Energy Policy: No Place for Zero-Sum Thinking

by Inara Scott

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Summary

In game theory, "zero-sum" means that a person may gain only at the expense of another person losing. Two-person games, such as chess and checkers, exemplify this win/loss dichotomy. Transported to economics, the idea of zero-sum similarly means that one party must lose for another to win. But in broad, multi-faceted policy contexts, such as the evolution of the energy industry in the United States, this winner/loser paradigm is particularly unhelpful and can lead to short-sighted and dangerous consequences. This Article, adapted from Chapter 3 of *Beyond Zero-Sum Environmentalism* (ELI Press 2019), recommends moving away from the zero-sum analogy to advance energy policies that benefit people across geographic, socioeconomic, and cultural divides, and offers concrete suggestions to ground policy development in a broader, more holistic manner.

The popular notion of a zero-sum game is a scenario in which, in order for one party to gain value, another party must lose it. We can imagine a pie cut into six pieces, with six people standing beside it. For any one individual to get two pieces (the winner) someone else must go hungry (the loser).[1] One of the key assumptions here, of course, is that the number of slices of pie is fixed. We cannot add to the pie. Because one cannot win unless someone else loses, there is no win-win scenario in the zero-sum game.

Any simplistic metaphor is certain to break down under scrutiny, but in broad, multi-faceted policy contexts, such as the evolution of the energy industry in the United States, the zero-sum game, or winner/loser paradigm, is particularly unhelpful, and can lead to short-sighted and dangerous consequences. For example, consider calls for transitioning electric generation to renewable fuel sources. Zero-sum thinkers, seeing renewables as winners, necessarily identify fossil fuels as losers.[2] Similarly, those who see the environment as the winner often suggest that economic growth must be the loser.[3]

For an illustration of this way of thinking, one need only look to President Donald Trump's statement on his intent to withdraw the United States from the Paris Climate Accord, where he stated that the agreement would put U.S. energy reserves "under lock and key," thereby "taking away the great wealth of our nation . . . and leaving millions and millions of families trapped in poverty and joblessness."[4] If renewable energy wins, the argument

1. In this piece, the author refers interchangeably to zero-sum and winner/loser thinking. For an example of the winner/loser framing, see Eliza Barclay, *3 Winners and 5 Losers From Trump's Decision to Pull Out of the Paris Climate Agreement*, Vox.com, June 3, 2017, www.vox.com/energy-and-environment/2017/6/2/15723988/winners-losers-trump-paris.
2. Popular news articles about developments in electric generation often characterize solar and coal as "winners" and "losers" in the electric industry. *See, e.g.*, Katie Fehrenbacher, *U.S. Solar Jobs Boom While Oil, Coal Struggle*, Fortune, Jan. 12, 2016, http://fortune.com/2016/01/12/solar-jobs-boom/; Anna Mikulska & Michael Maher, *Who's Winning the Battle to Replace Coal?*, Fortune, May 17, 2016, www.forbes.com/sites/thebakersinstitute/2016/05/17/whos-winning-the-battle-to-replace-coal/#207917b9765d.
3. Dana Varinsky et al., *5 Claims Trump Used to Justify Pulling the U.S. Out of the Paris Agreement—and the Reality*, Bus. Insider, June 1, 2017, www.businessinsider.com/fact-check-trump-reasons-for-leaving-paris-agreement-2017-6/#job-losses-1; Noah Kaufman, *U.S. Chamber of Commerce's Energy Institute Misleads on Climate Action Costs: 3 Things to Know*, World Res. Inst., Apr. 26, 2017, www.wri.org/blog/2017/04/us-chamber-commerces-energy-institute-misleads-climate-action-costs-3-things-know?utm_source=&utm_medium=&utm_campaign. Importantly, some studies of the economic cost of the Paris Agreement do not factor in the cost of not responding to climate change, which is potentially devastating. Marshall Burke et al., *Global Non-Linear Effect of Temperature on Economic Production*, 527 Nature 235 (2015) ("unmitigated warming is expected to . . . reduc[e] average global incomes roughly 23% by 2100 and widen global income inequality"), *available at* https://www.nature.com/nature/journal/v527/n7577/pdf/nature15725.pdf.
4. Press Release, The White House, Statement by President Trump on the Paris Climate Accord (June 1, 2017), www.whitehouse.gov/the-press-office/2017/06/01/statement-president-trump-paris-climate-accord. For more information about the Paris Agreement, see United Nations Framework

goes, the fossil fuel industry will lose, leaving the people it employed trapped in poverty and joblessness, ultimately destroying the wealth of an entire nation. It does not get much starker than that.

The zero-sum fallacy is particularly insidious because it can be both entirely wrong *and* entirely right, depending on the scope of the scenario that is considered. Renewable energy and natural gas have increasingly replaced coal as a source of electric generation[5]; meeting carbon emission reductions may require the elimination of fossil fuels from our generation stack.[6] These scenarios point to a clear winner and loser. Similarly, one might be able to show how favoring renewables could result in closing a coal plant, which could in turn have negative economic consequences for the town in which it was located and for those the mine employed.

On the other hand, if viewed in combination with a broad set of policy measures that include job retraining, environmental remediation, and the development of new industries, the same plant closure could result in overall *benefits* in physical and economic health for coal-dependent regions.[7] Although a depleted coal industry will clearly create some economic losses, including jobs at coal mines, data does not support the notion that the growth of renewable energy will necessarily lead overall to rising unemployment, higher costs, or economic harm. In fact, many suggest the opposite—that a transition to renewable energy will result in long-term economic gains and increased employment.[8]

The zero-sum game also creates a fallacy by suggesting that one set of interests, i.e., renewables, is the cause of harm to another, i.e., coal. Reality is rarely so cut and dry. As this Article will discuss, in the energy sector, a multitude of factors may work in combination, or may work in unexpected ways to bring about unpredictable outcomes. The declining cost of natural gas due to fracking, for example, has worked in conjunction with the declining cost of renewables to undermine the market for coal; new regulations, so often fingered as the culprit for declining coal sales, appear to have had little to do with this outcome.[9] The energy sector is sufficiently complex that when a resource scenario *can* be distilled into simplistic winners and losers, it is likely because of the way the context has been manipulated, not because of an irrefutable truth.

