet_Sept2012.pdf.
[107] Chinn, *supra* note 87, at 113.
[108] *Id.*
[109] *Id.*
[110] *See supra* note 10 (offering a short explanation of the CEIP).

A facility located in an EJ community that reduced its emissions would be awarded tax breaks or some other type of subsidy. This program is much less preferred than the one outlined above because it is voluntary and therefore might not result in emissions reductions in many of the targeted communities.

VI. DISCUSSING COUNTERARGUMENTS

There are several frequently heard arguments against mandating emissions reductions for EJ communities in climate change mitigation policy, especially in the context of the Clean Power Plan or a carbon-trading system in general. In this section of the Paper, there is an attempt to discuss those arguments from an EJ perspective.

One counterargument is that the Clean Air Act directly limits concentrations of non-GHG air pollutants to safe levels, so there is no need to affect the efficiency of the Clean Power Plan or any carbon-trading system by using it to address co-pollutants.[111] The response to this argument is actually contained in the discussion above: by using climate change policy in addition to the sections of the Clean Air Act that are already being utilized, concentrations of GHG co-pollutants might be driven down to levels not previously attained.[112] In fact, EPA is touting the additional lives that will be saved and the additional amount of pollution that will be reduced by the Clean Power Plan.[113] From an EJ perspective, the problem with trumpeting these benefits is that it is not at all clear to what extent they will be felt in overburdened EJ communities.[114]

Another counterargument usually comes in the form of a suggestion—that we should wait to see if there are any emissions increases, or

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[111] For example, the Clean Air Act sets limits on the ambient concentrations of six "criteria" air pollutants, *see* Kaswan, *supra* note 47.

[112] *See* PASTOR ET AL., *supra* note 67, at 4–5.

[113] U.S. ENVIRONMENTAL PROTECTION AGENCY, *The Clean Power Plan, By The Numbers, Cutting Carbon From Power Plants* (2011), https://www.epa.gov/cleanpowerplan/fact-sheet-clean-power-plan-numbers [https://perma.cc/UVY6-KUYY] (stating that the rule "will reduce pollutants that contribute to soot and smog, and make people sick, by over 20 percent"). It seems EPA is at least referring to sulfur dioxide and nitrogen dioxide (a nitrogen oxide) because the fact sheet says the former will be reduced by 318,000 tons per year and the latter by 282,000 tons per year. It also states the Clean Power Plan, by reducing exposure to PM and ozone, will prevent between 1,500 to 3,600 premature deaths; 90,000 asthma attacks; up to 1,700 heart attacks; 1,700 hospital admissions; and 300,000 missed school days.

[114] *Id.* The EPA did not specify any of these benefits.

what the distribution of emissions reductions will be under the Clean Power Plan or any carbon-trading scheme before intervening and reducing the efficiency of market-based policy.[115] One reply to this argument has actually already been given above. The distribution and intensity of emissions reductions for EJ communities, or of emissions increases for that matter, should not be left solely for the market to decide. These important equity questions should be intentionally and purposefully planned. This is especially true since the distribution of emissions reductions and increases could change over time.[116]

A third counterargument is based on several studies that found no disproportionate detrimental impacts on EJ communities connected to the sulfur dioxide trading program.[117] Perhaps the most discussed or cited of these investigations include Corburn,[118] Shadbegian et al.,[119] and Ringquist.[120] One query to be made about all three studies is whether their findings can be generalized to all emissions trading programs, and to the Clean Power Plan in particular, since it is not clear whether a sulfur dioxide trading program can be directly equated to a carbon dioxide trading program. A detailed reading of these studies also shows that their findings are not inconsistent with a recommendation that the location and intensity of emissions reductions under the Clean Power Plan should be planned and purposeful, at least with respect to EJ communities.[121] Although Professor Corburn did in general find no disproportionate impacts on EJ communities due to the sulfur-trading program,[122] he also found that the majority of plants (73 of 110) in the early stages of the program actually increased sulfur dioxide emissions.[123]

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[115] Chinn, *supra* note 87, at 113.

[116] THE ORGANISATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT, THE ECONOMICS OF CLIMATE CHANGE 197, http://www.oecd.org/greengrowth/greeneco/29173911.pdf [https://perma.cc/DL2M-RVS4].

