

GREEN POWER & ENVIRONMENTAL JUSTICE— DOES GREEN DISCRIMINATE?

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One of the most important environmental issues for the better part of the last decade has been energy.¹ It is difficult to open a newspaper, view a website, or turn on the television without seeing a story regarding various aspects of energy production.² Additionally, while there has often been

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I would like to thank the following law students for their research assistance on this Article: Richard Goldsmith, Margaret Reidy and Jamie Juster-Caballero (Barry 2012), Heather Culp (Barry 2013), Sandra Petersson (CSL 2014), Stacy Ramseyer (CSL 2014), Stacey Cargile (CSL 2015), and most notably, Ashley VanLaethem (CSL 2015). Additionally, I would like to thank the following academic peers for their insights and review: Brett Paben, Kate Aschenbrenner, Grant Christensen, Malik Edwards, Amanda Leiter, Kathryn Kovacs, Todd Aagaard, Mike Pappas, Justin Pidot, Sarah Schindler, and Itzchak Kornfeld.

1. See, e.g., Uma Outka, *Environmental Justice in the Renewable Energy Transition*, 19 J. ENVTL. & SUSTAINABILITY L. 60, 62 (2012); Congressman Mark Udall, *Remarks at the Climate of Environmental Justice: Taking Stock Conference at the University of Colorado Law School, March 16–17, 2007*, 78 U. COLO. L. REV. 1553, 1555 (2007).

2. See Outka, *Environmental Justice in the Renewable Energy Transition*, *supra* note 1, at 62.

comingling of environmental issues with other current affairs, no environmental issue has become so significantly linked with politics, economics, health, and national security as energy.³ Whether it is terrorism and September 11th,⁴ Hurricane Katrina,⁵ Deepwater Horizon,⁶ Obama's Green Jobs platform,⁷ or the increasing populist acknowledgement of the link between pollution and disease, the average American is now acutely aware of the trials and tribulations of our energy policies.⁸

Even prior to September 11, 2001, the growing consciousness regarding climate change and the green jobs movement was taking root across the nation.⁹ With climate change and the green jobs movement coinciding, the push for "greener" solutions to energy production has received greater support than ever before.¹⁰ Specifically, the United States Environmental Protection Agency

3. See *infra* notes 4–6 and accompanying text.

4. See generally Martin Feldstein, *Oil Dependence and National Security: A Market-Based System for Reducing U.S. Vulnerability*, NAT'L BUREAU OF ECON. RES. (Oct. 2001), <http://www.nber.org/feldstein/oil.html> (linking the attacks on September 11th to America's dependence on foreign oil).

5. See, e.g., Frank Verastro, Ctr. for Strategic & Int'l Studies, Remarks at the Arab-U.S. Policymakers Conference: Energy Policy Considerations in the Aftermath of Hurricane Katrina (Sept. 12, 2005) (transcript available at http://csis.org/files/media/isis/pubs/050912_verastro_remarks.pdf); *Hurricane Katrina*, NAT'L OCEANIC & ATMOSPHERIC ADMIN., NAT'L CLIMATIC DATA CENTER, <http://www.ncdc.noaa.gov/special-reports/katrina.html> (last visited Mar. 27, 2014); *Hurricanes & Tropical Storms – August 2005*, NAT'L OCEANIC & ATMOSPHERIC ADMIN., NAT'L CLIMATIC DATA CENTER, <http://www.ncdc.noaa.gov/sot/tropical-cyclones/2005/8> (last visited Mar. 27, 2014) ("Hurricane Katrina was one of the strongest storms to impact the coast of the United States during the last 100 years. . . . Katrina caused widespread devastation along the central Gulf Coast states of the U.S. Cities such as New Orleans, LA, Mobile, AL, and Gulfport, MS bore the brunt of Katrina's force and will need weeks and months of recovery efforts to restore normality.").

6. See, e.g., *Deep Water: The Gulf Oil Disaster and the Future of Offshore Drilling*, ENCYCLOPEDIA OF THE EARTH, <http://www.eoearth.org/view/article/162358> (last updated Aug. 16, 2012, 7:00 AM) (linking Deepwater Horizon to energy security); *Gulf Oil Spill*, NAT'L OCEANIC & ATMOSPHERIC ADMIN., EDUC. RESOURCES, http://www.education.noaa.gov/Ocean_and_Coasts/Oil_Spill.html (last visited Mar. 27, 2014) ("On April 20, 2010, an explosion on the Deepwater Horizon/BPMC252 drilling platform in the Gulf of Mexico killed 11 workers and caused the rig to sink. As a result, oil began leaking into the Gulf creating one of the largest spills in American history. During the next 87 days an estimated 4.9 million barrels (210 million gallons) of oil were released.").

7. *Barack Obama's Plan to Create 5 Million New Green Jobs*, OBAMA'08, http://obama.3cdn.net/eff0ff1daa8baf984_4yjqmv8j3.pdf (last visited Mar. 27, 2014).

8. See, e.g., George W. Bush, Address Before a Joint Session of Congress on the State of the Union (Jan. 31, 2006) (transcript available at <http://www.washingtonpost.com/wp-dyn/content/article/2006/01/31/AR2006013101468.html>) ("Keeping America competitive requires affordable energy. And here we have a serious problem: America is addicted to oil, which is often imported from unstable parts of the world. The best way to break this addiction is through technology. . . . So tonight, I announce the Advanced Energy Initiative—a 22 percent increase in clean-energy research at the Department of Energy . . ."); Michael T. Klare, *Oil: The Real Threat to National Security*, SALON (Oct. 4, 2004, 2:30 PM), http://www.salon.com/2004/10/04/oil_dependency.

9. See, e.g., Alyson Kenward, *Changes in Public Perception of Climate Change: Q&A with Matthew Nisbet*, CLIMATE CENT. (Apr. 22, 2011), <http://www.climatecentral.org/blogs/changes-in-public-perception-of-climate-change-qa-with-matthew-nisbet/>; Elisa Murray, *Green-Collar Jobs: The Secret History*, SIGHTLINE DAILY (Feb. 6, 2008, 11:45 AM), <http://daily.sightline.org/2008/02/06/green-collar-jobs-the-secret-history/>.

10. See *supra* notes 2–7 and accompanying text. Definitions of green include "of the color green"; "pleasantly alluring"; "youthful, vigorous"; "not ripened or matured"; "fresh, new"; "deficient in training, knowledge, or experience"; "deficient in sophistication and savoir faire: Naive"; "not fully qualified for or

(U.S. EPA) “defines green power as electricity produced from solar, wind, geothermal, biogas, eligible biomass, and low-impact small hydroelectric sources. Customers often buy green power for avoided environmental impacts and its greenhouse gas reduction benefits.”¹¹ “These electricity sources are derived from natural resources that replenish themselves over short periods of time, including the sun, wind, moving water, organic plant and waste material (biomass), and the Earth’s heat (geothermal).”¹² There continues to be significant public debate about associated green power issues such as: What is the greenest source of energy? Is climate change caused by humans? Is climate change as dire as it is portrayed by national environmental groups? Will the green power movement really destroy or restart our economy?¹³ One issue, however, has gotten lost in the shuffle—that of environmental justice. While battles have been waged and won in environmental justice communities around the country between residents and various energy source companies, no one has looked across the board at the “green power movement” to evaluate its overall impacts on environmental justice.¹⁴

Recently, academics have turned their attention to the green power movement in certain contexts.¹⁵ What is missing, however, is a broad look at the environmental justice risks and consequences in the development of green energy. Additionally, while social scientists and other academics have written about the overarching themes that create environmental justice risks and consequences and legal scholars have examined some of these themes in varying ways, there has been no overarching substantive classification of environmental justice issues in legal literature—in the energy context or otherwise. While I applaud the focused articles that are emerging from the

experienced in a particular function”; “relating to or being an environmentalist political movement”; and “tending to preserve environmental quality.” See *Green*, MERRIAM-WEBSTER’S ONLINE DICTIONARY, <http://www.merriam-webster.com/dictionary/green> (last visited Mar. 27, 2014) (typeface altered).

11. *Green Power Market: Green Power Defined*, U.S. ENVTL. PROTECTION AGENCY, <http://www.epa.gov/greenpower/gpmarket/> (last visited Mar. 27, 2014).

12. U.S. ENVTL. PROTECTION AGENCY, GUIDE TO PURCHASING GREEN POWER: RENEWABLE ELECTRICITY, RENEWABLE ENERGY CERTIFICATES, AND ON-SITE RENEWABLE GENERATION 4 (2010), available at http://www.epa.gov/greenpower/documents/purchasing_guide_for_web.pdf.

13. See *infra* note 14 and accompanying text.

14. See, e.g., MICHAEL B. GERRARD & SHEILA R. FOSTER, THE LAW OF ENVIRONMENTAL JUSTICE: THEORIES AND PROCEDURES TO ADDRESS DISPROPORTIONATE RISKS (2d ed. 2008); *The Environmental Justice Movement*, NAT. RESOURCES DEF. COUNCIL, <http://www.nrdc.org/ej/history/hej4.asp> (last visited Mar. 27, 2014). The following is a sample of environmental justice community battles involving the impacts from energy source companies: In Ward Valley, California, Native American activists succeeded in stopping a proposed nuclear waste dump site. See *Native American and Environmentalist Groups Block Nuclear Waste Site in Ward Valley, California, 1995–2000*, GLOBAL NONVIOLENT ACTION DATABASE, <http://nvdatabase.swarthmore.edu/content/native-american-and-environmentalist-groups-block-nuclear-waste-site-ward-valley-california-> (last visited Mar. 27, 2014). In New Haven, Connecticut, a power company reached an agreement with the city and various environmental groups to take steps to ensure there would be no net increase in pollution from the company’s plant expansion. *PSEG Agrees to No Net Increase in Air Pollution*, CONN. PUB. BROADCASTING NETWORK, <http://www.cpbn.org/articles/pseg-agrees-no-net-increase-air-pollution> (last visited Feb. 25, 2014).

15. See, e.g., Outka, *Environmental Justice in the Renewable Energy Transition*, *supra* note 1.

legal academy on the intersection of environmental justice and green energy development in particular contexts, this Article seeks to set a broader foundation from which any type of green energy production can be analyzed to determine its full extent of environmental justice risks and consequences.¹⁶ In setting this foundation, I hope to create an outline of the environmental risks posed that can be overlaid in the context of any green power decision-making—systemic or individual.¹⁷ Without such an overlay, much of the effort to address environmental justice will continue to be ad hoc and incomplete. The risks of such strategies not only proverbially “rob Peter to pay Paul,” but also often assure that Peter and Paul are both representatives of environmental justice communities that should be allied on these issues and not competing with each other.¹⁸

In this Article, I will examine environmental justice issues in the context of “green energy” with two primary goals in mind: (1) to utilize the momentum of the green power movement to reinvigorate the environmental justice discussion, and (2) to identify how environmental justice considerations can be addressed in green power decisions or any environmental decision-making forums. Specifically, in Part I, I will articulate a structure for classifying the common themes in environmental justice.¹⁹ In Part II, I will look at these themes in relation to energy production and provide an overview of historical environmental justice issues with energy production.²⁰ In Part III, I will discuss the “green power movement,” broadly evaluating its success in diversifying the United States’ energy sources and examining the environmental justice risks and impacts from these “green power” sources.²¹ Finally, in Part IV, I will evaluate solutions, which include proffering a roadmap for evaluating environmental justice impacts from any specific green power development decision, but also include other broader changes that can alleviate environmental justice impacts in the energy context and beyond.²²

I. ENVIRONMENTAL JUSTICE THEMES

What is environmental justice? The general thrust of environmental justice is a proportionate share issue regarding environmental burdens.²³ The U.S. EPA’s definition is the most commonly used regulatory definition.²⁴ The

16. See *infra* Parts I–III.

17. See *infra* Parts I–III.

18. *Rob Peter to Pay Paul*, DICTIONARY.COM, <http://www.dictionary.reference.com/browse/rob+peter+to+pay+paul> (last visited Mar. 27, 2014) (“Take from one to give to another, shift resources.”).

19. See *infra* Part I.

20. See *infra* Part II.

21. See *infra* Part III.

22. See *infra* Part IV.

23. See Alice Kaswan, *Environmental Justice: Bridging the Gap Between Environmental Laws and “Justice”*, 47 AM. U.L. REV. 221, 225–28 (1997).

24. See *generally id.* at 228–29 n.22.

U.S. EPA defines environmental justice as “the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies.”²⁵ The purpose of environmental justice from a regulatory perspective is actually to address environmental injustice.²⁶ Additionally, sometimes environmental injustice is coined as “environmental racism” because environmental justice communities are often communities of color as well as low-income communities.²⁷ Overall, the concept is that when living in an industrialized society, there are both benefits and burdens associated with environmental issues, and when environmental injustice occurs, those burdens are disproportionately thrust upon low-income communities and communities of color.²⁸

Regardless of which definition or nomenclature people use, there are some common characteristics of these disproportionately burdened communities.²⁹ Environmental justice communities are predominately of color, low-income, or both.³⁰ Academics, practitioners, politicians, and all people interested in environmental injustice debate whether economics or race is a more dominant factor; time and time again, however, studies have shown that both are factors in environmental injustice.³¹ There is also a disproportionate power base, meaning that residents have typically been excluded from policy-setting or

25. *Environmental Justice*, U.S. ENVTL. PROTECTION AGENCY, <http://www.epa.gov/environmental-justice/basics/index.html> (last visited Mar. 27, 2014).

26. *See id.*

27. *See* ROBERT D. BULLARD, *CONFRONTING ENVIRONMENTAL RACISM: VOICES FROM THE GRASSROOTS* (1993); Luke W. Cole, *Environmental Justice and the Three Great Myths of White Americana*, 3 HASTINGS W.-NW. J. ENVTL. L. & POL’Y 449, 449 (1996); Jill E. Evans, *Challenging the Racism in Environmental Racism: Redefining the Concept of Intent*, 40 ARIZ. L. REV. 1219, 1221 (1998); Maria Ramirez Fisher, *On the Road from Environmental Racism to Environmental Justice*, 5 VILL. ENVTL. L.J. 449, 449 (1994); Julie H. Hurwitz & E. Quita Sullivan, *Using Civil Rights Laws to Challenge Environmental Racism: From Bean to Guardians to Chester to Sandoval*, 2 J.L. SOC’Y 5, 11 (2001); Gerald Torres, *Introduction: Understanding Environmental Racism*, 63 U. COLO. L. REV. 839, 841 (1992).

28. *See supra* notes 25–27 and accompanying text.

29. *See infra* notes 30–33 and accompanying text.

30. *See* LUKE W. COLE & SHEILA R. FOSTER, *FROM THE GROUND UP: ENVIRONMENTAL RACISM AND THE RISE OF THE ENVIRONMENTAL JUSTICE MOVEMENT* 15–17 (2001); Bunyan Bryant, *History and Issues of the Environmental Justice Movement*, in *OUR BACKYARD: A QUEST FOR ENVIRONMENTAL JUSTICE* 3 (Gerald R. Visgilio & Diana M. Whitelaw eds., 2003); Robert D. Bullard, *Environmental Justice for All*, in *UNEQUAL PROTECTION: ENVIRONMENTAL JUSTICE & COMMUNITIES OF COLOR* 17 (Robert D. Bullard ed., 1994) [hereinafter Bullard, *Environmental Justice for All*, *UNEQUAL PROTECTION*]; Robert D. Bullard, *Environmental Justice for All: It’s the Right Thing to Do*, 9 J. ENVTL. L. & LITIG. 281, 285 (1994); Kaswan, *supra* note 23, at 221–52.

31. *See* COLE & FOSTER, *supra* note 30; Bryant, *supra* note 30; Bullard, *Environmental Justice for All*, *UNEQUAL PROTECTION*, *supra* note 30; Sheila Foster, *Justice From the Ground Up: Distributive Inequities, Grassroots Resistance, and the Transformative Politics of the Environmental Justice Movement*, 86 CALIF. L. REV. 775, 794 (1998); Kaswan, *supra* note 23, at 232; Robert R. Kuehn, *A Taxonomy of Environmental Justice*, 30 ENVTL. L. REP. 10681, 10681 (2000); Omar Saleem, *Overcoming Environmental Discrimination: The Need for a Disparate Impact Test and Improved Notice Requirements in Facility Siting Decisions*, 19 COLUM. J. ENVTL. L. 211, 213–22 (1994).

decision-making processes.³² In addition, the community is subjected to a disproportionate impact from environmental hazards and the residents experience disproportionate implementation of environmental regulations in their communities.³³

Any attempt to classify the common environmental justice themes or the primary types of environmental risks—and ultimately, burdens—that are experienced by environmental justice communities is impacted by (1) the siting of polluting and hazardous facilities; (2) air and water pollution resulting from operating facilities; (3) contaminated sites resulting from the operating of facilities or historical industrial operations; (4) disposal of hazardous waste; (5) raw material development; and (6) transportation of raw materials in which facilities utilize hazardous materials in their operations and transportation of hazardous waste generated by those facilities.³⁴ To borrow the Resource Conservation and Recovery Act (RCRA) tagline, to truly evaluate the environmental justice impacts of green energy, it must be examined from cradle to grave.³⁵ Historically, most of the environmental justice movement—including community-based litigation—has involved the first factor, the siting of polluting and hazardous facilities, and the fourth factor, the disposal of hazardous waste.³⁶ While these could be—and often have been—grouped as one (because most of the disposal of hazardous waste results in some level of processing at an industrial facility), I have elected to separate them to assure the broadest consideration of environmental justice impacts in a given decision. Regardless of the pervasive history focusing on the siting of polluting and disposal facilities and methods, environmental justice risks and consequences have been identified in all six themes; failure to consider any one of these in decision-making could result in a decision with unacknowledged environmental justice consequences.³⁷ While I recognize that environmental decision-making often involves trade-offs, the ability to alleviate or mitigate a problem can exist only by first admitting that there is, in fact, a problem. Consideration of these themes in environmental decision-making may still result in environmental justice impacts, but those decisions would now be informed and owned by the decision-makers.