Zero-sum arguments can be extremely powerful because they divide the world into two opposing teams. Social identity theory suggests that this type of political polarization is attractive for activist groups because identification of an "enemy" satisfies a basic human desire to identify with an "in-group," which is defined in opposition to an "out-group."[10] While some might think this is harmless "spin" that is necessary to encourage activism and sharpen short-term goals, us-versus-them language also encourages conflict between groups and heightens negative feelings between them. It also builds on itself: the more we observe partisan conflict, the more we distrust those who oppose us.[11]

Increasing polarization is helpful in increasing political activism, but disastrous if the goal is unified policymaking and compromise.[12] Addressing climate change and decarbonizing the energy system are complex problems that require transformations on the societal scale, transformations that demand compromise and bipartisan political efforts, rather than increasing polarization and resistance between groups.[13]

In this Article, I suggest that moving away from the zero-sum analogy and drawing wider contextual lenses

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Convention on Climate Change (UNFCCC), The Paris Agreement, http://unfccc.int/paris_agreement/items/9485.php (last visited June 15, 2017).

5. U.S. Energy Info. Admin., *Annual Energy Outlook 2017*, at 69 (2017), www.eia.gov/outlooks/aeo/pdf/0383(2017).pdf.

6. *See* Steven J. Davis et al., *Future CO_2 Emissions and Climate Change From Existing Energy Infrastructure*, 329 Science 1330 (2010). Some studies suggest eliminating carbon emissions from future emitters may not be enough to limit warming. *See* Céline Guivarch & Stéphane Hallegatte, *Existing Infrastructure and the 2°C Target*, 109 Climatic Change 801 (2011).

7. The negative health effects of coal mining are well-documented. *See, e.g.*, Rachel Sapire, *Engulfed in a Toxic Cloud: The Effects of Coal Mining on Human Health*, Harv. Coll. Global Health Rev., Feb. 1, 2012, www.hcs.harvard.edu/hghr/print/spring-2011/coal-mining/ (discussing study finding elevated mortality from chronic health diseases, including those of the heart and respiratory system, as well as elevated levels of birth defects, in members of mining communities). A 2005 study in Ontario suggested that coal plants were responsible for "over 600 premature deaths, 900 hospital admissions, and 1,000 emergency room visits, each year, in Ontario." Ontario Ministry of Energy, Cost-Benefit Analysis: Replacing Ontario's Coal-Fired Electricity Generation iv (2005) (report prepared by DSS Management Consultants Inc.), https://cape.ca/wp-content/uploads/2015/10/coal_cost_benefit_analysis_april2005.pdf. *See also infra* notes 32-36 and accompanying text.

8. Assessing the cost of a clean energy transition presents a clear opportunity to shift the winner and loser of a zero-sum scenario based on the facts included in the analysis. The National Resources Defense Council estimates that transitioning to a low-carbon energy system by 2050 will cost 1% more annually (approximately $22 billion) than a business-as-usual case. Vignesh Gowrishankar & Amanda Levin, *America's Clean Energy Frontier: The Pathway to a Safer Climate Future* 9 (2017), www.nrdc.org/sites/default/files/americas-clean-energy-frontier-report.pdf. Yet, if climate benefits, including avoided property damage, crop failures, and climate-induced illnesses, are included, the transition nets a benefit of more than $154 billion. *Id.* The International Renewable Energy Agency (IRENA) estimates that doubling the share of renewables globally will increase global gross domestic product by up to 1.1%. IRENA, *Renewable Energy Benefits: Measuring the Benefits* 10 (2016), www.irena.org/DocumentDownloads/Publications/IRENA_Measuring-the-Economics_2016.pdf. For a review of other estimates of a low-carbon energy transition, see Initiative for Global Environmental Leadership, Making the Transition to a Low-Carbon Economy 3-7 (2015).

9. *See* Charles D. Kokstad, *What Is Killing the U.S. Coal Industry?*, Stan. Inst. Econ. Pol'y Res., Mar. 2017, https://siepr.stanford.edu/research/publications/what-killing-us-coal-industry (last visited June 14, 2017).

10. *See generally* Henri Tajfel & Jonathan Turner, *An Integrative Theory of Intergroup Conflict*, *in* The Social Psychology of Intergroup Relations 33-47 (William G. Austin & Stephen Worchel eds., 1979).

11. David Kimball et al., *Political Identity and Party Polarization in the American Electorate*, *in* The Changing Role of Contemporary American Parties 37-54, 41-42, 53 (John C. Green et al. eds., 7th ed. 2014).

12. *See* Jessica M. Santos & Irina Feygina, *Responding to Climate Change Skepticism and the Ideological Divide*, 5 Mich. J. Sustainability 5, 11 (discussing how culture and beliefs shape responses to climate change communications). "Communication and policy approaches are typically most successful when the message or expert is perceived as sharing the worldviews of the audience." *Id.* at 12. Thus the more polarized politics become, the less likely it is that individuals can communicate persuasively to those outside of their communities and groups.

13. *See* Clark A. Miller et al., *Narrative Futures and the Governance of Energy Transitions*, 70 Futures 65, 66 (2015) (discussing need for diversity of participants and views to forward large-scale energy transitions).

may be necessary to move people outside of their ideological cages and advance energy policies that benefit people across geographic, socioeconomic, and cultural divides. After critiquing zero-sum thinking in the energy context and identifying key flaws in this method of framing, I offer concrete suggestions to ground policy development in a broader, more holistic manner. Specifically, I suggest constructing energy policy in a way that rejects narrow ideological framings, includes considerations of environmental justice and intersectionality, and rejects standard characterizations of heroes and villains.

