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

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Achieving Emissions Reductions for Environmental Justice Communities Through Climate Change Mitigation Policy

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Introduction

The Clean Power Plan rule is the U.S. Environmental Protection Agency's (EPA) regulatory method of reducing carbon dioxide emissions in the U.S. and thus fighting climate change. There was very little in the original Clean Power Plan proposal that addressed environmental justice (EJ),¹ using section 111(d) of the Clean Air Act² as authorization it instead featured averaging carbon dioxide emissions rates³ and facilitated emissions trading.⁴ 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. 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 the distributive impacts of a state plan on EJ communities within the state.⁵ 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.⁶ However, the above three suggestions were also usually core recommendations.

¹ See generally 79 Fed. Reg. 34829 (2014) for the Clean Power Plan in its original proposed form.

² 42 U.S.C. § 7411(d).

³ 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 80 Fed. Reg. 64661, 64667-64668, 64674-64675, 64812, 64823 (2015) (40 C.F.R. § 60.5855 (2015)).

⁴ See *id.* at 64672, 64674, 64675, 64839.

⁵ See comments submitted on the Clean Power Plan proposed rule by the Center for Earth, Energy and Democracy (available at <http://ceed.org/wp-content/uploads/2015/01/Clean-Power-Plan-Comments-EPA-HQ-OAR-2013-0601.pdf>); EJ Leadership Forum on Climate Change (available from the EJ Leadership Forum on Climate Change whose website is located at <http://www.ejleadershipforum.org/>); WEACT for EJ (available from WEACT for EJ whose website is located at <http://www.weact.org/>) and Sheats, *infra* note 6, on behalf of the New Jersey EJ Alliance (available from author). Sheats, *infra* note 15, also filed comments on EPA's related proposed Federal Plan rule on behalf of the New Jersey EJ Alliance. The Federal Plan will be the state plan that will be imposed on a state that does not submit its own state plan. See generally 80 Fed. Reg. 64965 (2015) (40 C.F.R. Parts 60, 62 and 78 (2015)). A state can also adopt the Federal Plan as its state plan on its own initiative without federal imposition. *Id.* For more legally oriented comments from an EJ perspective on the Clean Power Plan see comments filed by the Center on Race, Poverty and the Environment. (available from the Center on Race, Poverty and the Environment whose website is located at: <http://www.crpe-ej.org/crpe/>).

⁶ For example, see comments submitted by Nicky Sheats on behalf of the New Jersey EJ Alliance. (Nicky Sheats, *Comments on: The Clean Power Plan Proposed Rule, Docket ID: EPA-HQ-OAR-2013-0602*, (2014), at 13-14).

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 plans⁷ and the inclusion of an optional incentive program for the use of energy efficiency in low income neighborhoods.⁸ 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.

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 policy mechanism the Clean Power Plan at least facilitates if not promotes.⁹ 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,¹⁰ heat waves,¹¹ increased food prices¹² and flooding that leaves behind toxic contamination.¹³ It may also be more difficult for residents of EJ communities to recover from extreme weather events.¹⁴

⁷ See 80 Fed. Reg. 64661, 64858, 64916 (2015) (40 C.F.R. § 60.5745(a)(12) and 60.5765(a)(3) (2015)).

⁸ 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 64675-64676, 64829-64832. (40 C.F.R. § 60.5845 (2015)). 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. 42939 (2016). However, this paper will not discuss this newly proposed rule because the author has not yet had time to examine it.

⁹ See *supra*, note 4.

¹⁰ See generally Ethinios Targaris et al., *Sensitivity of air pollution-induced premature mortality to precursor emissions under the influence of climate change*, 7 International Journal of Environmental Research and Public Health 2222 (No. 5) (2010); Ethinios Targaris et al., *Potential impact of climate change on air pollution-related human health effects*, 43 Environmental Science & Technology 4979 (No. 13) (2009);

¹¹ 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 (No. 2) (2011); M.S. O’Neill et al., *Modifiers of the temperature and mortality association in seven US cities*. 157 American Journal of Epidemiology 1074 (No. 12) (2003) (available at: <http://aje.oxfordjournals.org/content/157/12/1074.full.pdf+html>); Eric Klinenberg, *Heat wave: a social autopsy of disaster in Chicago*, (2002).

¹² See George Luber et al, Ch. 9: Human Health. In Jerry M. Melillo et al. (Eds.), *Climate Change Impacts in the United States: The Third National Climate Assessment*, U.S. Global Change Research Program, (2014), at 228 (available at: <http://www.globalchange.gov/browse/reports/climate-change-impacts-united-states-third-national-climate-assessment-0>).

¹³ For example, see the New York City Environmental Justice Alliance’s (NYCEJA) Waterfront Justice project. Information on this project can be found on NYCEJA’s website at <http://nyc-eja.org/>.

¹⁴ See generally Robert Bullard and Beverly Wright, Introduction and Chapter 1. In Robert Bullard and Beverly Wright (Eds.), *Race, Place and Environmental Justice After Hurricane Katrina, Struggles to Reclaim, Rebuild, and Revitalize New Orleans and the Gulf Coast*, (2009), at 1-47; Manuel Pastor et al., *In the wake of the storm: Environment, disaster and race after Katrina*, Russell Sage Foundation (2006).