32. See Bullard, *Environmental Justice for All*, UNEQUAL PROTECTION, *supra* note 30; Bullard, *Environmental Justice for All: It's the Right Thing to Do*, *supra* note 30, at 288; Foster, *supra* note 31, at 778; Kaswan, *supra* note 23, at 252; Saleem, *supra* note 31, at 213–22.

33. Foster, *supra* note 31, at 787; Saleem, *supra* note 31, at 213–22.

34. COLE & FOSTER, *supra* note 30; PETER S. WENZ, ENVIRONMENTAL JUSTICE (1988); Bullard, *Environmental Justice for All*, UNEQUAL PROTECTION, *supra* note 30.

35. 42 U.S.C. § 6901 (2006) (referring to the Resource Conservation and Recovery Act that was passed in 1976, which, amongst other things, focuses on hazardous waste disposal through a “cradle-to-grave” approach—meaning that hazardous waste is controlled from its point of generation to its point of disposal).

36. COLE & FOSTER, *supra* note 30; Bryant, *supra* note 30; Bullard, *Environmental Justice for All*, UNEQUAL PROTECTION, *supra* note 30; Foster, *supra* note 31, at 794; Kaswan, *supra* note 23, at 232; Kuehn, *supra* note 31, at 10681; Saleem, *supra* note 31, at 213–22.

37. See *The Environmental Justice Movement*, NAT. RESOURCES DEF. COUNCIL, *supra* note 14.

The first of these, the siting of hazardous and polluting facilities, is the one that gets the most attention in the discussion of environmental justice and it is also fairly self-explanatory. Hazardous and polluting facilities are more commonly sited in low-income communities and communities of color.³⁸ These facilities are often referred to as “TRI facilities” because, since 1987, the U.S. EPA has required many industrial facilities to report their toxic releases through the Emergency Planning and Community Right-to-Know Act (EPCRA).³⁹ The compilation of this data, coined the “Toxic Release Inventory,” requires the U.S. EPA and states to collect data on releases and transfers of toxic chemicals from industrial facilities, which the U.S. EPA then makes available to the public.⁴⁰ As early as the 1990s, this data supported beliefs that there is a correlation between the siting of these facilities and race and socioeconomics.⁴¹ While TRI facilities were less of an initial focus in the environmental justice movement, the availability of this data and the large quantity of facilities have made them a significant part of the environmental justice landscape.⁴² Many environmental justice community battles have been fought against the siting and pollution of these facilities.⁴³

The second theme is air and water pollution from operating facilities, which is an important, though often overlooked difference from the first theme. In theme one, the issue is the disproportionate siting, but in theme two, the

38. Vicki Been, *Locally Undesirable Land Uses in Minority Neighborhoods: Disproportionate Siting or Market Dynamics?*, 103 YALE L.J. 1382, 1384 (1994); Robin Saha & Paul Mohai, *Historical Context and Hazardous Waste Facility Siting: Understanding Temporal Pattern in Michigan*, 52 SOC. PROBS. 618, 634–35 (2005); Lawrence J. Straw, Jr., *Environmental Justice: Racial Gerrymandering for Environmental Siting Decisions*, 14 VA. ENVTL. L.J. 665, 676 (1995).

39. 42 U.S.C. §§ 11001–50 (2006); Superfund Amendments and Reauthorization Act of 1986, Pub. L. No. 99-499, § 313, 100 Stat. 1613, 1741 (It is important to note, however, that not all facilities that fall into theme one qualify for TRI reporting.)

40. *Toxic Release Inventory (TRI) Program*, U.S. ENVTL. PROTECTION AGENCY, <http://www.epa.gov/tri/> (last visited Mar. 28, 2014).

41. CLIFFORD RECHTSCHAFFEN & EILEEN GUANA, ENVIRONMENTAL JUSTICE: LAW, POLICY & REGULATION 72–73 (2002) (quoting Evan J. Ringquist, *Equity and the Distribution of Environmental Risk: The Case of TRI Facilities*, 78 SOC. SCI. Q. 811 (1997)).

42. *Id.* at 73 (noting that TRI facilities, even in 1997, outnumbered hazardous waste facilities forty to one).

43. See, e.g., GERRARD & FOSTER, *supra* note 14; Terry Carter, *EPA Steps in to Clear the Air: Environmental Racism Charged in Challenge to Location of Chemical Plant*, 83 A.B.A. J., no. 11, Nov. 1997, at 32; Victoria R. Danta, Comment, *VX in TX: Chemical Weapons Incineration and Environmental Justice in Port Arthur, Texas*, 21 FORDHAM ENVTL. L. REV. 415 (2010); *The Environmental Justice Movement*, NAT. RESOURCES DEF. COUNCIL, *supra* note 14. Some examples of these battles include the St. James Parish in Louisiana (also known as “cancer alley”), where local citizens and the state government have fought to have the EPA investigate Shintech, Inc. to determine if it is in violation of the Civil Rights Act of 1964, and Norco, Louisiana, where, after much protesting by local citizens, Shell agreed to buy homes of citizens negatively affected by its chemical plant and promised to reduce air emissions by 30%. See *In re Shintech and its Affiliates*, 746 So.2d 601 (La. 1999); *How One Woman Took on Shell to Save Her La. Town*, ALLEGHENY FRONT (Nov. 8, 2013), <http://www.alleghenyfront.org/story/how-one-woman-took-shell-save-her-la-town>. In East Los Angeles, a Latino grassroots organization, Mothers of East L.A., has organized the opposition to the siting of a hazardous waste incinerator in the community. Mary Pardo, *Mexican American Women Grassroots Community Activists: Mothers of East Los Angeles*, 11 FRONTIERS: J. OF WOMEN’S STUD. 1, 1 (1990).

issue is the actual level of pollution from the facilities. This manifests itself in two ways: (1) the natural consequence of theme one—the more facilities there are in a concentrated area, the more polluted that area will be, and (2) a disproportionate pollution rate at individual facilities sited in these poor and of-color communities.⁴⁴ When levels of emissions of air and water pollution from facilities are compared, even for the same type of facilities built at the same capacity, typically the emissions are greater for those sited in environmental justice communities than for those sited in whiter or more affluent areas.⁴⁵ Additionally, statistical analysis of pollution also demonstrates this disproportionate impact.⁴⁶ Data from the 2000 census demonstrated that people of color are 79% more likely than whites to live in neighborhoods where industrial pollution is suspected of posing the greatest health danger.⁴⁷ In addition, relative to whites, higher percentages of people of color live in U.S. EPA-designated Clean Air Act non-attainment areas for particulate matter, ozone, sulfur dioxide, and lead.⁴⁸ This last statistic underscores the fact that not only is there a disproportionate amount of pollution emanating from individual facilities, but the exposure limits for residents are also higher because they are in proximity to multiple polluting sources.⁴⁹ For example, for the approximately six million Americans who live within three miles of a coal-fired power plant, the average per capita income is almost 15% less than the United States average and 39% of the residents are people of color.⁵⁰ In contrast, a person who is white or more affluent is less likely to live in an area that is besieged by industry.⁵¹ Therefore, the pollution impacts are typically going to be less in those areas, whereas most environmental justice communities have multiple facilities contributing to the level of pollution in that community.⁵²

Contaminated site cleanup is occurring across the nation, at both operating industrial facilities and now-defunct operating facilities.⁵³ For theme three, if

44. See discussion *infra* Part IV.

45. Been, *supra* note 38, at 1407; Saha & Mohai, *supra* note 38, at 634–35.

46. Dara O'Rourke & Sarah Connolly, *Just Oil? The Distribution of Environmental and Social Impacts of Oil Production and Consumption*, 28 ANN. REV. ENV'T & RESOURCES 587, 606 (2003).

47. David Pace, *Minorities Suffer Most from Industrial Pollution: AP Analysis of EPA Database Shows Poor, Uneducated Breathe Worst Air* (Dec. 14, 2005, 9:03 AM), http://www.nbcnews.com/id/10452037/ns/us_news-environment/t/minorities-suffer-most-industrial-pollution/.

48. U.S. ENVTL. PROTECTION AGENCY, ENVIRONMENTAL EQUITY: REDUCING RISK FOR ALL COMMUNITIES—VOLUME 1: WORKGROUP REPORT TO THE ADMINISTRATOR 11 (2002), available at http://www.epa.gov/compliance/ej/resources/reports/annual-project-reports/reducing_risk_com_vol1.pdf (providing the following statistics: particulate matter (whites = 14.7%, blacks = 16.5%, Hispanics = 34.0%), carbon monoxide (w = 33.6%, b = 46.0%, h = 57.1%), ozone (w = 52.5%, b = 62.2%, h = 71.2%), sulfur dioxide (w = 7.0%, b = 12.1%, h = 5.7%), and lead (w = 6.0%, b = 9.2%, h = 18.5%)).

49. See *id.*

50. NAACP, COAL BLOODED: PUTTING PROFITS BEFORE PEOPLE 15 (2009), available at http://naacp.3cdn.net/ab160002359dc4e863_mlbleopn9.pdf.

51. See *id.*

52. See *id.*

53. See, e.g., Foster, *supra* note 31, at 787; Saleem, *supra* note 31, at 213–22; *Contaminated Site Clean-Up Information*, U.S. EPA, <http://www.clu-in.org/> (last visited Sept. 17, 2013).

there are more facilities and more pollution coming from those facilities, then ultimately there will be more contaminated sites in these communities as well.⁵⁴ In addition, if there is less regulation and more pollution coming from those facilities, the levels of contamination there are also going to be worse.⁵⁵ That fact, coupled with evidence that cleanup regulations are also disproportionately enforced, will result in longer cleanup times in environmental justice communities.⁵⁶ The environmental cleanup justice theory links all of the aspects above and explains them using Superfund sites.⁵⁷ According to the environmental cleanup justice theory, it takes a longer time to clean Superfund sites in environmental justice communities because every phase of the program takes longer in these communities.⁵⁸ Sites in environmental justice communities have a smaller probability of even being listed on the National Priority List because of their lack of political clout and engaged citizenry.⁵⁹ Therefore, the longer it takes them to get listed, the longer it takes to get the cleanup started and completed.⁶⁰ Further, these same deficiencies result in a slower pace of cleanup and, arguably, a less thorough cleanup.⁶¹

Theme four is the disposal of hazardous waste.⁶² Landfills, incinerators, and recycling facilities are the three most common places that hazardous waste materials end up and all are disproportionately sited in environmental justice communities.⁶³ The siting of hazardous waste facilities was the genesis of the environmental justice movement, particularly the siting of a PCB landfill in Warren County, North Carolina.⁶⁴ In addition, hazardous wastes are often improperly disposed of in solid waste landfills.⁶⁵ In North Carolina, the odds were higher that a solid waste facility would be found in a community with

54. See, e.g., Sandra George O'Neil, *Superfund: Evaluating the Impact of Executive Order 12898*, 115 ENVTL. HEALTH PERSPECTIVE 1087, 1087–93 (2007), available at <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1913562/>.

55. See *id.*

56. See Marianne Lavelle & Marcia Coyle, *Unequal Protection: The Racial Divide in Environmental Law—A Special Investigation*, 15 NAT'L L.J., no. 3, Sept. 1992, available at <http://www.ejnet.org/ej/nlj.pdf>; O'Neil, *supra* note 54, at 1087–93.

57. O'Neil, *supra* note 54, at 1087–93.

58. *Id.*

59. *Id.*

60. *Id.*

61. *Id.*

62. See sources cited *supra* note 34.

63. Robert D. Bullard, Paul Mohai, Robin Saha & Beverly Wright, *Toxic Wastes and Race at Twenty: Why Race Still Matters After All of These Years*, 38 ENVTL. L. 371, 372 (2008); Saha & Mohai, *supra* note 38, at 634–35; John McArdle, *Environmental Justice Advocates Hail EPA Rule Providing More Oversight of Hazardous Waste Recycling*, N.Y. TIMES (July 7, 2011), <http://www.nytimes.com/gwire/2011/07/07/07greenwire-environmental-justice-advocates-hail-epa-rule-14131.html>.

64. See, e.g., Robert D. Bullard, *Environmental Racism PCB Landfill Finally Remedied but No Reparations for Residents*, ENVTL. JUST. RESOURCE CENTER, <http://www.ejrc.cau.edu/warren%20county%20rdb.htm> (last visited Mar. 29, 2014).

65. See McArdle, *supra* note 63.

large-of-color populations than in a community with a larger white population.⁶⁶ This same trend was found when comparing lower-income communities to wealthier communities.⁶⁷ Some of the earliest research into the disparate treatment of race and economic status also focused on the siting of hazardous waste facilities.⁶⁸ One study, done by the General Accounting Office, found that African-Americans made up the majority of populations where landfills were located in three out of the four communities being studied.⁶⁹ The study also found that at least 26% of the populations in all four communities had income levels below the poverty line and that most of the population falling below the poverty line was African-American.⁷⁰ Hazardous waste siting continues to receive a great deal of attention in academic publications and the popular media.⁷¹ Even more recently, studies have shown that hazardous waste facilities pose the greatest risk to people of color.⁷² For example, at distances between three and five kilometers from hazardous waste facilities in the United States, the proportion of people of color is 35.7%.⁷³ It increases to 46.1% between the distances of one and three kilometers and reaches 47.7% within a distance of one kilometer.⁷⁴ Beyond five kilometers, the proportion of people of color is only 22.2%.⁷⁵

The fifth theme is the impact of raw material development.⁷⁶ Communities that are low-income, of-color, or both face environmental burdens associated with the extraction and processing of raw materials used in industrial processes.⁷⁷ This includes extraction of zinc, copper, and other metals, as well as raw materials used in the context of energy production (water, coal, natural gas, uranium, etc.).⁷⁸ A unique aspect of this theme is that a lot of people tend to think of environmental justice communities as being only in urban areas;

66. Jennifer M. Norton et al., *Race, Wealth, and Solid Waste Facilities in North Carolina*, 115 ENVTL. HEALTH PERSPECTIVES 1344, 1348 (2007), available at <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1964896/>.

67. *Id.*

68. See, e.g., Robert D. Bullard, *Solid Waste Sites and the Black Houston Community*, 53 SOC. INQUIRY 273, 273–88 (1983); UNITED CHURCH OF CHRIST COMM'N FOR RACIAL JUSTICE, TOXIC WASTES AND RACE IN THE UNITED STATES: A NATIONAL REPORT ON THE RACIAL AND SOCIO-ECONOMIC CHARACTERISTICS OF COMMUNITIES WITH HAZARDOUS WASTE SITES 15 (1987), available at <http://www.ucc.org/about-us/archives/pdfs/toxwrace87.pdf>.

69. U.S. GEN. ACCOUNTING OFFICE, GAO/RCED-83-168, SITING OF HAZARDOUS WASTE LANDFILLS AND THEIR CORRELATION WITH RACIAL AND ECONOMIC STATUS OF SURROUNDING COMMUNITIES (1983), available at <http://www.gao.gov/products/RCED-83-168>.

70. *Id.*

71. See *supra* notes 1–5 and accompanying text.

72. See Bullard, Mohai, Saha & Wright, *supra* note 63.

73. *Id.*

74. *Id.*

75. *Id.*

76. See *supra* note 34 and accompanying text.

77. See, e.g., Robert B. Wiygul & Sharon Carr Harrington, *Environmental Justice in Rural Communities—Part One: RCRA, Communities, and Environmental Justice*, 96 W. VA. L. REV. 405, 417–20 (1993).

78. See, e.g., *id.*

however, there has been growing attention paid to environmental justice impacts from raw materials development thrust upon rural communities.⁷⁹

Lastly, the transportation of raw material and waste is the sixth main environmental justice theme.⁸⁰ This highlights an additional element of injustice: historical segregation within our land-use regulatory structure.⁸¹ Historically, land use was segregated by race across the country.⁸² Some would argue that this was even more dominant in the southern United States than elsewhere in the country.⁸³ Blacks were allowed to live on one side of town, while whites lived on the other.⁸⁴ That meant that not only was this where black people had permission to live, but also that black people had to live near the less desirable areas, including areas of industry and infrastructure such as industrial ports or railroad tracks.⁸⁵ Due to this historical segregation, communities of color still exist in these areas of industrial transportation infrastructure, meaning that the risk associated with the transportation of raw materials and waste is disproportionately borne by those communities.⁸⁶

As the next section will illustrate, all of these themes present environmental justice risks and impacts in the development and production of energy.⁸⁷ If we are truly committed to examining the environmental justice impacts of any type of energy production, the impact of the foregoing themes must be analyzed.