I. The Fallacy of the Zero-Sum Game

A. *Zero-Sum Arguments Assume Fixed Data Points*

In critiquing the zero-sum analogy, I begin with the most basic flaw in the analogy. In a zero-sum game, we rely on fixed data points to determine winners and losers. Yet, due to changing technologies and evolving understandings of the impact of our energy usage, almost every key data point in the energy resource landscape has a history of dramatic changes and forecast errors. In December 2005, natural gas was trading around $15.39/one million British thermal units (MMBtu). In June 2017, the price was $2.97/MMBtu.[14]

The reason for this precipitous drop? New techniques in fracking and horizontal drilling in shale rock, which allowed developers to shake loose massive stores of natural gas that had previously been inaccessible.[15] Improvements in materials and efficiency have also drastically lowered the cost of renewable energy generation—so much so that current cost projections suggest solar power will be the cheapest resource worldwide by 2025.[16] The cost of wind energy alone fell almost 60% from 2009-2015.[17] India recently saw a one-year 40% decline in the projected cost for solar energy.[18]

While recent cost differentials have favored lower carbon resources (including natural gas) over coal, fluctuations can move in the opposite direction as well. The abundant shale gas that led to decreases in the cost of natural gas could dry up. Fracking has been associated with an increase in earthquake activity.[19] The controversial technique also uses significant amounts of groundwater (a touchy subject in drought-stricken areas, including California)[20] and can contaminate groundwater with its dangerous mixture of chemicals.[21] While some seek to close loopholes and regulate fracking at the federal level,[22] states like New York have banned the practice entirely, citing significant health and safety concerns,[23] all of which could result in cost increases over time.

Fluctuations in resource cost and availability affect the economic impact of resource choices. If solar costs drop precipitously, economic benefits may roll through communities that convert to manufacturing, installing, and maintaining solar—turning losers into winners. If fracking is subjected to stricter regulation, communities that rely on fracking for jobs or royalties may turn abruptly from economic winners to economic losers.

The history of variability does not suggest forecasting and projections are useless—it is vital that we continue to examine the long-term availability, cost, and impact of energy resources. Still, such profound inconsistency cautions against using highly variable data to support black and white conclusions. It also suggests the need for developing more holistic ways of looking at data that incorporate multiple measures and account for uncertainty, to ensure that policy choices remain beneficial under a variety of scenarios.[24]

B. *Zero-Sum Games Reflect Ideological Framing*

A second flaw in zero-sum framings is their malleability based on the scope and context presented, which in turn illustrates their vulnerability to ideological maneuvering. For example, in fragile desert ecosystems, massive solar towers that concentrate heat and produce clean energy have also resulted in bird deaths and threatened habitat

14. Trading Economics, *Natural Gas*, www.tradingeconomics.com/commodity/natural-gas (last visited June 5, 2017).
15. Mason Inman, *Natural Gas: The Fracking Fallacy*, Nature, Dec. 3, 2014, www.nature.com.ezproxy.proxy.library.oregonstate.edu/news/natural-gas-the-fracking-fallacy-1.16430 (describing differences between forecasts by the U.S. Energy Information Administration (EIA) and others, particular forecast by University of Texas, which is substantially lower than the others, and predicts natural gas supplies to peak around 2020 and decline thereafter).
16. Jess Shankleman & Chris Martin, *Solar Power Could Beat Coal to Become the Cheapest Power on Earth*, Bloomberg, Jan. 2, 2017, www.bloomberg.com/news/articles/2017-01-03/for-cheapest-power-on-earth-look-skyward-as-coal-falls-to-solar.
17. Scott Nyquist, *Lower Oil Prices but More Renewables: What's Going on?*, McKinsey & Company, June 2015, www.mckinsey.com/industries/oil-and-gas/our-insights/lower-oil-prices-but-more-renewables-whats-going-on.
18. Michael Safi, *Indian Solar Power Prices Hit Record Low, Undercutting Fossil Fuels*, Guardian, May 10, 2017, www.theguardian.com/environment/2017/may/10/indian-solar-power-prices-hit-record-low-undercutting-fossil-fuels (last visited June 5, 2017).
19. For a variety of data and information, see U.S. Geological Survey, *Induced Earthquakes*, http://earthquake.usgs.gov/research/induced/ (last visited Sept. 12, 2016).
20. Bobby Magill, *Water Use Rises as Fracking Expands*, Sci. Am., July 1, 2015, www.scientificamerican.com/article/water-use-rises-as-fracking-expands/.
21. Gayathri Vaidyanathan, *Fracking Can Contaminate Dinking Water*, Sci. Am., Apr. 4, 2016, www.scientificamerican.com/article/fracking-can-contaminate-drinking-water/.
22. A recent decision by the U.S. District Court for the District of Wyoming ruled that the Bureau of Land Management did not have the authority to regulate fracking. *BLM Fracking Decision Is Narrow, but With a Vast Impact*, Law360, July 1, 2016, www.law360.com/articles/812000/blm-fracking-decision-is-narrow-but-with-a-vast-impact.
23. Freeman Klopott, *N.Y. Officially Bans Fracking With Release of Seven-Year Study*, Bloomberg, June 29, 2015, www.bloomberg.com/news/articles/2015-06-29/n-y-officially-bans-fracking-with-release-of-seven-year-study.
24. *See* Laura Diaz Anadon et al., *Integrating Uncertainty Into Public Energy Research and Development Decisions*, 2 Nature: Energy 17071 (2017) (discussing need to design research and design policies in energy transitions to account for uncertainty); Laura Uusitalo et al., *An Overview of Methods to Support Uncertainty of Deterministic Models in Decision Support*, 63 Envtl. Modeling & Software 24, 24 (2015) (reviewing methods to incorporate uncertainty into probabilistic modeling and decisionmaking in "wicked" environmental problems such as climate change).

for giant tortoises.[25] If one only considers a short-term contest between an individual solar tower and a tortoise that lives nearby, it is easy to conclude that "when solar wins, tortoises lose."