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 Environmental Justice Alliance.¹⁵ 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,¹⁶ 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.

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. That premise is that equity and EJ should be an integral part of climate change mitigation policy.

¹⁵ See generally Nicky Sheats, *Comments on: Federal Plan Requirements for Greenhouse Gas Emissions From Electric Utility Generating Units Constructed on or Before January 8, 2014; Model Trading Rules; Amendments to Framework Regulations*, Docket ID No. EPA-hQ-QAR-2015-0199, (2016); Sheats, *supra* note 6; Nicky Sheats, *Comments On: Air Quality Management CO₂ Budget Trading Program, Proposed Amendments: N.J.A.C. 7:27-22.16 and 7:27A-3.2 and 3.10, Proposed Amendments: N.J.A.C. 7:27-22.28 and N.J.A.C. 7:27C, DEP Docket Number: 07-08-06/662, (Regional Greenhouse Gas Initiative Proposed Rules)*, (2008). These documents are comments on the proposed Federal Plan, Clean Power Plan proposed rule and Regional Greenhouse Initiative proposed rules, respectively. They are available from the author.

¹⁶ On February 9, 2016 the U.S. Supreme Court stayed implementation of the Clean Power Plan until the D.C. Circuit Court of Appeals could consider the substance of a legal challenge to the rule and the Supreme Court could then review the appellate court's decision. The D.C. Circuit Court will hear the case *en banc* on September 27, 2016. For more information on the Supreme Court's stay see Fox News, *Supreme Court puts Obama's power plant regs on hold*, February 9, 2016 (available at: <http://www.foxnews.com/politics/2016/02/09/supreme-court-puts-obamas-clean-power-plan-on-hold.html>); Washington Post, *Supreme Court puts the brakes on the EPA's Clean Power Plan*, February 9, 2016 (available at: <https://www.washingtonpost.com/news/volokh-conspiracy/wp/2016/02/09/supreme-court-puts-the-brakes-on-the-epas-clean-power-plan/>); For more information on the D.C. Circuit Court of Appeals hearing the case *en banc* on February 27, 2016 see Environmental Leader, *Clean Power Plan Arguments Delayed, Full DC Circuit Court Will Hear the Case*, May 17, 2016 (available at: <http://www.environmentalleader.com/2016/05/17/clean-power-plan-arguments-delayed-full-dc-circuit-court-will-hear-the-case/#>).

EJ advocates surely understand that not everybody agrees with this principle¹⁷ 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.

A variety of inequalities based on race and income exist in the U.S. including but not limited to life expectancy,¹⁸ disease rates,¹⁹ incarceration rate,²⁰ poverty²¹ and unemployment.²² 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 (see below). 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 (see below). Many EJ advocates want to use climate change mitigation policy to help reduce this “legacy” air pollution load on EJ communities.

The Need for Emissions Reductions in EJ Communities and How Climate Change Policy Can Deliver Them

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.²³ This concentration of polluting facilities and unwanted land uses

¹⁷ For example, in one of her article's Professor Alice Kaswan quotes a former undersecretary of the California Environmental Protection Agency's denial that EJ should be incorporated into climate change policy. Alice Kaswan. *Environmental Justice and Domestic Climate Change Policy* 38 ELR 10287, 10287 (2008) (available at: http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1077675).

¹⁸ See generally Joyce Manchester and Julie Topoleski, *Growing Disparities in Life Expectancy*, Congressional Budget Office (2008) (available at https://www.cbo.gov/sites/default/files/110th-congress-2007-2008/reports/04-17-lifeexpectancy_brief.pdf); Hilary Waldron, *Trends in Mortality Differentials and Life Expectancy for Male Social Security-Covered Workers, by Average Relative Earnings*, U.S. Social Security Administration, Office of Policy (ORES Working Paper No. 108) (2007) (available at <https://www.ssa.gov/policy/docs/workingpapers/wp108.html>).

¹⁹ See generally U.S. Department of Health and Human Services, *Health, United States, 2012, With Special Feature on Emergency Care* (2013) (available at <http://www.cdc.gov/nchs/data/hus/12.pdf>).

²⁰ See generally Marc Mauer and Ryan S. King, *Uneven Justice: State Rates of Incarceration By Race and Ethnicity*, The Sentencing Project (2007) (available at: <http://www.sentencingproject.org/wp-content/uploads/2016/01/Uneven-Justice-State-Rates-of-Incarceration-by-Race-and-Ethnicity.pdf>).

²¹ See generally Carmen DeNavas-Walt, *Income, Poverty, and Health Insurance Coverage in the United States: 2012*, U.S. Department of Commerce, Economics and Statistics Administration, U.S. Census Bureau (2013) (available at <https://www.census.gov/prod/2013pubs/p60-245.pdf>).

²² See Chart entitled “Racial and ethnic disparities persist over time: Unemployment rate of workers age 16 and older by race and ethnicity, 1973-2013” and table entitled “Household Data Annual Averages: 5. Employment status of the civilian noninstitutional population by sex, age, and race”, which presents data from the years 2011 and 2012. Both the chart and table were accessed on the Bureau of Labor Statistics website on 9/22/13 and are available from the author.