II. ENVIRONMENTAL JUSTICE THEMES IN ENERGY PRODUCTION

As indicated, one can see these environmental justice themes through the lens of energy development. With respect to theme one, siting, at least within the context of energy production, predominately involves the siting of power plants, but may also include the siting of manufacturing facilities that produce

79. See, e.g., Bullard, Mohai, Saha & Wright, *supra* note 63, at 372; Wiygul & Harrington, *supra* note 77, at 415–17, 441–48; U.S. Env'tl. Protection Agency, Office of Research & Dev., *Hydraulic Fracturing Research Study*, SCI. IN ACTION (2010), available at <http://www.epa.gov/safewater/uic/pdfs/hfresearchstudyfs.pdf>.

80. See sources cited *supra* note 34.

81. Craig Anthony (Tony) Arnold, *The Structure of the Land Use Regulatory System in the United States*, 22 J. LAND USE & ENVTL. L. 441, 455–59 (2007); James A. Kushner, *Apartheid in America: An Historical and Legal Analysis of Contemporary Racial Segregation in the United States*, 22 HOW. L.J. 547, 547–60 (1979); Marc Seitles, Comment, *The Perpetuation of Residential Segregation in America: Historical Discrimination, Modern Forms of Exclusion, and Inclusionary Remedies*, 14 J. LAND USE & ENVTL. L. 89, 91–94 (1998).

82. DOUGLAS S. MASSEY & NANCY A. DENTON, *AMERICAN APARTHEID: SEGREGATION AND THE MAKING OF THE UNDERCLASS* 1, 27–57 (1993); Kushner, *supra* note 81, at 547–60; Seitles, *supra* note 81, at 91–94.

83. MASSEY & DENTON, *supra* note 82, at 47–48; Seitles, *supra* note 81, at 91–94.

84. Kushner, *supra* note 81, at 547–60.

85. Luke W. Cole & Caroline Farrell, *Structural Racism, Structural Pollution and the Need for a New Paradigm*, 20 WASH. U. J.L. & POL'Y 265, 278 (2006); Kushner, *supra* note 81, at 547–60.

86. Cole & Farrell, *supra* note 85, at 278; Kushner, *supra* note 81, at 547–60.

87. See *infra* Part II.

parts for power plant production.⁸⁸ With respect to the second theme, just like other industrial facilities, power plants create air and water pollution.⁸⁹ If there is a greater number of power plants in a concentrated area or if a power plant's emissions remain unregulated or under regulated, there will be additional air and water pollution in those environmental justice communities from power production—theme two.⁹⁰

As for theme three, like any other industrial process, power plants result in sites contaminated by the power plant's operations. Sometimes the contamination exists during operation and sometimes the contamination remains unidentified until after the plant closes down. Theme four is the disposal of hazardous waste. Energy waste is often a type of hazardous waste, although not all is regulated as such. Some examples of energy waste include fuel cells (batteries) and coal ash.⁹¹ Every year, Americans throw away billions of batteries, which may contain lead, acids, and other heavy metals.⁹² Although many batteries—particularly those containing toxic materials—are recyclable, recycling collection can be difficult to find and most simply end up in ordinary landfills.⁹³ Coal ash, a residue from the combustion of coal, typically contains arsenic, a variety of heavy metals, as well as other toxins.⁹⁴ The U.S. EPA has found that people living next to coal ash disposal sites have an increased risk of cancer or other diseases; the risk exists especially for those who receive drinking water from wells and who live near unlined wet ash ponds that contain coal ash comingled with other coal wastes.⁹⁵ How and where people deposit this waste also constitutes theme four—hazardous waste disposal. As previously discussed, more often than not this hazardous waste finds itself in low-income and of-color communities.⁹⁶

Theme five discusses the impacts of raw material development. The most prominent environmental justice impact of raw materials developed for power production for years has been coal.⁹⁷ More recently, it has been mountaintop removal, “where the entire tops of mountains are chewed up to remove the coal

88. See Bullard, Mohai, Saha & Wright, *supra* note 63; *supra* Part I.

89. Saha & Mohai, *supra* note 38.

90. *Id.*

91. See *infra* notes 92–96 and accompanying text.

92. *Wastes-Resource Conservation-Conservation Tools: Batteries*, U.S. ENVTL. PROTECTION AGENCY, <http://www.epa.gov/wastes/conservation/tools/stewardship/products/batteries.htm> (last updated Nov. 15, 2012).

93. *Region 7 Solid Waste: Batteries*, U.S. ENVTL. PROTECTION AGENCY, <http://www.epa.gov/region7/waste/solidwaste/batteries.htm> (last updated July 30, 2013).

94. BARBARA GOTTLIEB, STEVEN G. GILBERT & LISA GOLLIN EVANS, COAL ASH: THE TOXIC THREAT TO OUR HEALTH AND ENVIRONMENT 7 (2010), available at <http://www.psr.org/assets/pdfs/coal-ash.pdf>.

95. *Id.*

96. U.S. ENVTL. PROTECTION AGENCY, ENVIRONMENTAL EQUITY: REDUCING RISK FOR ALL COMMUNITIES—VOLUME 1: WORKGROUP REPORT TO THE ADMINISTRATOR, *supra* note 48, at 11; see also Deborah Behles, *From Dirty to Green: Increasing Energy Efficiency and Renewable Energy in Environmental Justice Communities*, 58 VILL. L. REV. 25, 40–43 (2013) (discussing the reduction of harmful air pollution in environmental justice communities).

97. Bullard, Mohai, Saha & Wright, *supra* note 63.

buried within them.”⁹⁸ This is also an example of an increase in environmental justice impacts of energy development that occurs in more rural communities.⁹⁹ The disproportionate environmental impacts on rural communities are also true in the context of raw material development of natural gas via hydraulic fracturing.¹⁰⁰ Hydraulic fracturing, or “fracking,” is a means of natural gas extraction employed in deep natural gas well drilling.¹⁰¹ Once a well is drilled, workers inject millions of gallons of water, sand, and proprietary chemicals under high pressure into a well.¹⁰² The fracking process involves, simply stated, “pressure [that] fractures the shale and props open fissures that enable natural gas to flow more freely out of the well.”¹⁰³ Currently, at the federal level, the Safe Drinking Water Act exempts fracking and companies do not have to disclose the chemicals used during hydraulic fracturing.¹⁰⁴ In the absence of federal regulations on fracking, states have initiated enforcement actions against well operators believed to have contaminated nearby drinking wells,¹⁰⁵ instituted temporary bans on fracking,¹⁰⁶ and enacted statutes or regulations specifically to deal with the environmental issues presented by fracking.¹⁰⁷

98. Mark Baller & Joseph Leor Pantilat, Comment, *Defenders of Appalachia: The Campaign to Eliminate Mountaintop Removal Coal, Mining and the Role of Public Justice*, 37 ENVTL. L. 629, 631–33 (2007); see generally Diana Keneva, Note, *Let’s Face Facts, These Mountains Won’t Grow Back: Reducing the Environmental Impact of Mountaintop Removal Coal Mining in Appalachia*, 35 WM. & MARY ENVTL. L. & POL’Y REV. 931 (2011); *Mountaintop Removal*, OHIO VALLEY ENVTL. COALITION, http://ohvec.org/old_site/mountains04.htm (last updated July 27, 2001).

99. Baller & Pantilat, *supra* note 98, at 631–33 (“Residents near mines suffer from ‘rock slides, catastrophic floods, poisoned water supplies, constant blasting, destroyed property, and lost culture.’ The health implications are alarming.”); see Keneva, *supra* note 98; *Mountaintop Removal*, *supra* note 98.

100. U.S. Evtl. Protection Agency, Office of Research & Dev., *Hydraulic Fracturing Research Study*, *supra* note 79; see generally Todd Agaard et al., ‘Shale’ We Drill? *The Legal and Environmental Impacts of Extracting Natural Gas from Marcellus Shale*, 22 VILL. ENVTL. L.J. 189 (2011) (discussing the impacts of extracting from shale); Brian J. Smith, Comment, *Fracing the Environment?: An Examination of the Effects and Regulation of Hydraulic Fracturing*, 18 TEX. WESLEYAN L. REV. 129, 130 (2011) (discussing hydraulic drilling).

101. *Fracking Facts*, GASLAND, <http://www.gaslandthemovie.com/whats-fracking> (last visited Mar. 29, 2014).

102. U.S. Evtl. Protection Agency, Office of Research & Dev., *Hydraulic Fracturing Research Study*, *supra* note 79.

103. *Fracking Facts*, *supra* note 101.

104. Emily C. Powers, Comment, *Fracking and Federalism: Support for an Adaptive Approach that Avoids the Tragedy of the Regulatory Commons*, 19 J.L. & POL’Y 913, 939 (2011); Sharon Kelly, *Environment: The Trouble with Fracking*, NAT’L WILDLIFE FED’N (Sept. 15, 2011), <https://www.nwf.org/News-and-Magazines/National-Wildlife/Animals/Archives/2011/Trouble-with-Fracking.aspx>.

105. See *PA DEP Takes Aggressive Action Against Cabot Oil & Gas Corp. to Enforce Environmental Laws, Protect Public in Susquehanna County*, PR NEWSWIRE, <http://www.pnewswire.com/news-releases/pa-dep-takes-aggressive-action-against-cabot-oil-gas-corp-to-enforce-environmental-laws-protect-public-in-susquehanna-county-90951864.html> (last visited Mar. 29, 2014).

106. *Id.*

107. See, e.g., 16 TEXAS ADMIN. CODE § 3.29 (2014) (R.R. Comm’n of Tex., Hydraulic Fracturing Chemical Disclosure Requirements); Colorado Oil and Gas Conservation Comm’n, Order No. 1R-114 (Dec. 13, 2011), available at <http://cogcc.state.co.us/orders/1R/114.html>; *Public Access to Rules*, WYO. SECRETARY OF ST., <http://soswy.state.wy.us/Rules/default.aspx> (last visited Mar. 29, 2014).

Theme six, transportation of raw materials for, and waste from, power production also creates environmental justice issues due to historical and perpetuated land-use segregation and the resulting location of industry transportation infrastructure.¹⁰⁸ Such land use segregation results in the transportation of raw materials and waste occurring more frequently in these communities, creating greater risk to them.¹⁰⁹

While the discussion above briefly identifies how the six environmental justice themes intersect with energy production, this Article seeks to evaluate whether or not the shift to green power has affected these environmental justice impacts.¹¹⁰ This requires one to examine historical energy sources, what constitutes a green energy source, and how green energy has impacted the overall distribution of energy production.¹¹¹ Only then can one determine whether green energy poses the same, less, or greater environmental justice risks than historical energy sources.¹¹² With that assessment, one can decide whether addressing environmental injustice issues should form part of the green energy movement, and if so, how to begin to address these issues in reality.¹¹³

Since the emergence of the industrial age, United States energy development has relied largely on nonrenewable fuel sources.¹¹⁴ Chief among the United States' historical energy sources are coal, petroleum, natural gas, nuclear, and hydroelectric.¹¹⁵ Coal has been used in the United States for energy production since the 1850s, followed shortly thereafter by petroleum, natural gas, and hydroelectric.¹¹⁶ Nuclear energy has been a more recent addition to the mix—first utilized for electricity production in the 1960s—but it has never provided more than 10% of the United States' energy supply.¹¹⁷ Of these, hydroelectric constitutes the only arguably renewable energy source, though large-scale dams are certainly not without significant environmental impacts.¹¹⁸ Similarly, some tout nuclear energy as being a renewable fuel

108. See *supra* notes 81–85 and accompanying text.

109. Been, *supra* note 38, at 1384; Saha & Mohai, *supra* note 38; Straw, *supra* note 38, at 876.

110. See *infra* Part III.

111. See *infra* Parts II–IV.

112. See *infra* Parts IV–V.

113. See *infra* Parts IV–V.

114. See *History of Energy Consumption in the United States, 1775–2009*, U.S. ENERGY INFO. ADMIN., TODAY IN ENERGY (Feb. 9, 2011), <http://www.eia.gov/todayinenergy/detail.cfm?id=10>.

115. See *id.* (“[P]etroleum, natural gas, and coal, which together provided an average of 87% of total U.S. primary energy use over the past decade—have dominated the U.S. fuel mix for well over 100 years . . .”). Since 1980, nuclear energy has provided between 3%–8% of the United States' energy while hydroelectric power has provided between 2%–4% since the 1960s. See *id.*

116. See *id.*

117. See *id.*

118. See *id.* For example, California allows electric companies to include small-scale hydroelectric facilities (30 MW or less) in the mandated Renewable Portfolio Standard (RPS), but not the large-scale hydroelectric facilities. See *Hydroelectric Power in California*, CAL. ENERGY COMMISSION, www.energy.ca.gov/hydroelectric/ (last visited Feb. 22, 2014).

source; however, “[u]ranium is a nonrenewable resource that cannot be replenished on a human timescale.”¹¹⁹

TABLE 1.¹²⁰

| HISTORICAL ENERGY SOURCES | | |
|---------------------------|-------------|------------|
| ENERGY SOURCE | TIME PERIOD | RENEWABLE? |
| Hydroelectric | 1850s | YES |
| Coal | 1850s | NO |
| Oil & Gas (Petroleum) | 1880s | NO |
| Natural Gas | 1890s | NO |
| Nuclear | 1960s | NO |

One should note that these energy sources pose environmental impacts, but not all are considered environmental justice impacts.¹²¹ For the purposes of this Article, the environmental impacts discussed will be those that have created or can create environmental injustice.¹²² Additionally, the debate on green energy often intertwines with a discussion of emission levels from various types of energy sources.¹²³ While this is a valid environmental consideration, for the purposes of this Article, this issue is considered only to the extent that it relates to impacts on environmental justice communities.¹²⁴

119. See *Nuclear Energy: Clean Energy*, U.S. ENVTL. PROTECTION AGENCY, <http://www.epa.gov/cleanenergy/energy-and-you/affect/nuclear.html> (last updated Oct. 22, 2013); see, e.g., Bernard L. Cohen, *Breeder Reactors: A Renewable Energy Source*, 51 AM. J. PHYS. 75, 75 (1983); T.L. Fähring, Note, *Nuclear Uncertainty: A Look at the Uncertainties of a U.S. Nuclear Renaissance*, 41 TEX. ENVTL. L.J. 279, 280 (2011).

120. See *supra* notes 114–19 and accompanying text.

121. See *supra* Part I.

122. See *infra* Part II.A–E.

123. See Michael B. Gerrard, *What Does Environmental Justice Mean in an Era of Global Climate Change?*, 19 J. ENVTL. & SUSTAINABILITY L. 278, 283–84 (2013).

124. See *infra* Part III.

A. Hydroelectric

Though hydroelectric has been used for centuries to produce power for a variety of applications, today it is widely used for electrical power development.¹²⁵ The primary environmental justice impact from hydroelectric power is the displacement of indigenous people for the production of electricity to be used elsewhere.¹²⁶ Typically, this falls into theme five—raw materials extraction—because it involves the removal of water resources from their natural state to supply and operate hydroelectric dams and power plants.¹²⁷ In addition, there are also impacts to subsistence fisherman and farming communities from the downstream impacts of dams, including the loss of fisheries, contaminated water, decreased availability of water, and a reduction in the quality of farmlands and forests.¹²⁸ One tribe, the Hoopa Valley Tribe, has sought a minimum flow requirement for rivers downstream from the Klamath Hydroelectric Project after subsistence fishing was affected.¹²⁹ Another tribe, the Skokomish near Tacoma, Washington, sought damages from the United States government incurred on the tribe's hunting and fishing lands due to flooding caused by nearby hydroelectric plants.¹³⁰ Although these battles involved strong arguments and clear environmental justice impacts, neither survived as legal claims at the district or appellate court level.¹³¹

B. Coal

The environmental justice impacts from the use of coal are significant from start to finish. The extraction of coal causes health and environmental damage to those who work in the mining industry as well as those living near mines.¹³² The rate of black lung declined in the United States after the passage of the Federal Coal Mine Health and Safety Act in 1969, but in the last decade, the Black Lung rate has actually doubled.¹³³ In addition, the burning of coal has a significant environmental justice impact because 68% of African

125. See David Pimentel et al., *Renewable Energy: Economic and Environmental Issues*, 44 *BIOSCIENCE*, Sept. 1994, at 536, 536.

126. See, e.g., *Questions and Answers About Large Dams*, INT'L RIVERS, <http://www.internationalrivers.org/questions-and-answers-about-large-dams> (last visited Mar. 29, 2014) (asserting that between forty and eighty million people have been displaced by large dams).

127. See *supra* notes 75–77 and accompanying text.

128. See *id.*

129. See *Hoopa Valley Tribe v. Fed. Energy Regulatory Comm'n*, 629 F.3d 209, 210 (D.C. Cir. 2010).

130. See *Skokomish Indian Tribe v. United States*, 410 F.3d 506, 509 (9th Cir. 2005).

131. *Hoopa Valley Tribe*, 629 F.3d 209; *Skokomish Indian Tribe*, 322 F.3d 551.

132. See *Workplace Safety & Health Topics: Occupational Respiratory Disease Surveillance*, CENTERS FOR DISEASE CONTROL & PREVENTION, <http://www.cdc.gov/niosh/topics/surveillance/ords/CoalWorkersHealthSurvProgram.html#publicdata> (last updated Feb. 28, 2014).

133. See Howard Berkes, *As Mine Protections Fail, Black Lung Cases Surge*, NAT'L PUB. RADIO (July 9, 2012), <http://www.npr.org/2012/07/09/155978300/as-mine-protections-fail-black-lung-cases-surge>.