[117] *See generally* Corburn, *supra* note 69; Ringquist, *supra* note 69; Shadbegian et al., *infra* note 119.

[118] Corburn, *supra* note 69.

[119] Ronald J. Shadbegian, Wayne B. Gray and Cynthia L. Morgan, *Benefits and Costs from Sulfur dioxide Trading: A Distributional Analysis*, U.S. ENVIRONMENTAL PROTECTION AGENCY, NAT'L CENTER FOR ENVTL. ECON., Working Paper #05-09 (2005).

[120] Ringquist, *supra* note 69.

[121] *See generally* Corburn, *supra* note 69; Ringquist, *supra* note 69; Shadbegian et al., *supra* note 119.

[122] *See, e.g.*, Corburn, *supra* note 69, at 323 (stating that the sulfur dioxide trading program did not disproportionately concentrate emissions in low-income and of-color neighborhoods).

[123] Corburn, *supra* note 69, at 327.

These findings are consistent with those of Rebecca Stanfield, who determined in a later phase of the sulfur dioxide trading program that 300 of the 500 "dirtiest" facilities had actually increased sulfur dioxide emissions.[124] If a significant number of plants in a trading program are actually going to experience increased emissions at some point during the program it would seem a certain amount of planning is in order since the communities near those plants may experience increased detrimental health impacts. Shadbegian et al. concluded there were no significant environmental injustices due to the sulfur dioxide trading program,[125] but they also found that: 1) 25% of plants had negative impacts on African-American communities; 2) 10% of plants had negative impacts on Latino communities; and 3) "the poor received slightly less of the benefits than the costs from SO_2 reductions."[126] From an EJ perspective, the fact that 25% of the plants in the trading program had negative impacts on African-American communities is troubling, and the fact that 10% of the plants negatively affected Latino communities is not encouraging. Similarly, the conclusion that the sulfur dioxide trading program had not disproportionately concentrated emissions in of-color communities is not the only interesting finding made by Professor Ringquist.[127] He also found that poverty may be associated with smaller emissions reductions,[128] and that the trading program tended to concentrate sulfur dioxide emissions in areas with relatively low educational achievement.[129] Taken together, it would seem reasonable to conclude that some of the findings of the above-discussed studies raise not only an EJ issue, but also issues related to non-EJ communities.

Adelman and Schatzki & Stavins raise another possible counterargument. They point out that in relative terms, power plant GHG copollutants may represent a small amount of the total pollution load facing an overburdened community;[130] however, several issues must be considered in connection with this observation. The first is that although

[124] Rebecca Stanfield, *Darkening Skies: Trends Towards Increasing Power Plants Emissions*, U.S. PIRG EDUCATION FUND AND CLEAN THE AIR: NATIONAL CAMPAIGN AGAINST DIRTY POWER 1, 1, 7 (2002), https://www.csu.edu/cerc/documents/DarkeningSkies.pdf [https://perma.cc/D4FP-3WMT] (examining data from 1995–2000); *see also* Corburn, *supra* note 69, at 325 (examining data from 1996–1997).

[125] Shadbegian et al., *supra* note 119, at 18–19.

[126] *Id.* at 17–18.

[127] Ringquist, *supra* note 69, at 2, 23.

[128] *Id.* at 21.

[129] *Id.* at 2, 22–23.

[130] *See* Adelman, *supra* note 106, at 277, 330–31; SCHATZKI & STAVINS, *supra* note 48, at 6.

pollution from power plants may represent a relatively small portion of a community's pollution, it could still represent a significant absolute amount of pollution. For example, Professor Adelman estimated that industrial air pollution causes a cancer risk greater than ten in a million in approximately 1,180 census tracts in the country.[131] Industrial air pollution would thus seem to be a significant health risk in our nation that needs to be addressed.[132]

The relatively small portion of the total air pollution, but significant amount of absolute air pollution, that Adelman and Schatzki & Stavins estimate that industrial air pollution represents also leads us back to the issue of cumulative impacts.[133] The reason that industrial air pollution might represent a relatively small share of a community's total pollution load is because that load in our country is so large.[134] But the solution to reducing this large load is not to ignore relatively small sources of pollution. Addressing this cumulative pollution means addressing the multiple sources that cause it. This is especially true when a vehicle such as the Clean Power Plan, or climate change mitigation policy in general, is available for utilization; however, using climate change mitigation policy, and more specifically the mandatory emissions reduction policy for EJ communities suggested above, should only be one of multiple policies developed to fight the high level of cumulative impacts in many EJ communities. A coherent cumulative set of policies is needed to fight cumulative impacts.