The trick, of course, is the scope of the conflict that is considered. Why should the analysis include only the tortoise population in an area adjacent to a particular tower? What if nearby habitat is improved, so the total tortoise population expands? What if the solar tower replaces the need for a fracking well in another location, which in turn would have displaced other species and degraded air quality? Should the impact of reduced greenhouse gas (GHG) emissions and the overall impact on habitat caused by global warming be considered? If so, which impacts should be included: short-term impacts incurred over the course of construction, or long-term impacts that span decades? Each of these decisions impacts the zero-sum framing, and who ends up as the winners and losers of that game. If long-term impacts of solar generation, habitat mitigation, and fracking displacement are included in the analysis, the winner/loser calculation could shift—and perhaps even become a win-win: "when solar wins, so do tortoises."

Proponents of solar towers have a clear incentive to push a broader narrative; friends of the tortoise living in the shadow of the tower will want to keep the focus narrow. As a result, ideological and individual interests cannot help but drive the construction of zero-sum framings. One sees such stark ideological differences in the zero-sum framing of the coal versus renewables debate, perhaps nowhere so clearly as in the perceptions about the Clean Power Plan (CPP).[26] The CPP was President Barack Obama's signature attempt to address climate change through the reduction of emissions from the power generation sector.[27] Projections from the Energy Information Administration (EIA) suggested the CPP would have significantly reduced coal-fired electric production.[28] Not surprisingly, the CPP became characterized as a zero-sum game between coal and renewables or, more broadly, between conservatives and environmentalists.[29]

It is important to recognize that coal-dependent communities in the eastern United States that became the symbol of this zero-sum game have been devastated by record levels of unemployment and poverty.[30] Yet, there are a number of problems in framing the CPP, and environmental regulation more generally, as a zero-sum game between the coal miner and the solar technician.

First, as noted above, the data do not support the claim that regulation has caused the decimated economic state of coal-dependent communities. A far more complicated story attributes part of the loss in the *eastern* United States to competition from the *western* United States, as well as the drop in natural gas prices, deregulations of railroads in the 1980s, the increasing competitiveness of renewable resources, *and* increases in productivity at mines that allowed them to operate with fewer workers.[31]

Beyond this basic data problem, there are other issues at work as well. Framing the coal miner as a loser only works if his interest is construed narrowly, i.e., to work at a coal mine. If his interest is defined more broadly as desiring a job and/or a way to support himself and his family in retirement, he does not have to be a loser. An analysis by Adele Morris of the Brookings Institution shows that a carbon tax could provide ample revenues to support job retraining and retirement benefits for displaced coal workers, as well as fund mine reclamation, all with positive economic outcomes.[32]

The antagonism toward renewable resources obscures the significant potential for new jobs and economic opportunities in the growing renewable energy industry. Jobs in the solar industry have increased 123% since 2010; the wind and solar industries together employ about 300,000, while the coal industry only employs about 150,000.[33] The need for new wind technicians is so pressing, a wind turbine manufacturer has offered a free training program aimed

25. Union of Concerned Scientists, *Concentrating Solar Power Plants*, www.ucsusa.org/clean-energy/renewable-energy/concentrating-solar-power-plants#.V9gD-zuyuAQ (last visited Sept. 12, 2016); Ken Wells, *Tortoises Manhandled for Solar Splits Environmentalists*, Bloomberg, Sept. 19, 2012, www.bloomberg.com/news/articles/2012-09-20/tortoises-manhandled-for-solar-splits-environmentalists.

26. President Obama's climate change plan, which included the Clean Power Plan, was widely characterized as narrowly focused on reducing and/or eliminating the use of coal. *See* Philip Bump, *Obama's Climate Change Speech in Just Three Words: Less Coal, Finally*, Atlantic, June 25, 2013, www.theatlantic.com/politics/archive/2013/06/obamas-climate-change-speech-three-words-less-coal-finally/313908/; Stuart Stevens, *Pity the Coal Miners: A Greener Environment's Biggest Losers*, Daily Beast, June 28, 2013: ("There's consensus that the major focus of Obama's plan [including an outline of the Clean Power Plan] was on coal."), www.thedailybeast.com/pity-the-coal-miners-a-greener-environments-biggest-losers.

27. *See* David E. Adelman & David B. Spence, *Ideology v. Interest Group Politics in U.S. Energy Policy*, 95 N.C. L. Rev. 339, 358-60 (2017) (describing CPP in context of the evolution of regulations of coal-fired generation); Jody Freeman, *The Uncomfortable Convergence of Energy and Environmental Law*, 41 Harv. Envtl. L. Rev. 339, 405-16 (2017) (describing evolution of the CPP, including attention the U.S. Environmental Protection Agency (EPA) paid to traditional energy concerns).

28. U.S. Energy Info. Admin., *Clean Power Plan Reduces Projected Coal Production in all Major U.S. Supply Regions*, July 8, 2016, www.eia.gov/todayinenergy/detail.php?id=26992# (predicting coal production to decline approximately 26% between 2015 and 2040, if the CPP was implemented).

29. *See, e.g.*, *supra* note 25; Peter Roff, *The War on Coal Is Just the Beginning*, U.S. News Opinion, Aug. 12, 2015: ("The environmental movement isn't going to stop at putting coal out of business."), www.usnews.com/opinion/blogs/peter-roff/2015/08/12/the-war-on-coal-and-the-clean-power-plan-are-just-the-beginning.