Americans live within thirty miles of a coal plant.¹³⁴ According to the U.S. EPA, coal plants account for 74% of the sulfur dioxide, 18% of the nitrous oxide, and 85% of the fine particulate matter emissions in the country.¹³⁵ Sulfur dioxide emissions cause increased rates of asthma.¹³⁶ African Americans are hospitalized for asthma at three times the rate for whites, and the asthma death rate for African Americans is 172% of that for whites.¹³⁷ It has been estimated that coal plants kill 13,000 Americans every year.¹³⁸ The 2011 NAACP report, *Coal Blooded: Putting Profits Before People*, evaluated 378 United States coal plants for environmental justice impacts, with seventy-five receiving failing grades.¹³⁹ The results of the study done by the NAACP indicated that people living in of-color and low-income communities are more likely to be burdened by pollution from coal plants than people living in traditionally wealthier communities.¹⁴⁰ The study investigated 378 coal plants across the country and graded each facility according to its environmental justice impact.¹⁴¹ Seventy-five plants received a grade of “F,” which indicated that these facilities were responsible for large amounts of air pollution impacting of-color and low-income communities.¹⁴² The NAACP determined that four million people live within a three-mile radius of these “F” grade plants and that 53% of the people living in that radius are of-color or have an average income of \$17,500.¹⁴³ But African Americans are not the only of-color community being disproportionately affected by coal plants. A recent study done on the Crawford Power Plant, the largest source of carbon dioxide emissions in Chicago, found an increasing trend of toxic power plants being placed within primarily Latino communities.¹⁴⁴ The study also linked the increase in placement of these plants with an increase in cases of pediatric asthma and other health risks.¹⁴⁵

134. MARTHA H. KEATING & FELICIA DAVIS, AIR OF INJUSTICE: AFRICAN AMERICANS & POWER PLANT POLLUTION 3 (2002), available at http://www.energyjustice.net/files/coal/Air_of_Injustice.pdf; Bullard, Mohai, Saha & Wright, *supra* note 63, at 380; *Coal: Dangerous Power*, ENERGY JUST. NETWORK, <http://www.energyjustice.net/coal> (last visited Mar. 29, 2014).

135. See COAL BLOODED: PUTTING PROFITS BEFORE PEOPLE, *supra* note 50, at 16.

136. See AM. LUNG ASS'N, TOXIC AIR: THE CASE FOR CLEANING UP COAL-FIRED POWER PLANTS 7 (Mar. 2011), available at <http://www.lung.org/assets/documents/healthy-air/toxic-air-report.pdf>; *Sulfur Dioxide: Health*, U.S. ENVTL. PROTECTION AGENCY, <http://www.epa.gov/oaqps001/sulfurdioxide/health.html> (last visited Mar. 29, 2014).

137. KEATING & DAVIS, *supra* note 134, at 1.

138. See COAL BLOODED: PUTTING PROFITS BEFORE PEOPLE, *supra* note 50, at 17.

139. See *id.* at 25–26.

140. Raviya Ismail, *Tr-Ash Talk: Low-Income and Communities of Color Breathe More Dirty Air*, EARTHJUSTICE (Dec. 4, 2012, 3:36 PM), <http://earthjustice.org/blog/2012-december/tr-ash-talk-low-income-and-communities-of-color-breathe-more-dirty-air>.

141. *Id.*

142. *Id.*

143. *Id.*

144. MICHAEL ARMSTRONG ET AL., ENVIRONMENTAL JUSTICE: MAPPING COAL POWER PLANTS IN ILLINOIS AND CHICAGO 6–17 (Mar. 17, 2009), available at http://gis.depaul.edu/shwang/Community_Outreach/GEO242_Service_Learning_Project/GEO242_Win0809_LVEJO_final_report.pdf.

145. *Id.* at 6.

In addition, coal plants bring the challenge of the disposal of coal ash. Coal ash commonly contains some of the most toxic metals: arsenic, lead, mercury, cadmium, chromium, and selenium.¹⁴⁶ These and other toxicants in coal ash can cause cancer and neurological damage in humans.¹⁴⁷ It is also important to note that the U.S. EPA initiated rulemaking to include coal ash under the Resource Conservation and Recovery Act (RCRA) because it is not currently regulated as a hazardous waste.¹⁴⁸ The final rule has been postponed, not because the material does not meet the definition of “hazardous,” but for political reasons from those opposed, which included numerous states.¹⁴⁹

C. Oil & Gasoline (Petroleum)

Oil and gas development also has significant environmental justice impacts. “The oil and gas industry in the United States alone creates more solid and liquid waste than all other categories of municipal, agriculture, mining, and industrial waste combined.”¹⁵⁰ “Oil and gas drilling and pumping produce most of the sector’s waste.”¹⁵¹ It is important to note that some of that waste is hazardous, but about 20% of the non-hazardous waste produced in the United States also comes from oil and gas exploration and production.¹⁵² Since 1960, there have been almost twice as many tanker spills—over 10,000 gallons—in the Gulf of Mexico as in any other body of water in the entire world.¹⁵³ Oil spills in the Gulf have an environmental justice impact because they have a direct effect on subsistence fishermen who live along the coast.¹⁵⁴ After Deepwater Horizon, small Vietnamese communities were harshly impacted both with regard to economic and health issues.¹⁵⁵ When the spill occurred, these community members were either working on the water or surviving mainly on seafood they caught.¹⁵⁶ Language barriers caused the communities to

146. GOTTLIEB, GILBERT & EVANS, *supra* note 94.

147. *Id.*

148. Jessica Lienau, Comment, *Coal Ash Waste: A History of Legislative Inaction*, 14 LOY. PUB. INT. L. REP. 141, 143 (2009); *Coal Combustion Residuals – Proposed Rule*, U.S. ENVTL. PROTECTION AGENCY, <http://www.epa.gov/epawaste/nonhaz/industrial/special/fossil/ccr-rule/index.htm> (last updated Dec. 4, 2013).

149. LINDA LUTHER, CONG. RESEARCH SERV., R42847, H.R. 2273 AND S. 3512: ANALYSIS OF PROPOSALS TO CREATE A COAL COMBUSTION RESIDUALS PERMIT PROGRAM UNDER RCRA 11–13 (2012), available at http://earthjustice.org/sites/default/files/CRS_Rpt_R42847.pdf.

150. O’Rourke & Connolly, *supra* note 46, at 594; see also Bassam S. Tawabini, Environmental Management of Drilling Fluid Waste: An Overview, Presented at the Third Joint SQU-JCCP Env’tl. Symposium 3 (Dec. 21, 2010), available at http://www.jccp.or.jp/english/wp-content/uploads/19thgcsympo_session5-2_drbassam_kfupm.pdf.

151. O’Rourke & Connolly, *supra* note 46, at 594.

152. *Id.*

153. *Accidental Discharges of Oil*, GLOBAL MARINE OIL POLLUTION INFO. GATEWAY, <http://oils.gpa.unep.org/facts/oilspills.htm> (last visited Mar. 29, 2014).

154. Erin Marcus, *One Year Later: The Health Effects of the BP Oil Spill*, NEW AM. MEDIA (Mar. 20, 2011), <http://newamericamedia.org/2011/03/one-year-later-the-health-effects-of-the-bp-oil-spill.php>.

155. *Id.*

156. *Id.*

be unaware of the negative effects of the oil spill on the fish they ate, as well as the effect on themselves.¹⁵⁷ Also, oil pipelines have caused disproportionate impacts on low income and minority communities in the United States.¹⁵⁸ Additionally, to obtain a sense of the oil refineries' ability to conform to environmental regulations, in 1999, 54% of oil refineries were in significant non-compliance with the Clean Air Act, 22% were in significant non-compliance with the Clean Water Act, and one-third violated RCRA.¹⁵⁹ More recently, in 2009, for all major active facilities, 25% were in non-compliance with the Clean Air Act and 55% were in non-compliance with the Clean Water Act.¹⁶⁰

D. Natural Gas

Natural gas development also contributes to environmental injustice. Currently, the most prevalent environmental justice impact in raw material development is the extraction of natural gas through hydraulic fracturing, known more commonly as "fracking."¹⁶¹ More specifically, fracking is the process of injecting salt, water, sand, and a mix of toxic chemicals to break open rock formations in order to release the gas.¹⁶² This again predominantly affects rural, low-income communities.¹⁶³ In addition, natural gas facilities have the ability to contribute to theme one and theme two of the environmental justice issues.¹⁶⁴ Natural gas facility pollution contributes to both air and water pollution in local communities.¹⁶⁵ If these facilities follow the same trend as other hazardous facilities, there is the potential for disproportionate siting in

157. *Id.*

158. O'Rourke & Connolly, *supra* note 46, at 611 (explaining that communities with high minority populations were subject to fewer inspections than those with predominantly white communities).

159. *Id.* at 603.

160. U.S. ENVTL. PROTECTION AGENCY, 2009 STATE SUMMARY DATA FOR CLEAN AIR ACT MAJORS: FISCAL YEAR 2009 FINAL REPORT (2010), available at <http://www.epa.gov/compliance/resources/reports/performance/caa/caa-majors-2009.pdf>; U.S. ENVTL. PROTECTION AGENCY, 2009 STATE SUMMARY DATA FOR CLEAN WATER ACT NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM MAJORS (2010), available at <http://www.epa.gov/compliance/resources/reports/performance/cwa/cwa-npdes-majors-2009.pdf>. For a recent compilation of cases and settlements regarding refineries' violations of the Clean Water Act, Clean Air Act, CERCLA, EPCRA, SDWA, and TSCA, visit *Enforcement: Civil Cases and Settlements by Statute*, U.S. ENVTL. PROTECTION AGENCY, <http://cfpub.epa.gov/compliance/cases/index.cfm?templatePage=12&ID=1> (last visited Mar. 29, 2014).

161. See Smith, *supra* note 100, at 129; see also Aagaard et al., *supra* note 100, at 189–90.

162. Aagaard, *supra* note 100, at 196; Smith, *supra* note 100, at 130.

163. See, e.g., *Statement of Policy – Environmental & Health Impacts of Hydraulic Fracturing of Unconventional Gas Reserves*, NAT'L ASS'N OF COUNTY & CITY HEALTH OFFICIALS (Mar. 2013), available at www.naccho.org/advocacy/positions/upload/13-03Environmental-and-Health-Impacts-of-Hydraulic-Fracturing-of-Unconventional-Gas-Reserves.pdf.

164. Aagaard, *supra* note 100, at 196; Smith, *supra* note 100, at 130.

165. See *Clean Energy: Natural Gas*, U.S. ENVTL. PROTECTION AGENCY, <http://www.epa.gov/clean-energy/energy-and-you/affect/natural-gas.html> (last updated Sept. 25, 2013).

environmental justice communities.¹⁶⁶ Similarly, this potential disproportionate siting can then lead to disproportionate polluting in those communities as well.

E. Nuclear

There are also significant environmental justice implications from nuclear energy development.¹⁶⁷ This is true for both low-level and high-level radioactive wastes produced by the nuclear power industry.¹⁶⁸ High-level radioactive wastes cause environmental justice problems with extraction as well as with storage and disposal.¹⁶⁹ Not only is the majority of uranium mining concentrated in Native American communities across the country,¹⁷⁰ but sixty Native American communities have been targeted for storage or disposal of high-level radioactive wastes as well.¹⁷¹ In evaluating the true impact of high-level radioactive waste, one challenge is with the way that high-level radioactive waste is defined: it only includes irradiated fuel and liquid sludge waste from plutonium recovery.¹⁷² There are many radioactive materials that are not regulated as high-level radioactive waste.¹⁷³

These low-level radioactive waste disposal sites have also targeted environmental justice communities—notably black and Hispanic communities.¹⁷⁴ There are four official low-level radioactive waste dumps in the United States, and every single one of them is leaking, causing contamination of groundwater in the area.¹⁷⁵ Of these four sites, only one, located in Richland, Washington, exceeds the national average for its

166. See *supra* Part II.A–C; see also *infra* Part II.E.

167. *Environmental Justice and Nuclear Power*, NUCLEAR INFO. & RESOURCE SERVICE, <http://www.nirs.org/ejustice/ejustice.htm> (last visited Mar. 29, 2014).

168. Diane D’Arrigo, “Low-Level” Radioactive Waste is Not Low Risk, NUCLEAR INFO. & RESOURCE SERVICE, <http://www.nirs.org/factsheets/llwnolowrisk.pdf> (last visited Mar. 29, 2014).

169. *Highly Radioactive Waste*, NUCLEAR INFO. & RESOURCE SERVICE, <http://www.nirs.org/radwaste/hlw/hlw.htm> (last visited Mar. 29, 2014).

170. *Nuclear*, ENERGY JUST. NETWORK, <http://www.energyjustice.net/nuclear> (last modified Dec. 16, 2008).

171. Kevin Kamps, *The Science and Politics of the Proposed High-Level Radioactive Waste Dump at Yucca Mountain, Nevada, USA*, NUCLEAR INFO. & RESOURCE SERVICE (Nov. 28, 2003), <http://www.nirs.org/factsheets/yuccaitaly1.htm>; *Nuclear*, ENERGY JUST. NETWORK, *supra* note 170; *Private Fuel Storage Targets High-Level Radioactive Waste Dump at Skull Valley Goshute Indian Reservation, Utah*, NUCLEAR INFO. & RESOURCE SERVICE, <http://www.nirs.org/radwaste/scullvalley/skullvalley.htm> (last visited Mar. 29, 2014).

172. *High-Level Radioactive Waste*, NUCLEAR INFO. & RESOURCE SERV., <http://www.nirs.org/factsheets/hlwfest.htm> (last visited Mar. 29, 2014).

173. *Id.*

174. *Nuclear*, ENERGY JUST. NETWORK, *supra* note 170. According to the Nuclear Regulatory Commission (NRC), there are four licensed low-level radioactive waste disposal sites: Barnwell, South Carolina; Richland, Washington; Clive, Utah; and Andrews, Texas. See *Locations of Low-Level Waste Disposal Facilities*, U.S. NUCLEAR REG. COMMISSION, <http://www.nrc.gov/waste/llw-disposal/licensing/locations.html> (last visited Mar. 29, 2014).

175. See *United States Commercial “Low-Level” Radioactive Waste Disposal Sites Fact Sheet*, NUCLEAR INFO. & RESOURCE SERVICE, <http://www.nirs.org/factsheets/wastesitesfctst43009.pdf> (last visited Mar. 29, 2014).

percentage of whites in the population.¹⁷⁶ Some also believe that nuclear is a green energy source, or at least is cleaner than more traditional fuels such as coal or petroleum, but nuclear is not as clean as many people think.¹⁷⁷ Ninety-three percent of the emissions of CFC-114, a strong ozone-depleting chemical and greenhouse gas, come from the U.S. Enrichment Corporation, which owns and operates the only United States-owned enrichment facility in the United States—one of only two enrichment plants in the Western Hemisphere.¹⁷⁸ In addition, nuclear energy actually produces an even more significant amount of greenhouse gases when the whole chain of nuclear production—from its extraction point to its disposal point—is considered.¹⁷⁹

TABLE 2.

| HISTORICAL ENERGY SOURCES & EJ THEMES | | | | | | | |
|---------------------------------------|-----------|--------------------------------|------------------------------|--------------------|-----------------------------|--------------------------|---|
| | EJ THEMES | 1 | 2 | 3 | 4 | 5 | 6 |
| | | Siting of Polluting Facilities | Unequal Pollution Regulation | Contaminated Sites | Disposal of Hazardous Waste | Raw Material Development | Transportation of Raw Materials & Waste |
| Hydroelectric | | | | | | X | X |
| Coal | | X | X | X | X | X | X |
| Oil & Gas (Petro) | | X | X | X | X | X | X |
| Natural Gas | | X | X | | X | X | X |
| Nuclear | | X | X | X | X | X | X |

In TABLE 2, a bolded and italicized “**X**” means that there is no example given for this source in this theme in the Article, but this energy source has the potential to fit into the theme. As illustrated above, the historical sources of energy production in the United States have significant environmental justice impacts, including impacts in all seven of the themes of environmental justice.¹⁸⁰

176. See CITY-DATA.COM, <http://www.City-Data.com> (last visited Mar. 29, 2104) (website database for Barnwell, South Carolina; Richland, Washington; Clive (Salt Lake City), Utah; and Andrews, Texas).

177. Pimentel et al., *supra* note 125; Mark Clayton, *How Green Is Nuclear Power?*, CHRISTIAN SCI. MONITOR (Mar. 7, 2007), <http://csmonitor.com/2007/0307/p01s04-sten.html>.

178. *The Company*, USEC, <http://www.usec.com/company> (last visited Mar. 29, 2014); *Nuclear*, ENERGY JUST. NETWORK, *supra* note 170; *Uranium Enrichment*, WORLD NUCLEAR ASS'N, <http://www.world-nuclear.org/info/Nuclear-Fuel-Cycle/Conversion-Enrichment-and-Fabrication/Uranium-Enrichment/#> (last updated Oct. 2013).

179. *Nuclear Power: No Solution to Climate Change*, NUCLEAR INFO. & RESOURCE SERVICE, www.nirs.org/climate/climate.htm (last visited Mar. 29, 2014); see also Kurt Kleiner, *Nuclear Energy: Assessing the Emissions*, NATURE REP. CLIMATE CHANGE (Sept. 24, 2008), <http://www.nature.com/climate/2008/0810/full/climate.2008.99.html> (discussing the fact that nuclear energy has gotten a better reputation in comparison to other energy sources, but arguing that such a reputation is not necessarily true if aspects such as extraction and cleaning up the nuclear power plant are considered).