Before leaving this discussion of counterarguments, it is important to reference a recently released research brief that examines an existing emissions trading program and may provide support for the recommendation of mandatory emissions reductions in EJ communities. Cushing et al. released analyses that showed that 61% of the highest emitting facilities in California's carbon trading program increased GHG emissions.[135] They

[131] Adelman, *supra* note 106, at 312.

[132] Power plants' air pollution would account for only a portion of this risk. *But see* Clean Air Act, 42 U.S.C. § 7412(f)(2) (setting a goal of reducing cancer risk from HAPs for the most exposed individual to less than one a million). Therefore, the cancer risk connected to power plant air pollution might exceed this number in a significant number of census tracts, even if it is a relatively small portion of the overall amount of industrial pollution.

[133] Adelman, *supra* note 106, at 308–09.

[134] *Id.* (observing that the average cumulative cancer risk in the U.S. from HAP's has only been estimated at 50 in a million).

[135] Lara J. Cushing et al., *A Preliminary Environmental Equity Assessment of California's Cap-And-Trade Program*, USC DORNSIFE PROGRAM FOR ENVIRONMENTAL QUALITY AND REGIONAL EQUITY; SCHOOL OF HEALTH, UNIVERSITY OF CALIFORNIA, BERKELEY; BERKELEY, UNIVERSITY OF CALIFORNIA COLLEGE OF NATURAL RESOURCES; OCCIDENTAL COLLEGE, LOS ANGELES 4 (2016).

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also found that "[n]eighborhoods near the top-emitting facilities that increased emissions had higher proportions of people of color than neighborhoods near top-emitting facilities that decreased their emissions."[136] These results might confirm fears that carbon trading can lead to emissions increases for EJ communities; however, for several reasons caution must be used before applying the results to the Clean Power Plan. First, the results are only from the earliest stages of California's program[137] and might change.[138] Second, just as with the sulfur dioxide trading program investigations, it is not clear that the California program can be equated to the Clean Power Plan.[139] Even with these caveats, however, the Cushing et al. findings are sure to generate renewed discussion over the EJ impacts on carbon trading.

CONCLUSION

There has been tension for years between the EJ and environmental communities over climate change mitigation policy, and most of it has centered on carbon-trading.[140] But the two communities, along with several other sectors, including philanthropy, are attempting to find common ground on how to fight this worldwide threat.[141] In this Paper, one of the EJ community's primary goals with respect to climate change mitigation policy is discussed—obtaining emissions reductions in EJ communities—and a specific mechanism is offered to achieve this goal. But this recommendation is not intended to be a solution that ends discussion; instead, it is meant to provoke and promote an open and honest discourse. It is understood that no individual participant or community in the discussion is likely to agree with all the ideas expressed in this Paper, even those participants from the EJ community.

One of the key messages to be delivered during the discussion is that we should not miss the opportunity that climate change mitigation policy offers to reduce pollution in overburdened EJ communities. Another

[136] *Id.*
[137] *See id.* at 1 (referring to the study as a "preliminary evaluation" and analyzing data from the California program's first compliance period).
[138] *Id.* at 10.
[139] *Compare* Carbon Pollution Emission Guidelines for Existing Stationary Sources: Electric Utility Generating Units, *supra* note 9 (showing that the Clean Power Plan covers only electricity generating facilities), *with* Cushing et al., *supra* note 135, at 6 and Figure 4 (showing that the California trading program regulates additional sectors).
[140] *See* Comment Letter on The Clean Power Plan Proposed Rule, *supra* note 18, at 13–14.
[141] *See* Mohai & Saha, *supra* note 30, at 346.

key message is that if equity is a priority, then achieving emissions reductions for EJ communities should not be left solely to the market, but should be planned. Society should not wait and decide if what the market yields for equity is satisfactory; instead, we should very intentionally and purposefully decide what is needed. To do less is a failure to fulfill our responsibility to strive for environmental justice.