30. *See* Declan Walsh, *Alienated and Angry, Coal Miners See Donald Trump as Their Only Choice*, N.Y. Times, Aug. 19, 2016, www.nytimes.com/2016/08/20/world/americas/alienated-and-angry-coal-miners-see-donald-trump-as-their-only-choice.html. From 1948-2015, West Virginia went from 131,700 coal mining jobs to only 18,000. *This Graph Shows the Shocking Loss of Coal Mining Jobs in West Virginia*, We Heart WV, June 18, 2015, http://weheartwv.com/2015/06/18/this-graph-shows-the-shocking-loss-of-coal-mining-jobs-in-west-virginia/. The greatest decrease appears to be attributable to tax policies in the 1980s that allowed for greater automation at mines, and declining prices tied to oversupply. *Id.*

31. *See* Kokstad, *supra* note 9.

32. Adele C. Morris, *Build a Better Future for Coal Workers and Their Communities*, Economic Studies at Brookings (Apr. 25, 2016), www.brookings.edu/wp-content/uploads/2016/07/Build-a-Better-Future-for-Coal-Workers-and-their-Communities-Morris.pdf.

33. Jeff Nesbit, *Clean Energy Is Seeing Monumental Job Growth*, U.S. News & World Rep., Mar. 15, 2017, www.usnews.com/news/at-the-edge/articles/2017-03-15/clean-energy-is-seeing-explosive-job-growth-dont-let-budget-kill-it.

at displaced coal miners.[34] In addition, a study in *Energy Economics* suggests the solar industry could fully absorb laid-off coal workers through the next 15 years with relatively modest investments in job retraining.[35] There is great promise for the switch from coal to renewables to result in economic growth, as long as antagonism between communities does not turn people away from new opportunities.

Considering the demonstrated negative health consequences to living near or working at a coal mine, transitioning coal communities toward new industries could provide an additional benefit to residents and families.[36] The coal miner is a "loser" if the analysis is confined to one issue (job at a coal mine), rather than looking broadly at economic security and physical and emotional health.

C. *Zero-Sum Framing Turns the Environment Into an Enemy*

One of the most serious problems with the zero-sum formulation is that by turning areas of potential shared interest, i.e., environmental protection, into areas of conflict, the zero-sum game creates additional negative consequences for both the winners and the losers. Antipathy toward environmental protection may result in resistance to enforcement of existing regulations, or even a desire to eliminate regulations. In turn, this lack of environmental monitoring and enforcement may lead to negative health impacts from pollutants,[37] the loss of a food source from polluted fish stocks,[38] or the loss of culturally important wild lands and open spaces.[39]

In her 2016 book *Strangers in Their Own Land*, Arlie Russell Hochschild describes this very process, in which communities in Louisiana have come to view environmental protection as antagonistic to their interests. Despite overwhelming damage to waterways, devastating health impacts, and entire communities upended by pollution,[40] many residents still do not believe in the value of environmental regulation.[41] In their zero-sum game, regulation means a loss of jobs and economic harm. Not only do they not trust the federal government to clean up the environment, they fundamentally mistrust what they see as a regulatory culture that is antithetical to their religious and cultural beliefs.[42] Perhaps as a result, Louisiana's waterways are among the most polluted in the United States.[43]

This attitude toward environmental regulation may also reflect a national trend toward a growing polarization between Democrats and Republicans on environmental issues. The gap between party members regarding beliefs about the need for stronger environmental laws was only 5% in 1987; in 2012 it was 39%.[44] In 2007, 57% of Democrats and Republicans polled agreed that regulation of business usually does more harm than good; in 2012, a 35% gap in the belief about regulation had appeared between the parties, with 76% of Republicans now expressing the sentiment that regulation was bad for business, while only 41% of Democrats said the same.[45] In her research, Hochschild found that states and counties in which citizens had higher rates of exposure to toxic pollutants also had populations that were more likely to describe themselves as Republican, and more likely to believe that Americans "worry too much" about the environment and that the government is doing "more than enough" about it.[46]

While the environmentalist and solar technician might be seen as the winners in a clean energy scenario, on a deeper level, they are not. By almost any measure, environmental policies are suffering from tremendous antagonism, manifesting in efforts to undo, repeal, or marginalize existing regulations and environmental protection.[47] In an increasingly polarized political climate, anti-environmen-