²³ 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)

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.²⁴

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). NJEJA is an EJ organization that has filed comments on both the Clean Power Plan rule and the related Federal Plan rule.²⁵ 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.²⁶ The concept of cumulative

(available at <https://www.nrdc.org/sites/default/files/toxic-wastes-and-race-at-twenty-1987-2007.pdf>); Paul Mohai and Robin Saha, *Racial Inequality in the Distribution of Hazardous Waste: A National-Level Reassessment*, 54 *Social Problems* 343 (No. 3) (2007); Commission for Racial Justice, United Church of Christ, *Toxic Wastes and Race in the United States: A National Report on the Racial and Socioeconomic Characteristics of Communities with Hazardous Waste Sites* (1987) (available at http://d3n8a8pro7vnmx.cloudfront.net/unitedchurchofchrist/legacy_url/13567/toxwrace87.pdf?1418439935); Also see Rachel Morello-Frosch et al., *Understanding The Cumulative Impacts of Inequalities In Environmental Health: Implications for Policy*, 30 *Health Affairs* 879, 880-881 (No. 5) (2011) (available at <http://content.healthaffairs.org/content/30/5/879.full>); California EPA, *Cumulative Impacts: Building a Scientific Foundation*, California Environmental Protection Agency, Office of Environmental Health Hazard Assessment, (2010), at 5-17 (available at <http://oehha.ca.gov/media/downloads/calenviroscreen/report/cireport123110.pdf>).

²⁴ See generally Michael Ash et al., *Justice in the Air: Tracking Toxic Pollution from America's Industries and Companies to Our States, Cities, and Neighborhoods* (2009) (available at http://www.peri.umass.edu/fileadmin/pdf/dpe/ctip/justice_in_the_air.pdf); 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 (No. 2) (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 (No. 5) (2004); Manuel Pastor et al., *Waiting to Inhale: The Demographics of Toxic Air Release Facilities in 21st-Century California*, 85 *Social Science Quarterly* 420 (No. 2) (2004); Michael Jarrett et al., *A GIS- environmental justice analysis of particulate air pollution in Hamilton, Canada*, 33 *Environment and Planning A* 955 (No. 6) (2001); D.R. Wernette and L.A. Nieves, *Breathing Polluted Air*, 18 *EPA Journal* 16 (1992). Also see California EPA, *supra* note 23, at 5-17. Ash et al. examined hazardous air pollutants, Pastor et al. (2005) investigated hazardous air pollutants and diesel particulate matter (National Air Toxics Assessment data), Houston et al. looked at exposure to traffic, Pastor et al. (2004) examined hazardous air pollutants (toxic release inventory data), Wernette and Nieves examined criteria air pollutants and Jarrett et al. investigated particulate matter. 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 PM₁₀), ozone, carbon monoxide, sulfur dioxide, nitrogen oxides (NO and NO₂) and lead. For information on criteria air pollutants see the EPA website at: <https://www.epa.gov/criteria-air-pollutants>. 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>.

²⁵ See *supra* notes 6 and 15.

²⁶ New Jersey Environmental Justice Advisory Council website location: <http://www.nj.gov/dep/ej/ejcouncil.html>, Ironbound Community Corporation website location:

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.²⁷ It also encompasses the interactions of the pollutants with social vulnerabilities that exist in the community where the facilities are located.²⁸ NJDEP initially combined nine indicators in a cumulative impacts screening tool²⁹ to estimate the relative amount of cumulative impacts in every block group in New Jersey. To ascertain if there was a relationship between cumulative impacts, race and income in New Jersey, NJDEP graphed the relative amount of cumulative impacts in block groups³⁰ against the percentage of block group residents that are Of Color or impoverished and a clear pattern did emerge. As the number of Of Color residents in a block group increases so does the amount of cumulative impacts. 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.³¹ 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 pollution³² 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. Second, no statistical tests were performed to quantitatively confirm these relationships and the data is from 2009. 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

<http://ironboundcc.org/>, Clean Water Action website location: <http://www.cleanwateraction.org/njef/>, Eastern Environmental Law Center website location: <http://www.easternenvironmental.org/>.

²⁷ See Morello-Frosch et al., *supra* note 23, at 879-880; California EPA, *supra* note 23, at 3; National Environmental Justice Advisory Council, *Ensuring Risk reduction In Communities With Multiple Stressors: Environmental Justice and Cumulative Risks/Impacts*, (2004), at 5.

²⁸ See Morello-Frosch et al., *supra* note 23, at 879-880; California EPA, *supra* note 23, at 3; National Environmental Justice Advisory Council, *supra* note 27, at 5.

²⁹ There is a technical report and an accompanying power point that describe the screening tool on the NJDEP website. Both are entitled “A Preliminary Screening Method to Estimate Cumulative Environmental Impacts”. The technical report can be accessed at

http://www.state.nj.us/dep/ej/docs/ejc_screeningmethods20091222.pdf and the power point at

http://www.state.nj.us/dep/ej/docs/ejc_screeningmethods_pp20091222.pdf.