180. See *supra* Part II.

III. THE RISE OF THE “GREEN POWER” MOVEMENT & ITS ENVIRONMENTAL JUSTICE IMPACTS

Up to this point, this Article has identified the common themes in environmental justice and has evaluated the historical contribution of energy production to environmental injustice.¹⁸¹ Looking at the historical sources of energy in the United States, it is easy to see their role in environmental justice issues.¹⁸² While all of these themes and their application are worthy of many law review articles, for the purpose of this Article, I will now narrow the focus to understanding the rise of the “green power” movement and evaluate to what extent this shift to green power is actually occurring.¹⁸³ In that context, I will look back again at the themes of environmental justice and evaluate whether or not this “pro-environment” shift in power production is also impacting environmental injustice.¹⁸⁴

The movement for renewable energy in the United States, also known as “green energy,” has its roots in the strict petroleum dependency on foreign oil.¹⁸⁵ What seemed to be everlasting supplies of low-priced oil and gas that played a major role in American technological and industrial advancement during the time period from 1940 to 1970 no longer exists.¹⁸⁶ From 1950 to 1972, the total United States energy demand more than doubled from thirty-seven trillion BTUs¹⁸⁷ to seventy-six trillion BTUs.¹⁸⁸ During this twenty-two-year time period, domestic oil and gas production did not increase proportionately with erupting energy demands. In 1973, domestic oil production was 10.9 million barrels per day, while demand for oil in the United States was 17.2 million barrels.¹⁸⁹ This difference of approximately six million barrels resulted in increased dependence on foreign sources and the United States has remained heavily dependent on foreign oil ever since. In 2011, the United States imported approximately 11.4 million barrels of petroleum per day.¹⁹⁰

The dependency on foreign oil came to a head during 1973 when Arab oil-producing nations retaliated against the United States by curbing petroleum

181. See *supra* Parts I–II.

182. See *supra* Parts I–II.

183. See *infra* Part III.A–D.

184. See *infra* Part IV.

185. James M. Summers, Comment, *The Case for Decontrolling the Price and Allocation of Crude Oil*, 53 TEX. L. REV. 1275, 1275 (1975).

186. *Id.*

187. *British Thermal Unit*, MERRIAM-WEBSTER ONLINE DICTIONARY, <http://www.merriam-webster.com/dictionary/british+thermal+unit> (last visited Mar. 29, 2014) (defining “British Thermal Unit”).

188. H.R. Rep. No. 93-531, at 2583 (1973); Summers, *supra* note 185.

189. Summers, *supra* note 185, at 1275 n.4.

190. *Frequently Asked Questions*, U.S. ENERGY INFO. ADMIN., <http://www.eia.gov/tools/faqs/faq.cfm?id=727&t=6> (last visited Mar. 29, 2014). For an overview of barrels of oil imported every day since 1973, visit *Petroleum & Other Liquids*, U.S. ENERGY INFO. ADMIN., <http://www.eia.gov/dnav/pet/hist/LeafHandler.aspx?n=p&s=mtntus2&f=m> (last visited Mar. 29, 2014).

production and embargoing oil to the United States.¹⁹¹ The embargo lasted into the spring of 1974 and caused a 5% decrease in the United States' energy supply.¹⁹² The 1973 oil crisis was the first time the United States had to deal with significant concerns about rising fossil fuel prices and energy security. The energy crisis led to greater interest in renewable energy and spurred extensive research into solar power, wind power, and water power. Due to the expense of developing these sources at the time and general newness to the scene, however, the United States instead focused its domestic energy policy on the development of coal and nuclear power, not renewable sources.¹⁹³

The call for renewable energy in the 1980s and 1990s was still strong, but could not gain significant traction.¹⁹⁴ The costs for developing these new sources of energy were still considered too expensive to incorporate, particularly the costs associated with infrastructure development and linking these sources into the existing energy grid.¹⁹⁵ Also during this time, when renewable energy sources were planned to be constructed, the United States faced significant opposition through "not in my back yard" (NIMBY) stances that ultimately ended planned construction in some areas.¹⁹⁶

Unfortunately, it took the events of September 11, 2001, and the subsequent war with Iraq to understand the importance of green energy from a national security perspective.¹⁹⁷ This event brought back the same debate from the 1973 oil crisis, but it was now much more magnified and personal.¹⁹⁸ After the events of September 11th, the loudest and most important reason for the United States to start using renewable energy became our national security.¹⁹⁹ At the time, the United States bought over 50% of its oil from foreign countries, including Saudi Arabia and other nations located in the Middle East.²⁰⁰

National security concerns at this time also dovetailed with an increasing acceptance of the science of climate change amongst the majority of

191. KAREN R. MERRILL, *THE OIL CRISIS OF 1973–1974: A BRIEF HISTORY WITH DOCUMENTS* 5–7 (2007).

192. *Id.*

193. *Id.*

194. *See generally* Paul L. Joskow, *U.S. Energy Policy During the 1990s*, MIT ECONOMICS (2001), available at <http://economics.mit.edu/files/1144> (discussing the energy market in the 1980s and 1990s).

195. *See id.* Today, green energy is increasing nationwide and has been a significant source of many jobs created recently. *From Emerging to Mainstream: The Growth of the Global Clean Energy Marketplace*, U.S. DEPARTMENT OF ENERGY, <http://energy.gov/articles/emerging-mainstream-growth-global-clean-energy-marketplace> (last visited Mar. 29, 2014).

196. *See* Michael Schirber, *Whatever Happened to Wind Energy?*, LIVESCIENCE (Jan. 14, 2008, 4:47 AM), <http://www.livescience.com/2211-happened-wind-energy.html>.

197. *See National Security*, AM. ENERGY INDEPENDENCE, www.americanenergyindependence.com/security.aspx (last visited Mar. 29, 2014).

198. *Id.*

199. *See id.*

200. *See Energy in Brief: How Dependent Are We on Foreign Oil?*, U.S. ENERGY INFO. ADMIN, http://www.eia.gov/energy_in_brief/article/foreign_oil_dependence.cfm (last visited Mar. 29, 2014).

Americans.²⁰¹ Together with the unprecedented growth in the price of petroleum fuel, the call for renewable energy became higher than ever before.²⁰²

Renewable energy movement efforts have been increasing since the United States made it a priority to lessen its dependence on foreign oil.²⁰³ In 2007, Congress passed the Energy Independence and Security Act, also known as the Clean Energy Act of 2007.²⁰⁴ The stated purpose of the Act was:

To move the United States toward greater energy independence and security, to increase the production of clean renewable fuels, to protect consumers, to increase the efficiency of products, buildings, and vehicles, to promote research on and deploy greenhouse gas capture and storage options, and to improve the energy performance of the Federal Government, and for other purposes.²⁰⁵

Specifically, it included federal funding of research and development of solar energy, geothermal energy, and marine and hydrokinetic renewable energy technologies.²⁰⁶ This demonstrated that not only was there a strong public desire to move towards green energy, but also that there was political and economic support for such a shift.²⁰⁷

Given the rise of the “green power” movement, it is necessary to evaluate what actual impact this movement has had on diversifying our historical energy sources and then to evaluate what impacts that shift has had on environmental justice issues. To do this, I looked at a ten-year period, from 1999 to 2009, to see if there was a noticeable difference in the allocation of the United States’ energy sources.

First, the more historical power sources—coal, petroleum, natural gas, nuclear, and hydroelectric—underwent a change in use in the United States. Nationally, coal usage went down 5% during the ten-year timeframe,²⁰⁸ and petroleum usage saw a 10% decrease since the United States’ peak oil consumption from 2005 to 2006.²⁰⁹ However, there was a 60% increase in the

201. *Energy Update*, RASMUSSEN REP. (Mar. 11, 2014), http://rasmussenreports.com/public_content/politics/current_events/environment_energy/energy_update.

202. *See National Security*, *supra* note 197.

203. *See supra* notes 197–202 and accompanying text.

204. *See* Energy Independence and Security Act of 2007, Pub. L. No. 110-140, 121 Stat. 1492.

205. *Id.*

206. Energy Independence and Security Act of 2007 §§ 121, 602, 613, 633.

207. *See supra* notes 203–06 and accompanying text.

208. *Annual Energy Review*, U.S. ENERGY INFO. ADMIN. (Sept. 27, 2012), http://www.eia.gov/total_energy/data/annual/pdf/aer.pdf.

209. *Petroleum & Other Liquids: Product Supplied*, U.S. ENERGY INFO. ADMIN., http://www.eia.gov/dnav/pet/pet_cons_psup_dc_nus_mbb1_a.htm (last visited Mar. 30, 2014).

use of natural gas²¹⁰ and a small increase in nuclear energy as well.²¹¹ Hydroelectric usage remained relatively stable nationally.²¹²

In looking at renewable energy sources during this time period, significant changes also occurred.²¹³ While the use of biomass decreased at the national level, the increase almost doubled on the national level for the other renewables.²¹⁴ In 2009, according to the United States Energy Information Administration, Americans used renewable energy sources—water (hydroelectric), wood, biofuels, wind, organic waste, geothermal, and sun—to meet about 8% of our total energy needs.²¹⁵ Renewable energy consumption increased by about 38% between 2001 and 2009, contributing about 8% of the United States' total energy demand and 10% of total United States electricity generation in 2009.²¹⁶ The largest share of the renewable-generated electricity in 2009 came from hydroelectric energy (66%), followed by wind (17%), wood (9%), biomass waste (4%), geothermal (4%), and solar (0.2%).²¹⁷ Wind-generated electricity increased by 28% in 2009 from 2008, more than any other energy source.²¹⁸

TABLE 3.

| SOURCE | RENEWABLE/NONRENEWABLE | CHANGE BETWEEN 1999–2009 |
|------------------------|------------------------|--------------------------|
| Petroleum | Nonrenewable | Decrease of 10% |
| Coal | Nonrenewable | Decrease of 5% |
| Nuclear Electric Power | Nonrenewable | Very Small Increase |
| Natural Gas | Nonrenewable | Increase of 60% |
| Hydroelectric Power | Renewable | No significant Change |
| Biomass Waste | Renewable | Increase of 3% |
| Wind | Renewable | Increase of 8% |
| Biofuels | Renewable | Increase of 16% |
| Solar | Renewable | Increase of 67% |
| Geothermal | Renewable | Increase of 80% |

210. *Total Energy: Annual Energy Review 2011*, U.S. ENERGY INFO. ADMIN. (Sept. 27, 2012), <http://www.eia.gov/totalenergy/data/annual/showtext.cfm?t=ptb0701>.

211. *See id.*

212. *Annual Energy Review 2009*, U.S. ENERGY INFO. ADMIN. 9 tbl.1.3 (Aug. 2010), <http://www.eia.gov/totalenergy/data/annual/archive/038409.pdf>.

213. *See infra* notes 217–23 and accompanying text.

214. *Id.*

215. *Id.*

216. *Id.* In 2012, total energy consumption was 95,080 Btu, out of which 8,851 Btu came from renewable energy sources, constituting 9% of the total energy consumption in the United States. *Table 10.1 Renewable Energy Production and Consumption by Source*, U.S. ENERGY INFO. ADMIN. (Mar. 2014), www.eia.gov/totalenergy/data/monthly/pdf/sec10_3.pdf. Over ten years, the consumption of renewable energy has increased from 5,729 Btu to 8,851 Btu, which represents an increase of 54%. *Id.* In 2012, the renewable energy was derived from hydroelectric power (30%), wind (15%), wood (22%), biomass waste (5%), geothermal (2%), solar (2%), and biofuels (21%). *Id.*

217. *See Annual Energy Review 2009*, *supra* note 212, at 230 tbl.8.2a.

218. *Id.*

These trends are only expected to increase over the coming years, with annual renewable energy installations doubling from 12 gigawatts (GW) in 2012 to 24 GW in 2018.²¹⁹ “Of the 126 GW total U.S. installations during the period, onshore wind is expected to account for 65 GW, and solar PV is forecast to account for 51 GW. Combined, these two segments could account for 92 percent of all new installations in the United States.”²²⁰ Further, the United States Energy Information Administration (EIA) projects that renewable-generated electricity will account for 17% of total United States electricity generation in 2035.²²¹ While the United States does not have any official Renewable Portfolio Standards (RPS), which require electricity providers to generate or acquire a percentage of generation from renewable sources, thirty-six states do have RPS.²²² Most of the utility providers are expected to meet or exceed their RPS requirements.²²³

Overall, it is clear that a shift towards green energy is occurring in the United States. Perhaps the shift is not happening as quickly as some envisioned, but nonetheless, the increased proportion of energy coming from renewable sources is undeniable.²²⁴ Not all of these renewable energy sources are created equal in terms of their contribution to environmental problems, which pose environmental justice consequences and risks. Further, no renewable source of energy is devoid of environmental justice risks. And although the green energy movement is thriving, it is a long way from displacing historical energy sources and their history of environmental justice impacts.

As indicated, some of the emerging green power technologies that are getting more attention today are wind, solar, biomass, and biofuels (for comparison purposes, it is these four green power sources that are predominately evaluated in this Article).²²⁵ The next question is: Are these emerging green power technologies free from environmental justice impacts? And the simple answer is “No.”²²⁶ With respect to environmental justice impacts, the green power industry sometimes remains the same, but in other instances it presents new challenges.²²⁷ Where the environmental justice

219. THE PEW CHARITABLE TRUST, INNOVATE, MANUFACTURE, COMPETE: A CLEAN ENERGY ACTION PLAN 18 (2012), available at http://www.pewenvironment.org/uploadedFiles/PEG/Newsroom/Press_Release/Innovate,%20Manufacture,%20Compete.pdf.

220. *Id.* at 18–19.

221. U.S. ENERGY INFO. ADMIN., ANNUAL ENERGY OUTLOOK 2013: EARLY RELEASE OVERVIEW 8 fig.12 (2013), available at [http://www.eia.gov/forecasts/aeo/er/pdf/0383er\(2013\).pdf](http://www.eia.gov/forecasts/aeo/er/pdf/0383er(2013).pdf); Uma Outka, *The Renewable Energy Footprint*, 30 STAN. ENVTL. L.J. 241, 247–48 (2011).

222. *Energy in Brief*, U.S. ENERGY INFO. ADMIN., http://www.eia.gov/energy_in_brief/article/renewable_portfolio_standards.cfm (last visited Sept. 17, 2013).

223. U.S. ENERGY INFO. ADMIN., ANNUAL ENERGY OUTLOOK 2013: EARLY RELEASE OVERVIEW, *supra* note 221, at 8.

224. See *supra* notes 197–223 and accompanying text.

225. Pimentel et al., *supra* note 125.

226. *Id.*

227. *Id.*

impacts for the green power industry remain the same is in recognizing that there are some environmental justice impacts for all six environmental justice themes for some form of green power.²²⁸

A. Wind

Wind has the lowest pollution emission risks (i.e., theme two), although there have been complaints of health effects associated with flicker or low-level frequency, sub-audible sounds (infrasounds).²²⁹ Although scientific evidence does not support a direct link between infrasounds generated by wind turbines and health effects, there are psychological complaints associated with infrasounds and wind turbines that are likely attributable to scare tactics of the anti-wind propagandists.²³⁰ Research has indicated that only a very small portion of people living near wind turbines actually complain about health symptoms, and when they do, the complaints coincide with campaigning from anti-wind groups.²³¹ It is interesting to note that one of the largest proponents of helping the public understand the health risks of wind energy are anti-wind advocates, including the nuclear power industry.²³² Despite the lack of scientifically documented health effects of wind turbines, some of the most prolific battles fought against the siting of green power facilities have been against wind farms.²³³ The most famous of these has been the Cape Wind project in the water of Nantucket Sound.²³⁴ One of the groups opposing the Cape Wind project presented a potential environmental justice issue.²³⁵ The Wampanoag Tribe opposed the project because the placement of the turbines would affect tribal religious ceremonies—the turbines were to be placed on burial grounds, which would have obstructed the view for these ceremonies.²³⁶

228. *Id.*

229. Fiona Crichton et al., *Can Expectations Produce Symptoms from Infrasound Associated with Wind Turbines?*, HEALTH PSYCHOL. (Mar. 11, 2013), available at <http://psycnet.apa.org/psycinfo/2013-07740-001/>.

230. *Id.*

231. Simone Chapman et al., *Spatio-Temporal Differences in the History of Health and Noise Complaints About Australian Wind Farms: Evidence for the Psychogenic, "Communicated Disease" Hypothesis*, UNIV OF SYDNEY, SYDNEY SCH. OF PUB. HEALTH (2006), <http://ses.library.usyd.edu.au/bitstream/2123/8977/4/Complaints%20FINAL.pdf>.

232. See, e.g., Merrill Goozner, *Nuclear Attack on Wind Turbines—Energy Wars Begin*, FISCAL TIMES (Sept. 21, 2012), <http://www.thefiscaltimes.com/Articles/2012/09/21/Nuclear-Attack-on-Wind-Turbines-Energy-Wars-Begin.aspx#page1>.