34. Diane Cardwell, *Wind Project in Wyoming Envisions Coal Miners as Trainees*, N.Y. Times, May 21, 2017, www.nytimes.com/2017/05/21/business/energy-environment/wind-turbine-job-training-wyoming.html.
35. Edward P. Louie & Joshua M. Pearce, *Retraining Investment for U.S. Transition From Coal to Solar Photovoltaic Employment*, 57 Energy Econ. 295 (2016).
36. *See supra* note 7; *see also* Statement by American Academy of Pediatrics, *Ambient Air Pollution: Health Hazards to Children*, 114 Pediatrics 1699 (Dec. 2004), *available at* http://pediatrics.aappublications.org/content/114/6/1699 (summarizing research linking ambient air pollution and negative health effects).
37. *See supra* note 7, 36; *see also* Steve Wing et al., *Air Pollution From Industrial Swine Operations and Blood Pressure of Neighboring Residents*, 121 Envtl. Health Persp. 92 (2013) (demonstrating increased blood pressure related to odorant air pollution from concentrated animal feeding lot).
38. Brian Bienkowski, *Contaminated Culture: Native People Struggle With Tainted Resources, Lost Identity*, Envtl. Health News, Oct. 25, 2012, www.environmentalhealthnews.org/ehs/news/2012/contaminated-culture; Alice Miranda Ollstein, *The "Sacrifice Zone": Life as a Fisherman Along Louisana's Vanishing Coastline*, ThinkProgress, Jan. 23, 2015, https://thinkprogress.org/the-sacrifice-zone-life-as-a-fisherman-along-louisiana-s-vanishing-coastline-e38b78ba7a3b (describing impacts to fishing communities from environmental degradation); Sharon Lerner, *The Plant Next Door*, The Intercept, Mar. 24, 2017, https://theintercept.com/2017/03/24/a-louisiana-town-plagued-by-pollution-shows-why-cuts-to-the-epa-will-be-measured-in-illnesses-and-deaths/ (describing extreme health effects from industrial pollution in one Louisiana community).
39. Coral Davenport & Campbell Robertson, *Resettling the First Americna "Climate Refugees*," N.Y. Times, May 2, 2016, www.nytimes.com/2016/05/03/us/resettling-the-first-american-climate-refugees.html (chronicling how sea-level rise has led to tribal community needing to be resettled).
40. *See, e.g.*, Paul A. Keddy et al., *The Wetlands of Lakes Pontchartrain and Maurepas: Past, Present, and Future*, 15 Envtl. Rev., Mar. 2007, at 43 (describing environmental degradation at one of the largest wetlands in Louisana); Tim Murphy, *A Massive Chemical Plant Is Poised to Wipe This Louisana Town Off the Map*, Mother Jones, Mar. 27, 2014, www.motherjones.com/environment/2014/03/sasol-mossville-louisiana/ (describing extreme levels of chemical toxins in the community of Mossville); *see also* Davenport & Robertson, *supra* note 39.
41. Arlie Russell Hochschild, Strangers in Their Own Land 79, 131, 185-91, 242 (2016).
42. Hochschild makes a strong case for the way environmental policies have been swept up in an us-versus-them mentality between liberal and conservative values. "The federal government, the EPA, stood up for the biological environment but it was allowing—and it seemed at times it was causing—a cultural erosion." *Id.* at 203.
43. Jennifer Larino, *Louisana Waterways Among Most Polluted in Nation, Report Says* (June 19, 2014), www.nola.com/business/index.ssf/2014/06/louisiana_waterways_among_most.html (noting report finds Louisana waterways third most polluted in nation).
44. Dan Farber, *Environmental Values and Political Polarization*, LegalPlanet, Nov. 6, 2012, http://legal-planet.org/2012/11/06/environmental-values-and-political-polarization/.
45. *Id.*
46. Hochschild, *supra* note 41, at 79.
47. The Trump Administration's assault on environmental regulations has been notable. *See* Nadia Popovich & Tatiana Schlossberg, *23 Environmental Rules Rolled Back in Trump's First 100 Days*, N.Y. Times, May 2, 2017, www.nytimes.com/interactive/2017/05/02/climate/environmental-rules-reversed-trump-100-days.html; U.S. Energy Info. Admin., *Future Power Sector Carbon*

tal sentiment has threatened regulations that protect water quality[48] and reduce air emissions.[49] Former Secretary Ryan Zinke of the U.S. Department of the Interior suggested reducing the size of national monuments,[50] while current budget proposals would slash U.S. Environmental Protection Agency (EPA) funding by 30%.[51] The proposed reductions include significant cuts to EPA's Superfund program and toxic waste remediation programs, even while communities in Texas are threatened by flooding at Superfund and toxic waste sites in the wake of Hurricane Harvey.[52] Beyond these direct attacks on environmental protections, both sides have lost the opportunity to work together for solutions to simultaneously advance their interests, as could be the case with economically beneficial carbon taxes combined with carbon dividends.[53] Meanwhile, no progress has been made in addressing climate change at the federal level.

Winner and loser thinking implies that the winner is not just passively benefitting from a scenario, but is actively fighting against the loser. By talking about the environmentalists and coal miners as winners and losers, the coal miner reasonably believes the environmentalist is working against him and benefitting at his expense. This characterization turns every policy decision into a personal attack, and leads those in coal country to attribute every lost coal job to liberal antagonism. For the environmentalist, gridlock (at best) or anti-environmental policies (at worst) follow directly from this zero-sum game.

These are not the days for zero-sum thinking. The environment does not benefit when a generation of people think it is their enemy, and environmentalists do not win if coal miners believe they are adversaries. To make significant progress in addressing climate change and advance—or even simply maintain—environmental protection, it is essential that environmental policies and politics avoid zero-sum framings.

II. Avoiding Zero-Sum Games in Energy Policy

Part I described the fallacies and flaws in perpetuating zero-sum framings in the energy policy context. In this part, I offer three guiding principles for avoiding these framings and developing a more integrated, holistic energy policy.

A. Focus on the Big-Picture Goals, Not the Zero-Sum Game

In 2006, the Sierra Club began its "Beyond Coal" campaign and started to directly target proposed new coal facilities in an effort to keep them from opening.[54] The campaign's primary goal—to "replace dirty coal with clean energy"[55]—was certainly understandable and important. Keeping global warming below 2° Celsius will require most, if not all, future generation projects to be carbon-neutral,[56] and recent analyses suggest it will require the phaseout of all coal-based electricity without carbon capture and storage by 2050.[57] The campaign, however, was designed in a way that was absolutely certain to alienate individuals whose livelihood depended upon coal. Rather than focusing on holistic goals such as carbon reduction, energy access, or environmental justice, the campaign explicitly made elimination of coal its central target. The people who depended on coal for their livelihood quickly became the "losers" in a zero-sum game.

Campaigns like "Beyond Coal" suggest the ultimate goal of energy policy is the punishment of the coal industry. It was, in many respects, one of the Sierra Club's most successful campaigns,[58] perhaps because it sought an area of difference, not commonality. Yet, in doing so, the Beyond Coal campaign added to an already growing sense of polarization between left and right, and galvanized right-wing protests against the Sierra Club.[59] Coal became a powerful rallying cry in the 2016 election; some have argued that the election of Donald Trump might have turned, at least in part, on the perception

Dioxide Emissions Depend on the Status of the Clean Power Plan (May 18, 2016), www.eia.gov/todayinenergy/detail.cfm?id=26292.