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. Through personal communication with NJDEP staff it has been learned that the number of indicators is currently over 30.

³⁰Block 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” on the U.S. Census website at https://www.census.gov/geo/reference/gtc/gtc_block.html.

³¹ These figures can be found on slide 5 of the power point at

http://www.state.nj.us/dep/ej/docs/ejc_screeningmethods_pp20091222.pdf and page 3 of the technical

paper at http://www.state.nj.us/dep/ej/docs/ejc_screeningmethods20091222.pdf. The figures were created using the nine indicators detailed *supra* note 29. Currently the tool has over 30 indicators but to the best of the author’s knowledge the figures have not been re-graphed using the greater number of indicators.

³² These indicators were NATA cancer risk, NATA diesel, NJDEP Benzene estimate, Traffic All, Traffic trucks. See *supra* note 29.

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 Plan³³ contribute to the pollution load borne by communities by emitting greenhouse gases (GHGs), criteria air pollutants and hazardous air pollutants (HAPs).³⁴ Whereas GHGs are considered global pollutants without direct local health impacts,³⁵ criteria air pollutants and HAPs can have detrimental local health effects.³⁶ In the context of climate change the criteria pollutants and HAPs are called co-pollutants because they are emitted simultaneously with GHGs,³⁷ the air pollutants that actually cause climate change.³⁸ Perhaps the most worrisome of this group of pollutants is fine particulate matter (PM) and its pre-cursors sulfur dioxide and nitrogen oxides. Fine particulate matter air pollution, all airborne particles less than or equal to 2.5 micrometers in diameter,³⁹ is also known as PM_{2.5} and has been connected through numerous studies to a variety of detrimental health impacts including cardiovascular disease,⁴⁰ cardiopulmonary disorders,⁴¹ lung cancer⁴² and premature

³³ 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. 80 Fed. Reg. 64661, 64715-64716 (2015) (40 C.F.R. § 60.5845 (2015)).

³⁴ For the fact that these air pollutants are emitted simultaneously by power plants see Alice Kaswan, *Controlling Power Plants: The Co-pollutant Implications Of EPA's Clean Air Act § 111(D) Options For Greenhouse Gases*, 32 Va. Env'tl. L. J. 173, 177 (2015); Charles Driscoll et al., *Co-benefits of Carbon Standards, Part I: Air Pollution Changes under Different 111d Options for Existing Power Plants*, Syracuse University and the Center for Health and the Global Environment at the Harvard School of Public Health (2014).

³⁵ See Todd Schatzki and Robert N. Stavins, *Addressing Environmental Justice Concerns in the Design of California's Climate Policy*, Analysis Group, (2009), at 2-3 (available at http://www.climatechange.ca.gov/eaac/comments/2009-11-03_Schatzki_and_Stavins_attachment.pdf).

³⁶ For information on criteria air pollutants see *supra* note 24 and see immediately *infra* for discussion in the text of the paper of fine particulate matter, one of the criteria air pollutants. For information on HAPs see *supra* note 24.

³⁷ See Kaswan, *supra* note 34, at 177; Driscoll et al., *supra* note 34, at 2; Richard Toshiyuki Drury et al., *Pollution Trading And Environmental Injustice: Los Angeles' Failed Experiment In Air Quality Policy*, 9 Duke Env. L. & Pol. F. 231, 257 (1999) (available at <http://scholarship.law.duke.edu/cgi/viewcontent.cgi?article=1177&context=delpf>).

³⁸ See Kaswan, *supra* note 34, at 174; Driscoll et al., *supra* note 34, at 2.

³⁹ C. Arden Pope and Douglas W. Dockery, *Health Effects of Fine Particulate Air Pollution: Lines that Connect*, 56 Journal of the Air and Waste Management Association 709, 710 (2006) (available at <http://www.tandfonline.com/doi/abs/10.1080/10473289.2006.10464485>); Thad Godish, *Air Quality*, (3rd Edition, 1997), at 60.

⁴⁰ 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) (available at <http://circ.ahajournals.org/content/109/1/71.long>); also see generally Pope and Dockery, *supra* note 39.

⁴¹ See generally C. Arden Pope et al., *Lung Cancer, Cardiopulmonary Mortality, and Long Term Exposure to Fine Particulate Air Pollution*, 287 JAMA 1132 (2002) (available at <http://circ.ahajournals.org/content/109/1/71.long>); C. Arden Pope et al., *Particulate Air Pollution as a Predictor of Mortality in a Prospective Study of U.S. Adults*, 151 Am. J. Resp. Crit. Care Med 669 (1995); Douglas W. Dockery et al., *An Association Between Air Pollution And Mortality In Six U.S. Cities*, 329 NE J Med 1753 (No. 24) (1993) (available at <http://www.scientificintegrityinstitute.org/Dockery1993.pdf>); also see generally Pope and Dockery, *supra* note 39.

death.⁴³ 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 200,00 premature deaths in the U.S. in the year 2005 alone.⁴⁴ Sulfur dioxide and nitrogen oxides have direct local health impacts⁴⁵ and are also of concern because they are gaseous precursors for PM.⁴⁶ Nitrogen oxides are also a precursor for ozone.⁴⁷

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.⁴⁸ 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.