233. See, e.g., Susan Lorde Martin, *Wind Farms and NIMBYs: Generating Conflict, Reducing Litigation*, 20 FORDHAM ENVTL. L. REV. 427 (2010); Brian Dietz, Comment, *Turbines vs. Tallgrass: Law, Policy, and a New Solution to Conflict Over Wind Farms in the Kansas Flint Hills*, 54 U. KAN. L. REV. 1131 (2006); Renner Kincaid Walker, Note, *The Answer, My Friend, Is Blowin' in the Wind: Nuisance Suits and the Perplexing Future of American Wind Farms*, 16 DRAKE J. AGRIC. L. 509 (2011).

234. See, e.g., *Alliance to Protect Nantucket Sound, Inc. v. Energy Facilities Siting Bd.*, 932 N.E.2d 787, 795 (Mass. 2010) (recounting at various legal challenges to Cape Wind spanning over five years).

235. Abby Goodnough, *For Cape Cod Wind Farm, New Hurdle Is Spiritual*, N.Y. TIMES (Jan. 4, 2010), http://www.nytimes.com/2010/01/05/science/earth/05wind.html?_r=0.

236. *Id.*

Even though this is not a traditional environmental justice argument, it does pose the question central to the core of environmental justice: Would these turbines still be placed if the proposed location were a Catholic church or a Christian cemetery, rather than a tribe's burial ground?

B. Solar

While solar power is generally perceived to be clean, it raises the same environmental justice considerations associated with other types of energy sources with respect to transportation and disposal of waste.²³⁷ The disposal of photovoltaic cells and, in particular, those containing cadmium sulfide and gallium arsenide is problematic because these are very persistent chemicals, increasing the duration of exposure risks.²³⁸ The time required to break down photovoltaic cells is extremely long.²³⁹ As with the disposal of other energy sources, the disposal of solar energy waste from production facilities in the United States presents the risk of the same negative effects on environmental justice communities.²⁴⁰ These effects include the possibility of disposing of solar energy waste at a hazardous facility.²⁴¹ Additionally, some solar battery production is occurring in the United States; these facilities are creating real environmental risks for those living near them.²⁴²

What is also interesting in the solar context is that just as with electronics, we are seeing export of our waste to third world countries; consequently, the environmental justice impact is not just within the United States.²⁴³ In China, where the polysilicon component of the solar panels is created, there have been reports regarding toxins being improperly discarded.²⁴⁴ Silicon tetrachloride, a byproduct of solar panel production, has been reported to cause various problems in Gaolong, an impoverished farming community.²⁴⁵ Residents of the village reported problems with crop growth, soil left in a state not proper for humans or plants, and air quality problems resulting in wilting plants and cases of fainting.²⁴⁶

237. Pimentel et al., *supra* note 125.

238. Marko M. G. Slusarczuk, *The Environmental Implications of an Emerging Energy Technology: Photovoltaic Solar Cells—A Study of the Toxic Aspects*, 9 B.C. ENVTL. AFF. L. REV. 899, 908 (1982).

239. *Id.*

240. *Id.*

241. *Solar Companies Creating Millions of Pounds of Polluted Sludge, Contaminated Water*, CBS DC (Feb. 11, 2013), <http://washington.cbslocal.com/2013/02/11/solar-companies-creating-millions-of-pounds-of-polluted-sludge-contaminated-water/>.

242. *Solar Panel Makers Fail to Report Waste*, ENVTL. LEADER (Feb. 12, 2013), <http://www.environmentalleader.com/2013/02/12/solar-panel-makers-fail-to-report-waste/>.

243. Ariana Eunjung Cha, *Solar Energy Firms Leave Waste Behind in China*, WASH. POST (Mar. 9, 2008), <http://www.washingtonpost.com/wp-dyn/content/article/2008/03/08/AR2008030802595.html>

244. *Id.*

245. *Id.*

246. *Id.*

C. Biomass

Unlike potential health problems of solar energy, the impacts of biomass energy production are more direct.²⁴⁷ In the context of biomass, during the 2009 energy bill discussions, the American Lung Association urged the Legislature not to promote the combustion of biomass; it stated that burning biomass can lead to significant increases and emissions of nitrous oxide, particulate matter, and sulfur dioxide, which has a severe impact on the health of our children, older adults, and people with lung disease.²⁴⁸ In Florida, rural residents have fought several battles against the construction of new biomass energy facilities, at least two of which successfully prevented biomass plants in Gadsden, the only county in Florida with a majority African-American population, and in Tallahassee, which does not have a majority African-American population, but sought to place the facility in a predominately African-American minority section of the city.²⁴⁹ The American Lung Association has indicated that there was a nationwide pattern of biomass plants being proposed for rural areas away from cities, where less protective pollution control restrictions and weaker permitting requirements apply.²⁵⁰ This is due to the fact that urban areas are more likely to qualify as nonattainment areas under the Clean Air Act for one or more of the criteria pollutants.²⁵¹ Under the Clean Air Act, these nonattainment areas have much greater restrictions on new sources.²⁵² Some might contend that this propels an argument for a more proportionate share because if you put them further away from urban centers, you can pollute more and you are not competing with the polluting rights of other industries. But others argue that this is just going to ship the trend into rural, low-income communities.²⁵³

247. AM. LUNG ASS'N, PUBLIC POLICY POSITION: ENERGY 5 (June 23, 2012), <http://www.lung.org/get-involved/advocate/advocacy-documents/energy.pdf>.

248. *Id.*

249. See, e.g., Gerald Ensley, *Gretna Closes Door on Biomass Plant*, TALLAHASSEE DEMOCRAT (Mar. 17, 2010), <http://www.tallahassee.com/article/20100317/NEWS01/3170322/Gretna-closes-door-biomass-plant>; Gerald Ensley, *Plans to Land Biomass Plant in Gretna Put on Hold*, TALLAHASSEE DEMOCRAT (Mar. 15, 2010), http://www.tallahassee.com/Article/20100315/Breakingnews/100315015/Plans-To-Land-Biomass-Plant-in-Gretna-Put-On-Hold?nclck_check=1; Elizabeth M. Mack, *Biomass Plant Continues to Raise Concerns*, TALLAHASSEE DEMOCRAT (Feb. 26, 2010), <http://www.tallahassee.com/article/20100226/NEWS01/2260326/Biomass-plant-continues-raise-concerns>; Elizabeth M. Mack, *Gadsden Residents Raise Concerns Over Biomass Plant*, TALLAHASSEE DEMOCRAT (Feb. 27, 2010), <http://www.tallahassee.com/article/20100225/BREAKINGNEWS/100225026/Gadsden-residents-raise-concerns-over-biomass-plant>; cf. *Community Demographic Profile*, GADSDEN COUNTY, FLA., <http://www.gadsgov.net/index.aspx?page=92> (last visited Mar. 30, 2014); Dave Hodges, *Gretna Plans Bioenergy Plant*, TALLAHASSEE DEMOCRAT (Dec. 9, 2009), <http://www.tallahassee.com/article/20091210/BUSINESS/912100358/Gretna-plans-bioenergy-plant>.

250. Letter from June Dean, State Director, Am. Lung Ass'n in Ga., to Michael G. Noll (Dec. 3, 2010), available at http://energyjustice.net/files/biomass/GA-ALA_on_Lowndes_Biomass.pdf.

251. *Id.*

252. 42 U.S.C. § 7502(d) (2006).

253. See *id.*

D. Biofuels

Biofuels, though related to biomass as the result of biomass processing, have been used in at least some form for energy production for a long time.²⁵⁴ They are primarily used as a source of mobile power.²⁵⁵ The thinking that biofuels have no environmental justice impact overlooks the energy and land costs as well as the pollution associated with refining biofuels.²⁵⁶

TABLE 4.

| GREEN ENERGY SOURCES & EJ THEMES ²⁵⁷ | | | | | | | |
|---|-----------|--------------------------------|------------------------------|--------------------|-----------------------------|--------------------------|---|
| | EJ THEMES | 1 | 2 | 3 | 4 | 5 | 6 |
| | | Siting of Polluting Facilities | Unequal Pollution Regulation | Contaminated Sites | Disposal of Hazardous Waste | Raw Material Development | Transportation of Raw Materials & Waste |
| Wind | | X | | | | | |
| Solar | | X | X | X | X | X | X |
| Biomass | | X | X | X | X | X | X |
| Biofuels | | X | X | X | | | |

A bolded and italicized “X” means that there is no example given for this source in this theme in the Article, but this energy source has the potential to fit into this theme. Some of the challenges facing the potential environmental and health effects of green energy production are new and some are the same themes as traditional energy production with variations.²⁵⁸

IV. EVALUATING ENVIRONMENTAL JUSTICE IMPACTS & OTHER SOLUTIONS

Recognizing that green power is also potentially fraught with both environmental justice impacts and future risks, solutions need to be offered to address environmental justice issues in the context of green energy so that they actually earn the “green” name and are indeed sustainable over the long term. These themes—the siting of facilities that pollute; air and water pollution that results from these polluting facilities, superfund, and other contaminated sites;

254. *History of Biofuels*, BIOFUEL.ORG.UK, <http://biofuel.org.uk/history-of-biofuels.html> (last visited Mar. 30, 2014).

255. See generally Ayhan Demirbas, *Political, Economic and Environmental Impacts of Biofuels: A Review*, 86 APPLIED ENERGY S108 (2009).

256. Hyungtae Kim et al., *Biofuels, Land Use Change, and Greenhouse Gas Emissions: Some Unexplored Variables*, 43 ENVTL. SCI. TECHNOLOGY 961 (2009); Timothy Searchinger et al., *Use of U.S. Croplands for Biofuels Increases Greenhouse Gases Through Emissions from Land-Use Change*, 319 SCIENCE 1238, 1238 (2008); see generally Joseph Fargione et al., *Land Clearing and the Biofuel Carbon Debt*, 319 SCIENCE 1235 (2008).

257. See *supra* Part III.A–D. Note that hydroelectric is not included here, even though it is a renewable or green power source, because it is already in the historical energy chart and is identified as a renewable source in the previous table, as well.

258. See *infra* discussion Part IV.

the disposal of hazardous waste; raw material development; and transportation of hazardous material—are still the primary issues that give rise to the environmental justice movement.²⁵⁹ If we hope to start improving the lives of those most affected by the environmental burdens, then solutions that are offered today must become more than lip service and must be put into motion. Because the environmental justice problems posed by green energy sources are in many ways the same problems posed by traditional energy sources and other industrial processes, many of the solutions proffered over the years to address these issues also remain the same.²⁶⁰ For an extensive look at legal tools historically used to combat environmental injustice and their limitations, there is a litany of literature.²⁶¹

Instead of focusing there, in this Article, I highlight some existing law that, if pursued, would reduce environmental injustice.²⁶² Additionally, I will look at historically proffered, more general solutions that either have current traction or are innovative and that could significantly impact environmental justice concerns.²⁶³

The primary problem with past and current governmental responses to environmental justice is the lack of any meaningful legal enforceability.²⁶⁴ The strongest and most vehement argument of environmental justice advocates is that, to date, there has been no federally enforceable environmental justice law. The primary focus of this discussion has been President Clinton's Executive Order 12898 (EO 12898) entitled "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations" and the lack of legal force behind it. To date, there are no federally enforceable statutes regarding environmental justice; EO 12898 shed light on the environmental justice problem and created ways to begin discussing environmental justice issues.²⁶⁵ EO 12898 made agencies recognize environmental justice issues for the first time but placed no obligation on any government entity to create legally enforceable regulations to address the issue.²⁶⁶ Rather, EO 12898 only brought to the surface the depth of environmental justice problems in the country.²⁶⁷ This author, however, thinks it premature to measure the impact of EO 12898 because its full potential has not been realized.²⁶⁸ The vesting clause under Article II, § 1 of the United States Constitution vests the executive power

259. See Jeanne Marie Zokovitch Paben, *Approaches to Environmental Justice: A Case Study of One Community's Victory*, 20 S. CAL. REV. L. & SOC. JUST. 235, 235–36 (2011).

260. See *id.*

261. *Id.*

262. See *infra* notes 265–70 and accompanying text.

263. See *infra* notes 292–303 and accompanying text.

264. See Amanda K. Franzen, Comment, *The Time Is Now for Environmental Justice: Congress Must Take Action by Codifying Executive Order 12898*, 17 PENN ST. ENVTL. L. REV. 379, 386–91 (2009).

265. Exec. Order No. 12898, 59 Fed. Reg. 7629 (Feb. 11, 1994), amended by Exec. Order No. 12948, 60 Fed. Reg. 6381 (Jan. 30, 1995).

266. *Id.*

267. See Franzen, *supra* note 264, at 387–89.

268. See *id.* at 389–91.

of the United States in the President.²⁶⁹ Further, under Article II, § 3 of the United States Constitution, the President is charged with faithful execution of the laws of the United States.²⁷⁰ Since President George Washington, every United States president except William Henry Harrison has issued at least one executive order under this constitutional authority.²⁷¹ Additionally, Congress can delegate legislative rulemaking authority to the President via statute.²⁷² Executive orders are presidential directives to federal agencies, department heads, or other federal employees to address management of the executive branch, federal agencies, or officials, or to carry out statutory or constitutional duties of the President.²⁷³ Executive orders have the full force of law.²⁷⁴ Congress cannot directly affect an executive order, but it can pass legislation that cancels or modifies the effect of the executive order.²⁷⁵ Like all statutes, such a statute would be subject to a presidential veto, which Congress can override by a two-thirds vote.²⁷⁶ Additionally, the Supreme Court can find an executive order unconstitutional.²⁷⁷ Subsequent presidents can retain, revoke, or replace the executive orders of previous presidents.²⁷⁸

Further, the force of law in executive orders can be limited by the President himself.²⁷⁹ As early as the Reagan Administration, executive orders started including “disclaimer language” that, in essence, has been read to create no new legal rights for private parties.²⁸⁰ President Clinton’s EO 12898 includes this language.²⁸¹ Section 6-609 makes clear that this executive order affects only the “internal management of the executive branch” and that there is no private right to judicial review of any agency action taken underneath this law.²⁸² In evaluating the success or failure of EO 12898, this clause fundamentally alters the issue—while executive orders may, in fact, have the force of law, if the intent is to ultimately achieve environmental justice, why remove this legal tool from those actually suffering environmental injustice?²⁸³

269. U.S. CONST. art. II, § 1, cl. 1.

270. U.S. CONST. art. II, § 3.

271. *U.S. Gov’t Info: The President and Cabinet*, ABOUT.COM, <http://usgovinfo.about.com/od/the-president-and-cabinet/a/Presidential-Executive-Orders.html> (last visited Mar. 30, 2014).

272. *Id.*; see generally *Marshall Field & Co. v. Clark*, 143 U.S. 649, 693 (1892) (explaining that the President had power to act because Congress had delegated the power to him).

273. *U.S. Gov’t Info: The President and Cabinet*, *supra* note 271.

274. John C. Duncan, Jr., *A Critical Consideration of Executive Orders: Glimmerings of Autopoiesis in the Executive Role*, 35 VT. L. REV. 333, 335 (2010).

275. *U.S. Gov’t Info: The President and Cabinet*, *supra* note 271.

276. U.S. CONST. art. I, § 7.

277. See generally *Youngstown Sheet & Tube Co. v. Sawyer*, 343 U.S. 579 (1952) (finding that an executive order directing the Secretary of Commerce to take control and operate the nation’s steel mills was unconstitutional).

278. *U.S. Gov’t Info: The President and Cabinet*, *supra* note 271.

279. See *infra* notes 280–82 and accompanying text.

280. Exec. Order No. 12291, 46 Fed. Reg. 13193 (Feb. 17, 1981).

281. Exec. Order No. 12898, § 6-609, 59 FR 7629, 7632–33 (Feb. 11, 1994), *amended by* Exec. Order No. 12948, 60 Fed. Reg. 6381 (Jan. 30, 1995).

282. *Id.*

283. See *id.*

Some argue that the disclaimer language is used to allow the President to fully flex his executive authority as it relates to the executive branch and administrative agencies generally, while retaining clear separation-of-powers boundaries to protect the executive order itself from judicial scrutiny of its constitutionality.²⁸⁴ To date, however, no court has tested the theory. Further, in the context of EO 12898, the disclaimer language renders it impotent beyond its ability to demand planning and dialogue on the subject within governmental agencies.²⁸⁵ In addition, the legal landscape under which President Clinton created EO 12898 has changed. This author acknowledges that EO 12898 provided some important progress in the field of environmental justice. This progress came through validating what individuals in these communities already knew: they were, in fact, disproportionately burdened. This validation empowered communities to organize and make this issue a part of the discussion in the context of some environmental decision-making. Unfortunately, this places the success of the environmental justice community squarely in a political arena and not a legal arena. There is no doubt that many environmental justice battles have been won in political forums, and many environmental justice advocates argue that engaging in a political forum is the best strategy an environmental justice community can employ.²⁸⁶ Early on, however, environmental justice communities could engage in political battles while simultaneously pursuing legal action through constitutional claims under the Equal Protection Clause, Title VI, or § 1983 civil rights claims, tort actions, or claims of violations of traditional environmental laws, but in the past fifteen to twenty years, each of these legal options was removed entirely or significantly curtailed.²⁸⁷ Even when litigation was not successful, the ability to pursue meritorious claims changed the discussions occurring in the political arena.²⁸⁸ Therefore, the ramifications reverberate beyond the courtroom to political venues as well.