48. Juliet Eilperin & Steven Mufson, *Trump to Roll Back Obama's Climate, Water Rules Through Executive Action*, Wash. Post, Feb. 20, 2017, www.washingtonpost.com/news/energy-environment/wp/2017/02/20/trump-to-roll-back-obamas-climate-water-rules-through-executive-action/.
49. Gabrielle Levy, *Executive Order Undoes Obama-Era Climate Policies*, U.S. News & World Rep., Mar. 28, 2017, www.usnews.com/news/politics/articles/2017-03-28/trump-to-sign-executive-order-rolling-back-clean-power-plan-climate-change-policies.
50. AP, *Interior Secretary Recommends Reducing Size of Six National Monuments*, CBS News, Sept. 18, 2017, www.cbsnews.com/news/interior-secretary-recommends-reducing-size-of-six-national-monuments/.
51. Coral Davenport, *Trump Budget Would Cut E.P.A. Science Programs and Slash Cleanups*, N.Y. Times, May 19, 2017, www.nytimes.com/2017/05/19/climate/trump-epa-budget-superfund.html.
52. Jason Dearen & Michael Biesecker, *Toxic Waste Sites Flooded*, AP News, Sept. 3, 2017, https://apnews.com/27796dd13b9549b0ac76aded58a15122/AP-EXCLUSIVE:-Toxic-waste-sites-flooded-in-Houston-area; Matthew Brown & Larry Fenn, *Storage Tanks Failed During Harvey, Spilling at Least 145,000 Gallons of Fuel and Releasing Toxic Pollutants*, Denver Post, Sept. 9, 2017, www.denverpost.com/2017/09/09/oil-gas-tank-failures-hurricane-harvey-pollution/.
53. Dana Nuccitelli, *In Charts: How a Revenue Neutral Carbon Tax Creates Jobs, Grows the Economy*, Guardian, June 13, 2014, www.theguardian.com/environment/climate-consensus-97-per-cent/2014/jun/13/how-revenue-neutral-carbon-tax-creates-jobs-grows-economy. Carbon taxes are not solely a liberal proposal. *See* Climate Leadership Council, *The Conservative Case for Carbon Dividends*, www.clcouncil.org/wp-content/uploads/2017/02/TheConservativeCaseforCarbonDividends.pdf (last visited, June 14, 2017).
54. Michael Grunwald, *Inside the War on Coal*, Politico, May 26, 2015, www.politico.com/agenda/story/2015/05/inside-war-on-coal-000002.
55. Sierra Club, *About Us, The Beyond Coal Campaign*, https://content.sierraclub.org/coal/about-the-campaign.
56. *See supra* note 6.
57. Nils Johnson et al., *Stranded on a Low-Carbon Planet: Implications of Climate Policy for the Phase-Out of Coal-Based Power Plants*, 90 Technological Forecasting & Soc. Change 89, 100 (2015); *cf.* www.nature.com/news/limiting-global-warming-to-1-5-c-may-still-be-possible-1.22627.
58. Michael Grunwald, *Inside the War on Coal*, Politico (May 26, 2015), www.politico.com/agenda/story/2015/05/inside-war-on-coal-000002.
59. As the Capital Research Center put it in 2010: "If the Sierra Club-led campaign against coal succeeds there will be dire consequences for America's economic well-being and its national security. American policymakers must fight back against extremist environmental group demands that they kill coal-burning power plants." https://capitalresearch.org/article/the-sierra-clubs-war-on-coal/.

that Hillary Clinton was "anti-coal."[60] So, while the Beyond Coal campaign may be considered "successful" in the sense of leading to short-term "wins" in stopping new coal plant development, it may in the long-run prove counterproductive, as it has contributed to the perception that the electric generation landscape is a zero-sum game between coal miners and proponents of renewable energy.

By identifying higher level policy goals and drawing wider, more inclusive contexts, the Sierra Club could have avoided or perhaps countered the zero-sum framing of coal versus renewables, while still seeking the goal of decarbonization. For example, a goal of "Energy Access for All" could have focused on the need for affordable energy in coal-dependent communities, highlighted the potential for energy efficiency to reduce demand and lower costs, and emphasized the fact that coal plants are often the more expensive resource.[61] A goal of "Seeking Justice" could have highlighted the health risks posed by coal plants and sought ways to bring healthier options to these communities.[62] A goal of "Community Transformation" could have sought to bring solar industries to communities already devastated by the loss of coal-related jobs. As Benjamin Sovacool put it: "The clash between traditional, centralized, fossil-fuel electric generators and novel, dispersed, clean power resources is more than a conflict over technology. It is a battle over competing values and cultural attitudes."[63] Those values cannot be ignored or passed over in the name of expediency or urgency.

The danger of failing to identify bigger picture goals is that short-term, narrow contexts tend to lend themselves to zero-sum framing, and thereby create unnecessary divides. This cycle can be seen in the battle over net metering and rooftop solar. A majority of U.S. states have implemented net metering tariffs to compensate homeowners for excess electricity generated by rooftop solar installations.[64] These tariffs are seen by many as crucial to the development of solar generation in utility portfolios, and are supported by the solar industry and advocates of renewable and distributed energy development.[65] Yet, the narrow focus by some renewable energy activists on net metering, rather than decarbonization in general, creates a scenario in which those who benefit from net metering end up in opposition to those who do not.