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 reductions in EJ communities. Those facts are: 1) EJ communities suffer from a disproportionate number of unwanted land uses⁴⁹ and a corresponding disproportionate exposure to air pollution;⁵⁰ 2) numerous studies have shown that air pollution, in particular fine PM air pollution, has detrimental health impacts;⁵¹ 3) there are health benefits to driving down concentrations of fine PM air

⁴² See generally Pope et al. (2002), *supra* note 41; Dockery et al., *supra* note 41; also see generally Pope and Dockery, *supra* note 39.

⁴³ 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 Environment* 198 (2013); Also see Michael Jerrett et al., *Spatial Analysis of Air Pollution and Mortality in Los Angeles*, 16 *Epidemiology* 727 (2005) (available at <http://www.scientificintegrityinstitute.org/Jerrett110105.pdf>); Pope et al., *supra* note 40; Pope et al. (2002), *supra* note 41; Pope et al. (1995) *supra* note 41; Dockery et al., *supra* note 41; Pope and Dockery, *supra* note 39.

⁴⁴ Caiazzo et al., *supra* note 43.

⁴⁵ Short-term exposure to sulfur dioxide has been linked to increased asthma symptoms, bronchoconstriction and other respiratory problems. See EPA website at <https://www3.epa.gov/airquality/sulfurdioxide/health.html>. 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 EPA website at <https://www3.epa.gov/airquality/nitrogenoxides/health.html>.

⁴⁶ See *id.*

⁴⁷ See EPA website at <https://www3.epa.gov/airquality/nitrogenoxides/health.html>.

⁴⁸ See 80 Fed. Reg. 64995, 65047 (2015); 79 Fed. Reg. 34829, 34941-34942 (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. 34829, 34941-34942 (2014).

⁴⁹ See *supra* text in section of this paper entitled “The Need for Emissions Reductions in EJ Communities and How Climate Change Policy Can Deliver Them” and note 23.

⁵⁰ See *supra* text in section of this paper entitled “The Need for Emissions Reductions in EJ Communities and How Climate Change Policy Can Deliver Them” and note 24.

⁵¹ See *supra* text in section of this paper entitled “The Need for Emissions Reductions in EJ Communities and How Climate Change Policy Can Deliver Them” and notes 39-45.

pollution as low as possible;⁵² and 4) power plants contribute locally harmful GHG co-pollutants to the pollution loads of nearby communities.⁵³

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,⁵⁴ 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.⁵⁵ 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 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.⁵⁶ 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.

⁵² See *supra* text in section of this paper entitled “The Need for Emissions Reductions in EJ Communities and How Climate Change Policy Can Deliver Them” and note 48.

⁵³ See *supra* text in section of this paper entitled “The Need For Emissions Reductions In EJ Communities And How Climate Change Policy Can Deliver Them” and notes 34 and 36.

⁵⁴ Schatzki and Stavins, *supra* note 35, at 19, would go the other direction and strengthen existing policies that primarily address GHG co-pollutants but that also yield GHG emissions reductions.

⁵⁵ 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*, College of Natural Resources, University of California, Berkeley, USC Program for Environmental & Regional Equity, *Minding the Climate Gap Report 4* (available at <https://dornsife.usc.edu/assets/sites/242/docs/mindingthegap.pdf>). Pastor et al. make this point and cite several articles to support it. Also see L. Cifuentes, L. et al., *Hidden Health Benefits of Greenhouse Gas Mitigation*, 293 *Science* 1258 (No. 5533) (2001) (available at <https://cfpub.epa.gov/ncer/abstracts/index.cfm/fuseaction/display.files/fileID/13022>), for some quantification of the health benefits of co-pollutant reductions. Also see *infra* note 92 and the discussion in the section of the paper entitled “*Discussing Counter-arguments*” concerning EPA touting the co-benefits produced by the Clean Power Plan due to co-pollutant reduction.

⁵⁶ For example see comments filed by Sheats (2008), *supra* note 15, at 6-7, and note 6, at 5-6 on the Regional Greenhouse Gas Initiative and the proposed Clean Power Plan rule, respectively. These comments were filed on behalf of the NJ EJ Alliance and are available from the author.

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.⁵⁷ However, while increased emissions are certainly a concern, the EJ advocacy community has consistently also talked about the need for emissions reductions⁵⁸ 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.⁵⁹ 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 EJ communities now, we will miss an opportunity to help these communities that might never re-emerge.⁶⁰

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 plants⁶¹ collectively meet an average carbon dioxide emissions rate assigned to it by EPA.⁶² 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.⁶³ However, the Clean Power Plan, in part, derives the state

⁵⁷ For example see Evan J. Ringquist, *Trading Equity for Efficiency in Environmental Protection? Environmental Justice Effects from the SO₂ Allowance Trading Program*, 92 *Social Sciences Quarterly* 297, (No. 2) (2011), at 2; Jason Corburn, *Emissions trading and environmental justice: distributive fairness and the USA's Acid Rain Program*, 28 *Environmental Conservation* 323, 323 (No. 4) (2001) (available at https://www.researchgate.net/publication/231923515_Emissions_trading_and_environmental_justice_Distributive_fairness_and_the_USA's_Acid_Rain_Programme).