Additionally, President Clinton and every president since have further castrated EO 12898 by failing to utilize the internal authority given to agencies to address environmental justice issues in their policies and procedures as consistent with their enabling statutes. Executive orders themselves cannot direct agencies to promulgate rules unless Congress has delegated such authority to the President or the President possesses independent constitutional authority.²⁸⁹ However, even executive orders authored pursuant to the President's constitutional authority can result in agency policymaking without

284. See Peter Raven-Hansen, *Making Agencies Follow Orders: Judicial Review of Agency Violations of Executive Order 12,291*, 1983 DUKE L.J. 285, 286–87 (1983).

285. See Exec. Order No. 12898, 59 Fed. Reg. 7629, 7629–30 (Feb. 11, 1994), amended by Exec. Order No. 12948, 60 Fed. Reg. 6381 (Jan. 30, 1995).

286. Luke W. Cole, *Macho Law Brains, Public Citizens, and Grassroots Activists: Three Models of Environmental Advocacy*, 14 VA. ENVTL. L.J. 687, 709 (1995).

287. Paben, *supra* note 259, at 269.

288. See *id.*

289. Raven-Hansen, *supra* note 284, at 296–97.

the full force of law.²⁹⁰ Additionally, executive orders, whether under constitutional or statutory authority, can and have shaped the way agencies conduct congressionally delegated rulemaking.²⁹¹ Unlike issues addressed by other executive orders, Congress has delegated to agencies statutory authority to address environmental justice in a procedural way through the National Environmental Policy Act (NEPA).²⁹² To date, President Clinton's administration and every administration since has had, but has failed to utilize, its delegated administrative authority to promulgate rules to further the goals espoused in EO 12898 via Congress's delegated rulemaking authority under NEPA.

NEPA and its regulations, promulgated by the Council on Environmental Quality (CEQ), make it clear that all federal agencies are required to have NEPA's broad policy goals—including the assurance “for all Americans safe, healthful, productive, and esthetically and culturally pleasing surroundings” and the recognition “that each person should enjoy a healthful environment”—permeate federal agencies' ongoing programs and actions.²⁹³ Further, the statute and its regulations make it clear that humans are part of that environment and that the overall health and welfare of humans is central to achieving these goals.²⁹⁴ Additionally, courts have interpreted NEPA to provide wide discretion to agencies to achieve these goals.²⁹⁵ It is important to note that CEQ, in promulgating rules, and other agencies, in both promulgating their own NEPA rules and acting pursuant to NEPA, create enforceable law subject to judicial review.²⁹⁶ To this end, I assert that CEQ or any other agency can promulgate NEPA regulations that address environmental justice.²⁹⁷ Also, EO 12898 specifically directs agencies to address environmental justice in their NEPA actions.²⁹⁸ In doing so, it is clear that, to date, this typically results in a perfunctory exercise because a review of most federal register notices of NEPA actions contain the same summary statement indicating that this action is not expected to result in environmental injustice.²⁹⁹ This perfunctory exercise,

290. *Id.*

291. See National Environmental Policy Act of 1969, § 102, 42 U.S.C. § 4321 *et seq.* (2006 & Supp. 2011); Raven-Hansen, *supra* note 284, at 296–97.

292. National Environmental Policy Act of 1969 § 102.

293. 42 U.S.C. § 4331(b)(2), (c) (2006); see, e.g., 40 C.F.R. §§ 1500.1 (2003), 1502.1 (2011).

294. See 42 U.S.C. §§ 4321, 4331.

295. See, e.g., *Robertson v. Methow Valley Citizens Council*, 490 U.S. 332, 359 (1989); *Kleppe v. Sierra Club*, 427 U.S. 390, 416 (1976).

296. See Administrative Procedure Act of 1946, 5 U.S.C. § 706 (2012).

297. COUNCIL ON ENVTL. QUALITY, ENVIRONMENTAL JUSTICE: GUIDANCE UNDER THE NATIONAL ENVIRONMENTAL POLICY ACT 1 (1997), available at http://www.epa.gov/environmentaljustice/resources/policy/ej_guidance_nepa_ceq1297.pdf.

298. *EPA Insight Policy Paper: Executive Order #12898 on Environmental Justice*, U.S. ENVTL. PROTECTION AGENCY, FED. FACILITIES RESTORATION AND REUSE OFF., http://www.epa.gov/fedfac/documents/executive_order_12898 (last visited Mar. 30, 2014).

299. See, e.g., Notice of Intent to Prepare an Environmental Impact Statement for the Virginia Beach Transit Extension Study, Virginia, 78 Fed. Reg. 49600-01 (Aug. 14, 2013); Revisions to Environmental Review for Renewal of Nuclear Power Plant Operating License, 78 Fed. Reg. 37282 (June 20, 2013);

however, does not have to be the case. In the absence of specific agency regulations on environmental justice, those regulations promulgated by CEQ and other agencies give agencies the latitude to include environmental justice information and factors into their NEPA decision-making processes.³⁰⁰ In actuality, these muscles have been flexed, but not as a regular course of business.³⁰¹ Further, the agency's consideration of environmental justice information in NEPA decision-making has been held lawful and within the purview of courts to review.³⁰² The court in *Communities Against Runway Expansion, Inc. v. Federal Aviation Administration* found that the Federal Aviation Administration's decision to consider environmental justice impacts via its discretionary authority under NEPA was lawful and, once exercised, subject to judicial review.³⁰³ All of this being said, it is clear that the executive branch can provide force of law to EO 12898's proclamations, either through agency rulemaking under NEPA to address these issues or by actually taking environmental justice considerations as part of their NEPA duties.

While there are many ways in which an agency can undertake these acts, this Article suggests the following as a roadmap for such rules or internal agency processes as they relate to energy decision-making. Preference is given to promulgating rules, as the rules themselves ensure that the environmental justice considerations will be exercised and that judicial review attaches. In advance of such rulemaking, however, agencies could use the same roadmap via their discretionary authority.

Specifically, the rules should require agencies to consider cradle-to-grave information as consistent with the six primary environmental justice themes espoused in this Article regarding (1) demographics of affected communities and (2) risk analyses through each of these steps. When the action is a private one with a federal nexus via either funding or approval, the applicant or regulated entity is required to provide such information to be scrutinized by the agency and open to public input. Additionally, it provides a seventh category to consider environmental justice impacts unique to a particular decision. Beyond this, the agencies should incorporate these considerations and data into all other NEPA requirements such as cumulative impacts and indirect effects analysis, consideration of alternatives, and the ability to provide the agency with the authority to request mitigation in consultation with affected communities in order to avoid or alleviate significant environmental justice impacts. Unfortunately, to date, no executive agency has undertaken these steps.

Environmental Impact Statement for the Disposition of Hangars 2 and 3, Fort Wainwright, AK, 76 Fed. Reg. 70978-01 (Nov. 16, 2011).

300. See *Cmtys. Against Runway Expansion, Inc. v. Fed. Aviation Admin.*, 355 F.3d 678, 688 (D.C. Cir. 2004).

301. See *id.* at 687-88.

302. See *id.* at 689.

303. *Id.*

President Obama made environmental justice one of his priorities even prior to his first election and acknowledgedly put resources behind this issue.³⁰⁴ Picking up where President Clinton left off, the Obama Administration created Plan EJ 2014 in 2011.³⁰⁵ Plan EJ 2014 is in recognition of the twentieth anniversary of EO 12898 and is considered to be “a roadmap that will help EPA integrate environmental justice into the Agency’s programs, policies, and activities.”³⁰⁶ Plan EJ 2014’s goals include protecting the health of those who live in environmentally overly burdened areas, creating ways and means for communities to take firsthand action to improve their health and environments and creating partnerships with government organizations to help achieve these goals.³⁰⁷ However, similar to EO 12898, the plan is also not a legally enforceable rule or regulation.³⁰⁸

Despite lacking enforceability, the U.S. EPA indicates that Plan EJ 2014 has made some major accomplishments in its short lifespan.³⁰⁹ In February 2013, the U.S. EPA published the Plan EJ 2014 Progress Report.³¹⁰ In the progress report, the U.S. EPA identified several key accomplishments of Plan EJ 2014.³¹¹ The most notable accomplishments are the creation of environmental justice screening techniques and the advancement of environmental justice through compliance and possible enforcement.³¹² The U.S. EPA’s development and implementation of environmental justice into rulemaking, as part of its most basic goal and at the core of the Agency’s function, follows the “precautionary principle” to develop proactive strategies to integrate environmental justice into future compliance and enforcement aspects.³¹³ While I think it is premature to consider these as major accomplishments in the war on environmental justice, they are steps that could facilitate the battles that need to be fought. These are battles that the U.S. EPA now seems to acknowledge are inevitable, but the question is, are they preparing for battle or merely stockpiling weapons?³¹⁴

To start making enforceable regulations concerning environmental justice issues, Plan EJ 2014 includes the use of EJ screening to examine environmental

304. Nancy Sutley, *A Big Step Forward on Environmental Justice*, WHITE HOUSE COUNCIL ON ENVTL. QUALITY (Nov. 16, 2011, 10:00 AM), <http://www.whitehouse.gov/blog/2011/11/16/big-step-forward-environmental-justice>.

305. *EJ Plan 2014*, U.S. ENVTL. PROTECTION AGENCY, <http://www.epa.gov/compliance/plan-ej/> (last visited Mar. 30, 2014).

306. *Id.*

307. *Id.*

308. Exec. Order No. 12898 § 6-609, 59 Fed. Reg. 7629 (Feb. 11, 1994), *amended by* Exec. Order No. 12948, 60 Fed. Reg. 6381 (Jan. 30, 1995).

309. U.S. ENVTL. PROTECTION AGENCY, PLAN EJ 2014 PROGRESS REPORT i (Feb. 2014), <http://www.epa.gov/compliance/environmentaljustice/resources/policy/plan-ej/2014/plan-ej-progress-report-2014.pdf>.

310. *Id.* at ii.

311. *Id.* at 2.

312. *Id.* at 2–3.

313. *Id.*

314. *See generally id.* at 4–5 (enumerating the U.S. EPA’s main focus areas).

and demographic information to pinpoint locations that warrant further review.³¹⁵ This screening is used to characterize various environmental, health, and population impacts on the examined community.³¹⁶ The first national tool being used for this screening is known as EJSCREEN.³¹⁷

The U.S. EPA issued EJSCREEN in October of 2012, and the system is touted as a project similar to what an environmental justice Environmental Impact Statement (EIS) looks like.³¹⁸ EJSCREEN is a geospatial tool that cross-references census block group levels with different demographic and environmental data.³¹⁹ An EJSCREEN examines twelve environmental indicators, plus race and income of communities, and creates nationally consistent data methods for considering whether a community has an environmental justice concern.³²⁰

The environmental factors [being examined] include: (1) PM 2.5 Level in Air; (2) Ozone Level in Air; (3) Diesel Particulate Matter Level in Air; (4) Air Toxics Cancer Risk; (5) Air Toxics Neurological Hazard Index; (6) Air Toxics Respiratory Hazard Index; (7) Traffic Proximity and Volume; (8) Lead Paint Indicator (% pre-1960); (9) Risk Management Plan Facility Proximity; (10) Superfund Site Proximity; (11) Treatment Storage Disposal Facility Proximity; and (12) Major Direct Dischargers to Water Proximity.³²¹

Other data considered in an EJSCREEN include areas with language barrier problems, “population[s] over age 64, population[s] under age 5, and population[s] with less than a high school education” or equivalent.³²² Once all the data are gathered, they are used to determine and measure impacts to each block group, as well as to compare the information against demographic groups nationwide.³²³

U.S. EPA Region 5, which includes Illinois, Indiana, Michigan, Minnesota, Ohio, Wisconsin, and thirty-five tribes, recently published its plan

315. *EPA Region 5 Regional Implementation Plan to Promote Meaningful Engagement of Overburdened Communities in Permitting Activities*, U.S. ENVTL. PROTECTION AGENCY 2–3 (2013), available at <http://www.epa.gov/compliance/ej/resources/policy/plan-ej-2014/permitting/2013-05-region-05-plan.pdf>.

316. *Id.*

317. *Id.*

318. See PLAN EJ 2014 PROGRESS REPORT, *supra* note 309, at 2, 28.

319. *EPA Region 5 Regional Implementation Plan to Promote Meaningful Engagement of Overburdened Communities in Permitting Activities*, *supra* note 315, at 2.

320. PLAN EJ 2014 PROGRESS REPORT, *supra* note 309; *EPA Region 5 Regional Implementation Plan to Promote Meaningful Engagement of Overburdened Communities in Permitting Activities*, *supra* note 315, at 2–3.

321. *EPA Region 5 Regional Implementation Plan to Promote Meaningful Engagement of Overburdened Communities in Permitting Activities*, *supra* note 315, at 2.

322. *Id.*

323. *Id.* at 2–3.

for using EJSCREENS.³²⁴ Region 5 indicated that it plans to use the EJSCREEN to examine whether certain permits will be appropriate.³²⁵ After the initial screening for permits, EJSCREEN will then be used to determine if additional review will be needed for certain candidates.³²⁶ If additional review is called for, enhanced outreach programs will be initiated to start addressing local environmental justice issues.³²⁷

But even with its accomplishments thus far, Plan EJ 2014 has received various criticisms.³²⁸ The first and most obvious criticism is that despite all the promises made in Plan EJ 2014, it has yet to take any legally enforceable action.³²⁹ Plan EJ 2014 only creates a path for agencies and places no obligation to follow through on the plan.³³⁰

The public also criticized Plan EJ 2014.³³¹ The U.S. EPA received numerous public comments on the strategies and implementation of Plan EJ 2014 and addressed many of the public's concerns in the U.S. EPA Response to Public Comments on Plan EJ 2014 Strategy and Implementation Plans.³³² Some themes of the public comments involved the vagueness of the implementation plan, the lack of resources being used, and the concern that previous ideas are being overlooked.³³³ The U.S. EPA responded to every comment, but the responses were full of open-ended promises that vaguely alluded to how the U.S. EPA is currently addressing each issue.³³⁴

One example includes a comment regarding U.S. EPA implementation issues.³³⁵ The comment expressed the concern that the "EPA should train staff so that they understand environmental justice issues and the communities impacted by them."³³⁶ The U.S. EPA's response included an agreement that training is important and that they have a strategy to "build[] the capacity of Agency scientists to work with [affected] communities."³³⁷ Another comment attacked the Agency for not being clear enough about what information is being

324. EPA Region 5, U.S. ENVTL. PROTECTION AGENCY, www2.epa.gov/aboutepa/epa-region-5 (last updated Mar. 26, 2014); *EPA Region 5 Regional Implementation Plan to Promote Meaningful Engagement of Overburdened Communities in Permitting Activities*, *supra* note 315, at 2–3.

325. *EPA Region 5 Regional Implementation Plan to Promote Meaningful Engagement of Overburdened Communities in Permitting Activities*, *supra* note 315, at 3.

326. *Id.*

327. *See id.*

328. *See* discussion *infra* notes 329–43.

329. *Cf. Plan EJ 2014*, U.S. ENVTL. PROTECTION AGENCY, <http://www.epa.gov/compliance/ej/plan-ej/> (last updated Mar. 10, 2014).

330. *Id.*

331. *See* discussion *infra* notes 332–38.

332. U.S. ENVTL. PROTECTION AGENCY, U.S. ENVIRONMENTAL PROTECTION AGENCY (EPA) RESPONSE TO PUBLIC COMMENTS ON PLAN EJ 2014 STRATEGY AND IMPLEMENTATION PLANS (July 2010–Apr. 2011), *available at* <http://www.epa.gov/compliance/ej/resources/policy/plan-ej-2014/plan-ej-2011-comments-responses.pdf>.

333. *Id.* at 3, 7–8.

334. *See generally id.* at 3–58 (listing the U.S. EPA's responses to public commentary).

335. *Id.* at 3.

336. *Id.*

337. *Id.*

shared with the public; the U.S. EPA responded with a statement about increasing efforts to communicate with the public about these issues.³³⁸

Even the U.S. EPA's own advisory board has expressed concerns regarding Plan EJ 2014.³³⁹ The National Environmental Justice Advisory Council (NEJAC) wrote to Lisa Jackson, the U.S. EPA Administrator at the time, in April 2011, regarding its concerns about Plan EJ 2014 and advice and recommendations of how to improve the Plan.³⁴⁰ The letter addressed many of the same concerns as the public comments, with its overall recommendation asking the U.S. EPA for more specificity to the Plan.³⁴¹ NEJAC explained that without more clarity, such as clear implementation processes and timelines to obtain goals, Plan EJ 2014 will fall short of its goals.³⁴² More specific recommendations from NEJAC included creating an inventory of current environmental regulations and reassessing them to make more environmentally just regulations, requesting work plans and timelines to develop and incorporate new regulations into current laws, and rethinking issuing U.S. EPA help to communities that will benefit the most from nationally identifying areas of non-compliance and fixing the problem in a larger venue.³⁴³

If the U.S. EPA refuses to look into the issues raised, Plan EJ 2014 will be seen as lacking serious thought and has the possibility to fall into the same dark hole as the substance of EO 12898. So, for now, we wait to see if the U.S. EPA has indeed created a heavy arsenal with EJSCREEN and other tools, and we wait to determine whether the U.S. EPA is willing to engage in battle—will they actually use these tools in decision-making processes? Even if they do, I fear that without the force of promulgated regulations, it could result in the proverbial “bringing a knife to a gun fight”—we have the data, but without the ability to require its use, Plan EJ 2014 could be dead on arrival.