⁵⁸ For example see Sheats, *supra* note 6, at 4-6; Sheats, *supra* note 15, at 4-6.

⁵⁹ See Kaswan, *supra* note 34, 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.

⁶⁰ Pastor et al., *supra* note 55, at 4-5, also make 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.

⁶¹ See *supra* note 33 for a definition of affected power plants, i.e. power plants that will be regulated by the Clean Power Plan.

⁶² See *supra* note 3. For the actual average emission rate goals see 80 Fed. Reg. 64661, 64824 (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. *Id.* at 64833-64834 (40 C.F.R. § 60.5855 (2015)) and see *infra* note 64 for more information on the subcategory rates.

⁶³ 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) (see *infra* note 65) but then notes further that “Alternatively, 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. 64661, 64727 (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. *Id.* at 64779. EPA also states that “Furthermore, as a practical matter, states are free to apportion reductions in a way that reflects any subcategories of their choosing when determining the

average rates by setting subcategory rates that for the most part correspond to coal plants (steam generating units) and natural gas combined cycle (NGCC) facilities⁶⁴, and states can also meet their obligations under the Clean Power Plan by imposing the appropriate subcategory rate on each of their affected facilities.⁶⁵ 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.⁶⁶ A state can also choose to implement a rate based or mass based trading program.⁶⁷ In a rate based trading program a facility can meet their assigned rate, in whole or in part, by buying emissions reductions credits in addition to, or instead of, actually reducing their emissions rate.⁶⁸ An emissions reduction credit allows its holder to claim a certain amount of electricity production with no related emissions⁶⁹ and can be used to lower the official carbon dioxide emissions rate of a facility.⁷⁰ A state is also allowed to convert this rate based trading system to a mass based trading system⁷¹ under which facilities can meet their emissions obligations by not only reducing their own emissions but also by purchasing allowances.⁷² An allowance provides its holder with the authority to emit a certain amount of carbon dioxide.⁷³ In a mass based system no carbon dioxide can be emitted without an allowance that authorizes its release into the atmosphere.

To re-iterate, 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

emission standards for individual affected EGUs.” (*Id.* at 64791) and “Alternatively, 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 CO₂ emission performance rates or state rate- or mass-based CO₂ emission goal set forth by the EPA for the state.” (*Id.* at 64827) and “Alternatively, if a state chooses, it could apply rate-based emission standards to individual affected EGUs, or to categories of affected EGUs, at a lb CO₂/MWh rate that differs from the CO₂ emission performance rates or the state's rate-based CO₂ goal. In this case compliance by affected EGUs with their emissions standards would not necessarily ensure that the collective, weighted average CO₂ emission rate for these affected EGUs meets the CO₂ emission performance rates or the state's rate-based CO₂ 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 CO₂ emission performance rates or applicable state rate-based CO₂ goal.” *Id.* at 64833-64834. (40 C.F.R. § 60.5855 (2015)).

⁶⁴ For the fact that state average CO₂ emissions rates are derived from the subcategory rates *see id.* at 64674. For the fact that subcategory rates generally correspond to coal plants and NGCC facilities see the EPA Fact Sheet entitled “Components Of The Clean Power plan: Setting State Goals To Cut Pollution” at 1. But note that the EPA Fact Sheet entitled “Overview Of The Clean power Plan: Cutting Pollution From Power Plants” at 3 indicates 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 CO₂/MWh and for NGCC plants 771 lb CO₂/MWh. *Id.* at 64812.

⁶⁵ 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 id.* at 64667-64668, 64674, 64812.

⁶⁶ *Id.* at 64827, 64833-64834.

⁶⁷ *See id.* at 64727.

⁶⁸ *See id.* at 64779.

⁶⁹ 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 CO₂ emissions.” *Id.* at 64834 (40 C.F.R. § 60. 5790(c) and 60.5880 (2015)).

⁷⁰ *See id.* at 64779 (40 C.F.R. § 60. 5790(c) (2015)).

⁷¹ *See id.* at 64727, 64834-64835 (40 C.F.R. § 60.5815, 60.5820 and 60.5825 (2015)).

⁷² *See id.* at 64779, 64835 (40 C.F.R. § 60.5825 and 60.5880 (*see* definition of allowance system) (2015)).

⁷³ *See id.* at 64835 footnote #794 (40 C.F.R. § 60.5880 (*see* definition of allowance) (2015)).

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. Typically carbon-trading programs set an overall reduction goal, 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 allows facilities to trade or buy allowances from each other.⁷⁴ 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. 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 Plan⁷⁵ EPA concedes this is a possibility. 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.⁷⁶

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.⁷⁷ 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

⁷⁴ 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); Alice Kaswan, *Environmental Justice and Domestic Climate Change Policy*, 38 Environmental Law Reporter 10287, 10291-10293 (2008) (available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1077675); Drury et al., *supra* note 37, at 237-239.