With all of this in mind, we must begin looking for solutions for other ways to impact environmental justice problems in the green energy field if we hope to truly make the green energy field as eco-friendly as its name. As indicated, many solutions proffered over the last two decades remain viable solutions to address environmental injustice in the context of energy development, as well as elsewhere.³⁴⁴ In 2007, twenty years after the United Church of Christ's (UCC) groundbreaking report on environmental justice, *Toxic Wastes and Race in the United States: A National Report on the Racial and Socio-Economic Characteristics of Communities with Hazardous Waste Sites*, the UCC produced a new report evaluating the status of environmental

338. *Id.* at 5.

339. See discussion *infra* notes 340–43.

340. See *NEJAC Comments to EPA Plan EJ 2014*, NAT'L ENVTL. JUST. ADVISORY COUNCIL 2 (Apr. 2011), www.epa.gov/compliance/ej/resources/publications/nejac/plan-ej-2014-comments-0511.pdf.

341. *Id.*

342. *Id.*

343. See generally *id.* (listing the comments to Plan EJ 2014's strategy and the U.S. EPA's responses).

344. See *supra* Part IV.

justice in the United States.³⁴⁵ *Toxic Wastes and Race at Twenty: 1987–2007* concludes with recommendations to Congress, the Executive Branch, state and local governments, NGOs, and industries.³⁴⁶ With respect to the recommendations to governmental entities, the primary themes involve increased regulation and enforcement of regulations, increased notice and public access to information, and reduction of pollution and risks of exposure.³⁴⁷

The first recommendation, increased regulation, recognizes the limitations of previous governmental responses to environmental justice, which were limited to executive orders and administrative review processes.³⁴⁸ Something more must be done to address environmental justice issues across the board, linking government agencies and federal, state, and local governments to the public. The discussion above addressed the federal government's track record; unfortunately, the state track record has been no better.³⁴⁹ In 2010, a survey indicated that forty-one states have addressed the issue of environmental justice in some way, either by statutes, regulations, or other programs.³⁵⁰ Of the forty-one states addressing environmental justice issues, however, only six had formal programs with legally enforceable environmental justice statutes.³⁵¹

Beyond NEPA or NEPA-like state laws, other substantive environmental laws could be changed to reduce pollution, require greater compliance with environmental standards, or both, resulting in decreased environmental justice threats and realities. The UCC also mentioned this in its anniversary report as part of its proposed remedies, which would address these issues by increasing air and water pollution protections aimed at industry regulations and by implementing incentives to reduce the reliance on polluting technologies.³⁵² Other examples were aimed at proactive evaluations of risk.³⁵³ In this context, the precautionary principle is often talked about.³⁵⁴ The emphasis coming out of the January 28, 1998 Wingspread Conference, convened by the Science and Environmental Health Network, the W. Alton Jones Foundation, the C.S. Fund, and the Lowell Center for Sustainable Production at the University of

345. See generally ROBERT D. BULLARD ET AL., *TOXIC WASTES AND RACE AT TWENTY: 1987–2007*, at 1–5 (Mar. 2007), available at <http://www.ejnet.org/ej/twart.pdf> (discussing the status of environmental justice in the United States); UNITED CHURCH OF CHRIST COMM'N FOR RACIAL JUSTICE, *supra* note 68 (demonstrating the twenty year difference between the two reports).

346. BULLARD ET AL., *TOXIC WASTES AND RACE AT TWENTY: 1987–2007*, *supra* note 345, at 157–60.

347. See *id.* at 157–59.

348. *Id.* at 157.

349. See *infra* text accompanying notes 353–54.

350. Steven Bonorris & Nicholas Targ, *Environmental Justice in the Laboratories of Democracy*, 25 NAT. RESOURCES & ENV'T 44 (2010).

351. *Id.*

352. BULLARD ET AL., *TOXIC WASTES AND RACE AT TWENTY: 1987–2007*, *supra* note 345, at 157.

353. *Id.* at 157–60.

354. *Id.* at 160; see David A. Dana, *A Behavioral Economic Defense of the Precautionary Principle*, 97 NW. U. L. REV. 1315, 1315 (2003); *The Precautionary Principle: A Common Sense Way to Protect Public Health and the Environment*, MINDFULLY.ORG, <http://www.mindfully.org/Precaution/Precautionary-Principle-Common-Sense.htm> (last visited Mar. 30, 2014).

Massachusetts-Lowell, was “the necessity of the Precautionary Principle in public health and environmental decision-making.”³⁵⁵ The Wingspread Consensus Statement on the Precautionary Principle encapsulates the principle: “When an activity raises threats of harm to human health or the environment, precautionary measures should be taken even if some cause and effect relationships are not fully established scientifically.”³⁵⁶ The Precautionary Principle is modeled around the idea that in order to avoid or minimize risks whose consequences are uncertain but potentially serious, there must be proactive action.³⁵⁷ It has been referred to as the “[b]etter safe than sorry” principle.³⁵⁸ For instance, if an action or policy has a suspected risk of causing harm to the public or to the environment, in the absence of scientific consensus that the action or policy is harmful, the burden to prove that it is not harmful falls on the proponent of an activity, rather than the public.³⁵⁹

Several recommendations in the UCC report embrace the precautionary principle concept.³⁶⁰ For example, requiring cumulative risk assessments in U.S. EPA permitting processes would require evaluations of risks to be considered in advance of the issuance of permits.³⁶¹ At its fullest extent, the precautionary principle applied in this context should result in no permits being issued if the industry cannot demonstrate that its permitted activities would do no harm.³⁶² Even under a more moderate interpretation, however, such assessment should make it impossible for regulators and industries not to acknowledge the health trade-offs associated with the permitted actions.³⁶³

Actual federal legislation over the last few years has also included regulation that embodies the Precautionary Principle.³⁶⁴ The Safe Chemicals Act, a reform of the Toxic Substances Control Act (TSCA), has been offered in Congress from 2010 to 2013.³⁶⁵ TSCA, originally passed in 1976, was conceived to address growing concern about the introduction of toxic chemicals into the market.³⁶⁶ Although its aim was to evaluate and regulate the use of

355. *Precautionary Principle: Wingspread Conference on the Precautionary Principle*, SCI. & ENVTL. HEALTH NETWORK (Jan. 26, 1998), <http://www.sehn.org/wing.html>.

356. *Id.*

357. *See Precautionary Principal – FAQs*, SCI. & ENVTL. HEALTH NETWORK, www.sehn.org/ppfaqs.html (last visited Mar. 30, 2014).

358. *Id.*

359. *Id.*

360. *See* BULLARD ET AL., *TOXIC WASTES AND RACE AT TWENTY: 1987–2007*, *supra* note 345, at 160.

361. *See id.* at 158; Cole & Farrell, *supra* note 85, at 281.

362. BULLARD ET AL., *TOXIC WASTES AND RACE AT TWENTY: 1987–2007*, *supra* note 345, at 8.

363. *See id.*

364. *See infra* text accompanying notes 365–69.

365. Safe Chemicals Act of 2013, S. 696, 113th Cong.; Safe Chemicals Act of 2011, S. 847, 112th Cong. (2011); Safe Chemicals Act of 2010, S. 3209, 111th Cong.

366. Safe Chemicals Act of 2011, S. 847, 111th Cong., § 847; Frank Lautenberg, *Lautenberg’s Safe Chemicals Act Approved by Committee*, PROJECT VOTE SMART (July 25, 2012), <http://votesmart.org/public-statement/726669/lautenbergs-safe-chemicals-act-approved-by-committee#UzIJThaWGHY>; *Summary of the Toxic Substances Control Act: 15 U.S.C. § 2601 et seq., 1976*, U.S. ENVTL. PROT. AGENCY, www2.epa.gov/laws-regulations/summary-toxic-substances-control-act (last visited Mar. 30, 2014).

these substances, in effect, it has rendered the federal government impotent in its evaluation of these substances by grandfathering 62,000 chemicals then on the market into compliance, thereby preventing the U.S. EPA from ever reviewing their safety.³⁶⁷ The Safe Chemicals Act of 2011 would, amongst other things, have required industry to provide the government with health and environmental safety information on all chemicals or their use would be prohibited.³⁶⁸ Further, in adopting a more precautionary approach, when that data “shows potential concern, chemicals must be proven safe before entering commerce.”³⁶⁹

Additionally, the United States has endorsed the precautionary principle in international and other statements such as the Rio Declaration of 1992 at the United Nations Conference on the Environment and the Persistent Organic Pollutant Treaty.³⁷⁰

Local governments have also engaged in regulation that uses a precautionary principle approach. In June 2003, San Francisco’s Board of Supervisors became the first government in the United States to specifically embrace the precautionary principle in an ordinance.³⁷¹ There has been a lot of interest in this from the local government level with respect to siting: before we allow you a permit to build your new facility, you have to prove to us how you are not going to cause more pollution impacts, more quality of life impacts, or more environmental justice impacts.³⁷² This has been done in multiple ways. Some municipalities have utilized zoning laws, comprehensive plans, or other growth management tools to raise the bar on the evaluation of environmental impacts as part of local siting decisions.³⁷³ Others have utilized “home rule”

367. 15 U.S.C. § 2601 (2012); Michael E. Belliveau, *The Drive for a Safer Chemicals Policy in the United States*, 21 NEW SOLUTIONS 359, 360 (2011), available at <http://www.chemicalspolicy.org/downloads/Belliveau.pdf>; “*The Safe Chemicals Act of 2011*” *Introduced Today Legislation Would Protect American Families from Toxic Chemicals*, SAFER CHEMICALS, HEALTHY FAMILIES (Apr. 14, 2011), <http://www.saferchemicals.org/2011/04/safe-chemicals-act-of-2011-introduced-today-legislation-would-protect-american-families-from-toxic-chemicals.html>.

368. *The Safe Chemicals Act of 2011 – S. 847*, SAFER CHEMICALS, HEALTHY FAMILIES, <http://www.saferchemicals.org/resources/safechemicalsactof2011.html> (last visited Mar. 6, 2013).

369. *Id.*

370. *See, e.g.*, U.N. Rio Declaration on Environment and Development 1992, June 3–14, 1992, U.N. Doc. A/CONF.151/26 (Vol. I) (1992); *Persistent Organic Pollutants: A Global Issue, A Global Response*, U.S. ENVTL. PROTECTION AGENCY, <http://www.epa.gov/international/toxics/pop.html> (last visited Mar. 30, 2014).

371. Nancy Myers, *The Rise of the Precautionary Principle*, 25 ENVTL. RESEARCH FOUND., MULTINATIONAL MONITOR, no. 9, Sept. 2004, available at <http://www.multinationalmonitor.org/mm2004/09012004/september04corp1.html>; San Francisco’s Board of Supervisors, *Chapter 1: Precautionary Principle Policy Statement* § 100, AM. LEGAL PUBLISHING CORP. (July 3, 2003), [http://amlegal.com/nxt/gateway.dll/california/environment/chapter1precautionaryprinciplepolicy?F=templates\\$fn=default.htm\\$3.0\\$vid=amlegal:sanfrancisco_ca](http://amlegal.com/nxt/gateway.dll/california/environment/chapter1precautionaryprinciplepolicy?F=templates$fn=default.htm$3.0$vid=amlegal:sanfrancisco_ca).

372. *See* David A. Dana, *A Behavioral Economic Defense of the Precautionary Principle*, 97 NW. U. L. REV. 1315, 1315 (2003); *see generally* BULLARD ET AL., TOXIC WASTES AND RACE AT TWENTY: 1987–2007, *supra* note 345 (summarizing the environmental justice movement); *Newtown Township Comprehensive Plan Ordinance*, COMMUNITY ENVTL. LEGAL DEF. FUND, <http://www.celdf.org/article.php?id=435> (last visited Mar. 31, 2014).

373. *See* NAT’L ACADEMY OF PUBLIC ADMIN., ADDRESSING COMMUNITY CONCERNS: HOW

ordinances to garner authority to provide greater environmental, health, or quality of life protections.³⁷⁴ Still others have utilized home rule to institute ordinances that target specific industry activities.³⁷⁵ These local government actions have not been limited to liberal havens such as San Francisco, but have also happened in areas such as Pennsylvania and West Virginia.³⁷⁶

Another area of additional federal law changes that could significantly impact environmental justice issues is that of buffering.³⁷⁷ Specifically, under discussion are statutes, regulations, or both that require buffers between hazardous and polluting facilities and residences.³⁷⁸ These requirements would likely also extend to power production facilities.³⁷⁹

Also, the twenty-year report by the UCC contains a recommendation for NGOs to utilize community benefit agreements in addressing environmental justice impacts.³⁸⁰ A community benefit agreement is “a vehicle by which communities memorialize commitments and understandings with private developers and government officials that want to undertake development projects that will impact nearby communities.”³⁸¹ A community benefit agreement is one way of getting the community involved in the choices that

ENVIRONMENTAL JUSTICE RELATES TO LAND USE PLANNING AND ZONING (July 2003), <http://www.epa.gov/compliance/ej/resources/reports/annual-project-reports/napa-land-use-zoning-63003.pdf>; *Newtown Township Comprehensive Plan Ordinance*, *supra* note 372; *Town of Monroe Local Self-Government Ordinance Warrant Article*, COMMUNITY ENVTL. LEGAL DEF. FUND, <http://www.celdf.org/downloads/ME%20-%20Monroe%20Corporate%20Personhood%20Ordinance.pdf> (last visited Mar. 31, 2014); *Wayne Township Corporate Ownership and Control Disclosure Ordinance*, COMMUNITY ENVTL. LEGAL DEF. FUND, <http://www.celdf.org/article.php?id=769> (last visited Mar. 31, 2014); *Wayne Township Environmental Protection Ordinance*, COMMUNITY ENVTL. LEGAL DEF. FUND, <http://www.celdf.org/article.php?id=762> (last visited Mar. 31, 2014); *see also Ordinance Archive*, COMMUNITY ENVTL. LEGAL DEF. FUND, <http://www.celdf.org/ordinance-archive> (last visited Mar. 31, 2014) (providing links to city ordinances).

374. *See Home Rule*, CATSKILL MOUNTAINKEEPER, <http://www.catskillmountainkeeper.org/our-programs/fracking/home-rule/> (last visited Mar. 31, 2014).

375. *Newtown Township Comprehensive Plan Ordinance*, *supra* note 372; *Wayne Township Corporate Ownership and Control Disclosure Ordinance*, *supra* note 373; *Wayne Township Environmental Protection Ordinance*, *supra* note 373.

376. *See generally* Stephen G. Wood et al., *Whither the Precautionary Principle? An American Assessment from an Administrative Law Perspective*, 54 AM. J. COMP. L., Supp. 2006, at 581 (analyzing the Precautionary Principle in American law).

377. ENVTL. JUSTICE ISSUE BRIEF: N.Y. STATE ENERGY PLAN 2009, at 12 (Dec. 2009), *available at* http://energyplan.ny.gov/Plans/-/media/nysenergyplan/final/Environmental_Justice_IB.pdf; BULLARD ET AL., TOXIC WASTES AND RACE AT TWENTY: 1987–2007, *supra* note 345, at 5.

378. *See* BULLARD ET AL., TOXIC WASTES AND RACE AT TWENTY: 1987–2007, *supra* note 345, at 5; Troy Graham, *Environmentalists Fear Reduction in City Waterway Buffer Zones*, PHILLY.COM (Oct. 4, 2012), http://articles.philly.com/2012-10-04/news/34240220_1_buffer-setback-new-code.

379. *See Industrial Energy Efficiency Legislation Update: H.R. 4850 Passes Senate*, ALLIANCE TO SAVE ENERGY (Oct. 30, 2012), <http://www.ase.org/efficiencynews/industrial-energy-efficiency-legislative-update-hr-4850-passes-senate>.

380. BULLARD ET AL., TOXIC WASTES AND RACE AT TWENTY: 1987–2007, *supra* note 345, at 24.

381. ANNIE E. CASEY FOUND., COMMUNITY BENEFITS AGREEMENTS: THE POWER, PRACTICE, AND PROMISE OF A RESPONSIBLE REDEVELOPMENT TOOL 18 (2007), *available at* http://www.aecf.org/upload/PublicationFiles/AECF_CBA.pdf; *see also* Alex Geisinger, *The Benefits of Development and Environmental Injustice*, 37 COLUM. J. ENVTL. L. 205, 220 (2012).

impact them.³⁸² It is a tool that can empower a community and allow it to make decisions regarding trade-offs. For instance, a community benefit agreement can create a contractual agreement between a community entity or residents and a potentially polluting business wherein community members forego certain challenges to the business activity in exchange for the business instituting safer and more environmentally friendly operations. These agreements can also address other community concerns less directly related to environmental concerns, such as keeping jobs within the community, setting operating hours to address community concerns for quality of life, and providing other needed services to the community, such as educational or health services.

V. CONCLUSION

All of the solutions offered in this Article, if implemented, would directly alleviate some level of environmental injustice in low income and of-color communities. The solutions discussed here also are all applicable to environmental decision-making in the green energy context. While this creates a menu of options for those suffering from environmental injustice to consider utilizing or advocating for needed government action, I hope that it will not only propel governments into action, but also stimulate both small and large conversations between green energy companies, their supporters, and environmental justice communities. Ultimately, it may help to build a bridge and increase the capacity of green energy supporters by recognizing and addressing environmental justice consequences that may otherwise have been overlooked or ignored in these environmentally friendly decisions.

382. ANNIE E. CASEY FOUND., *supra* note 381, at 18.