⁷⁵ 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 80 Fed. Reg. 64965 (2015) et seq. (40 C.F.R. Parts 60, 62 and 78 (2015)). Both types of trading programs will probably be available for states to adopt or customize to their own needs if they so choose.

⁷⁶ 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. 64661, 64670 (2015). 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 changes to improve the unit’s efficiency that result 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 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”. 79 Fed. Reg. 34829, 34949 (2014). 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. *Id.* at 34950.

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”. 80 Fed. Reg. 64965, 65051 (2015).

⁷⁷ 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, SO₂, PM and mercury) released by natural gas plants are negligible. *Id.* at 65051; 79 Fed. Reg. 34829, 34950 (2014).

that are already overburdened with pollution. The Newark Energy Center is a relatively new⁷⁸ NGCC facility located in the EJ community of Newark, NJ.⁷⁹ The facility's permit allows it to emit 1.99 to 2.16 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.⁸⁰ 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."⁸¹ 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, it does not ensure emissions reductions for the communities that arguably need them the most. Most

⁷⁸ Through personal communication with NJDEP staff it has been learned that the plant has been in operation for approximately a year or less.

⁷⁹ 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* Table 4 on page 19 of the Fact Sheet. (Fact Sheet For Hess Newark Energy Center, Doremus Avenue and Delancy Street, Newark, (Essex County), New Jersey, 07105, Program Interest (PI) Number: 08857, Permit Activity Number: BOP11000, Application For Air Pollution Control Operating Permit (Title V) And Federal Prevention Of Significant Deterioration (PSD) Of Air Quality Permit And Acid Rain Permit.)

⁸⁰ 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, 101.27 tons per year of PM₁₀, 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 of 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 2,164,250 million pounds of co-pollutants was calculated by totaling all of the co-pollutants listed above except PM_{2.5} because this pollutant should be accounted for in the amount listed for PM₁₀ since by definition PM_{2.5} is a part of PM₁₀ (The definition of PM₁₀ is airborne particles less than or equal to 10 micrometers. *See* EPA website at: <https://www.epa.gov/pm-pollution/particulate-matter-pm-basics#PM>). By examining the total amounts it does not appear that PM₁₀ was included as part of total suspended particles (TSP) since the latter has a smaller total amount than the former. But just in case TSP did include PM₁₀ a second total was calculated that did not include either PM_{2.5} or TSP. This calculation yielded a total amount of co-pollutants per year of 2,016,476 pounds. A third 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 1,998,392 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. The first calculation is considered to be the most reliable of the three.

⁸¹ NJDEP Fact Sheet, *supra* note 79, at 24.

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 reductions, which EJ communities will receive reductions and what will be the extent of the reductions. Many in the EJ advocacy community also believe that if EJ and equity are actually the priority 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.

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 sub-category rate as set by the Clean Power Plan as long as this rate represents at least a 25% reduction from its 2012 rate.⁸² The sub-category rates are 771 lbs. CO₂/MWh for NGCC facilities and 1305 lbs. CO₂/MWh for coal burning facilities.⁸³ 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. The remainder of the Clean Power Plan could operate as written but the affected facilities in EJ communities would have to achieve real emissions reductions.

As with any new proposal, there are several issues connected to this recommendation that need to be explored. One of the most important 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 plant in question to determine its impact on the EJ community and then the stakeholder group would decide if that impact is enough to warrant that the plant

⁸² 2012 is the year EPA used for its baseline emissions calculations. See EPA fact sheet entitled “The Clean Power Plan: Key Topics and Issues” at 5.

⁸³ See *supra* note 64.

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.⁸⁴ 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.⁸⁵ 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 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. 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.⁸⁶ She⁸⁷ and other authors⁸⁸ also discuss the idea of restricting trading in EJ and overburdened neighborhoods in an effort to protect these areas from

⁸⁴ See *supra* text in section of this paper entitled “Why the Clean Power Plan and Carbon-trading Programs Do Not Ensure Emissions reductions for EJ Communities” and note 76.

⁸⁵ EPA estimates that by 2030 The Clean power Plan if fully implemented should achieve a 32% reduction below 2005 carbon dioxide emissions levels. 80 Fed. Reg. 64661, 64679 (2015).

⁸⁶ Kaswan, *supra* note 74, at 10,304.

⁸⁷ *Id.* at 10,305.

⁸⁸ For example, see Pastor, *supra* note 55, at 23; Drury et al., *supra* note 37, at 285; David E. Adelman, *The Collective Origins of Toxic Air Pollution: Implications for Greenhouse Gas Trading and Toxic Hotspots*, 88 Indiana Law Journal 273, 328-330 (and citations contained therein) (Issue 1, Article 5) (2013). It should be noted however that Professor Adelman believes the occurrences of “hotspots” would be rare. See *id.* at 328, 330-331, and his article generally. His article is discussed *infra* in a limited fashion in the text of the section of the paper entitled “Discussing Counter-arguments”.

increased emissions. 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. 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.

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 CEIP⁸⁹, this program created from an EJ perspective would provide incentives that would not necessarily reinforce a carbon-trading system. 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.

Discussing Counter-arguments

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 counter-argument 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.⁹⁰ 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.⁹¹ 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.⁹² 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.

⁸⁹ For a short explanation of the CEIP *see supra*, note 8.

⁹⁰ For example, the Clean Air Act sets limits on the ambient concentrations of six “criteria” air pollutants, *see supra* note 24.

⁹¹ *See supra* note 59.

⁹² In a fact sheet entitled “The Clean Power Plan, By The Numbers, Cutting Carbon From Power Plants” the EPA says the rule will reduce pollutants that contribute to soot and smog, and make people sick, by over 20 per cent. 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: 1) Between 1,500 to 3,600 premature deaths; 2) 90,000 asthma attacks, up to 1,700 heart attacks; 1,700 hospital admissions; and 3000,000 missed school days.

Another counter-argument usually comes in the form of a suggestion - that we should wait to see if there are any emissions increases, or 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. One reply to this argument has actually already been given above also. 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.

A third counter-argument is based on several studies that found no disproportionate detrimental impacts on EJ communities connected to the sulfur dioxide trading program. Perhaps the most discussed or cited of these investigations include Corburn (2001),⁹³ Shadbegian et al. (2005)⁹⁴ and Ringquist (2011).⁹⁵ 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. Although Professor Corburn did in general find no disproportionate impacts on EJ communities⁹⁶ due to the sulfur-trading program he also found that the majority of plants (73 of 110) in the early stages of the program that he examined actually increased sulfur dioxide emissions.⁹⁷ These findings are consistent with those of Stanfield,⁹⁸ who determined in a later phase of the sulfur dioxide trading program⁹⁹ that 300 of the 500 “dirtiest” facilities had actually increased sulfur dioxide emissions.¹⁰⁰ 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 program¹⁰¹ 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

⁹³ Corburn, *supra* note 57.

⁹⁴ 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, National Center for Environmental Economics, Working Paper # 05-09 (2005).

⁹⁵ Ringquist, *supra* note 57.

⁹⁶ See for example, Corburn, *supra* note 57, at 323 where Professor Corburn says that the sulfur dioxide trading program did not disproportionately concentrate emissions in low-income and Of Color neighborhoods.

⁹⁷ Coburn, *supra* note 57, at 327.

⁹⁸ Rebecca Stanfield, *Darkening Skies: Trends Towards Increasing Power Plants Emissions*, U.S. PIRG Education Fund and Clean the Air: National Campaign Against Dirty Power (available at <https://www.csu.edu/cerc/documents/DarkeningSkies.pdf>).

⁹⁹ Stanfield, *Id.* at 1, examined data from 1995-2000 while Professor Coburn’s data was from 1995-1997, *supra* note 57, at 325.

¹⁰⁰ Stanfield, *supra* note 98, at 1 and 7.

¹⁰¹ Shadbegian et al., *supra* note 94, at 18-19.

communities; and 3) “...the poor received slightly less of the benefits than the costs from SO₂ reductions.”¹⁰² 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 communities¹⁰³ is not the only interesting finding made by Professor Ringquist. He also found that poverty may be associated with smaller emissions reductions¹⁰⁴ and that the trading program had tended to concentrate sulfur dioxide emissions in areas with relatively lower educational achievement.¹⁰⁵ 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 (2013) and Schatzki and Stavins (2009)¹⁰⁶ raise another possible counter argument. They point out that in relative terms power plant GHG co-pollutants may represent a small amount of the total pollution load facing an overburdened community.¹⁰⁷ However, several issues must be considered in connection with this observation. The first is that although 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 10 in a million in approximately 1,180 census tracts in the country.¹⁰⁸ Thus, industrial air pollution would seem to be a significant health risk in our nation that needs to be addressed.¹⁰⁹

The relatively small portion of the total air pollution, but significant amount of absolute air pollution that Adelman, and Schatzki and Stavins estimate that industrial air pollution represents also leads us back to the issue of cumulative impacts. 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.¹¹⁰ But the solution to reducing this large load is not to ignore relatively, or even absolute, 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

¹⁰² *Id.* at 17-18. The quoted partial sentence appears on page 18.

¹⁰³ Ringquist, *supra* note 57, at 2, 23.

¹⁰⁴ *Id.* at 21.

¹⁰⁵ *Id.* at 2, 22-23.

¹⁰⁶ Adelman, *supra* note 88; Schatzki and Stavins, *supra* note 35.

¹⁰⁷ See Adelman, *supra* note 88, at 277, 330-331; Schatzki and Stavins, *supra* note 35, at 6.

¹⁰⁸ Adelman, *supra* note 88, at 312.

¹⁰⁹ Power plants’ air pollution would account for only a portion of this risk. But it is worth noting that the Clean Air Act sets a goal of reducing cancer risk from HAPs for the most exposed individual to less than one a million (CAA 42 U.S.C. § 7412(f)(2)). 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.

¹¹⁰ For instance, Adelman, *supra* note 79, at 308-309, observes that the average cumulative cancer risk in the U.S. from HAP’s only has been estimated at 50 in a million.

reduction policy for EJ communities suggested above, should be only 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.

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. But the two communities, along with several other sectors including philanthropy, are attempting to find common ground on how to fight this worldwide threat. 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 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.