To understand the impact of net metering, it is important to understand that utilities bill customers based on the total cost of operating their system. If some homeowners receive a financial benefit from installing solar panels, but the total cost of operating the system does not decrease, another customer must pay more (a true zero-sum game!).[66] Similarly, if some customers exit the system, leaving behind a smaller customer base over which to spread fixed costs, remaining customers will pay more. This leads to a potential conflict between those higher income homeowners who are able to take advantage of the benefits of net metering and rooftop solar, and those lower income, non-homeowners, who cannot.[67]

The net cost (or benefit) of accommodating rooftop solar and paying customers when they generate excess electricity is disputed.[68] Unfortunately, net metering was generally instituted without determining what the underlying programmatic goal of the policy was. Was the goal of net metering programs to spread rooftop solar, to encourage distributed resources, or to decarbonize the system? Or some combination of all three? In the absence of clearly defined goals, appropriate policy decisions are unclear. If the goal of net metering is to spread rooftop solar, then targeted subsidies for rooftop solar applications make sense, and can be an efficient use of resources. But if the goal is to decarbonize the system while also bringing clean energy options to low-income communities, then community solar applications,[69] or solar incentives targeted to rental housing,[70] could be a better, cheaper alternative. If the goal

60. Eliza Relman, *Hillary Clinton: Here's the Misstep From the Campaign I Regret Most*, Bus. Insider, Sept. 6, 2017, www.businessinsider.com/hillary-clinton-biggest-campaign-mistake-2017-9; Heather Long, *Hillary Clinton Might Lose Ohio Because She Badmouthed Coal*, CNN Money (last visited Sept. 25, 2017), http://money.cnn.com/2016/10/13/news/economy/hillary-clinton-ohio-coal/index.html.

61. *See* U.S. Energy Info. Admin., *Levelized Cost and Levelized Avoided Cost of New Generation Resources in the Annual Energy Outlook 2016* (Aug. 2016), at 8, www.eia.gov/forecasts/aeo/pdf/electricity_generation.pdf.

62. A 2014 study found that conservatives were more likely to support policies to reduce air pollution when those policies were framed by reference to the negative health effects of pollution, rather than the climate change effects of pollution. Nada Petrovic et al., *Motivating Mitigation: When Health Matters More Than Climate Change*, 126 Climate Change 245, 250 (2014).

63. Benjamin K. Sovacool, *The Cultural Barriers to Renewable Energy and Energy Efficiency in the United States*, 31 Tech. Soc'y 365, 372 (2009).

64. National Conference of State Legislatures, *State Net Metering Policies* (Nov. 3, 2016), www.ncsl.org/research/energy/net-metering-policy-overview-and-state-legislative-updates.aspx.

65. Mark Muro & Devashree Saha, *Rooftop Solar: Net Metering Is a Net Benefit*, Brookings (May 23, 2016), www.brookings.edu/research/rooftop-solar-net-metering-is-a-net-benefit/.

66. For a discussion of the complicated rate impacts of net metering, see Inara Scott, *Incentive Regulation, New Business Models, and the Transformation of the Electric Power Industry*, 5 Mich. J. Envtl. Admin. L. 319, 354-57 (2016).

67. *See* Morgan Lee, *Will Solar Energy Shine on Poor Communities?*, San Diego Union Trib., Sept. 14, 2015, www.sandiegouniontribune.com/sdut-solar-shine-poor-renters-2015sep14-story.html. More recently, there has been an interest in studying barriers to participation by low-income communities and individuals in solar generation. *See* California Energy Comm'n, *SB 350 Barriers Study*, www.energy.ca.gov/sb350/barriers_report/ (last visited June 15, 2017); Low-Income Solar Policy Guide, *Unlocking Participation*, www.lowincomesolar.org/why-act/unlocking-participation/ (last visited June 15, 2017), www.nrel.gov/technical-assistance/lmi-solar.html.

68. *Contrast* Edison Electric Institute, Solar Energy and Net Metering (Jan. 2016), www.eei.org/issuesandpolicy/generation/NetMetering/Documents/Straight%20Talk%20About%20Net%20Metering.pdf (last visited June 15, 2017) (asserting significant cost shifts from those who are able to take advantage of the tariffs to those who are not), *with* Nevada Public Utility Comm'n Staff, Nevada Net Energy Metering Impacts Evaluation 15 (July 2014), http://puc.nv.gov/uploadedFiles/pucnvgov/Content/About/Media_Outreach/Announcements/Announcements/E3%20PUCN%20NEM%20Report%202014.pdf?pdf=Net-Metering-Study (finding small net *benefit* to non-solar ratepayers in 2014 and 2015, and no impact in 2016).

69. Community solar applications provide the benefits of solar energy to a group of individuals. They may be sponsored by utilities, or by special business entities. For an overview of community solar and analysis of costs and benefits, see U.S. Dep't of Energy, A Guide to Community Solar: Utility, Private, and Nonprofit Project Development (Nov. 2010), www.nrel.gov/docs/fy11osti/49930.pdf.

70. *See* David Labrador, *Unlocking the High Value of Clean Energy in Low-Income Communities*, Rocky Mountain Institute (RMI) (June 5, 2017), https://rmi.org/news/unlocking-high-value-clean-energy-low-income-communities/ (describing Leap, an RMI initiative studying clean energy in low-income communities); California Public Utilities Comm'n, CSI Multifamily

is rapid decarbonization, then energy-efficiency programs could be an even more effective, and lower cost option.

Effective comparisons of policies is impossible if an end goal has not been identified, and a broader conversation with a variety of stakeholders has not been had.[71] This conversation should include questions such as: What do we want from solar applications? Who should be at the table? What about low-income communities? What is the cost of private, rooftop solar versus distributed community solar? If the goal is decarbonization, would it be cheaper to encourage utility-scale solar applications? If the goal is distributed energy resource development, has grid modernization been discussed alongside net metering? Importantly, who pays, and are the costs distributed equitably?

Policies that lack a broader context are particularly vulnerable to breaking down into "for" or "against" arguments. In the net metering context, when broader questions about the policies are asked, they are often characterized as being for or against solar power—as though one cannot support renewable energy without supporting net metering.[72] This is zero-sum thinking at its worst—creating polarization that restricts the questions that can be asked, and shrouding complex decisions in black and white ideology.

In the electric utility sector, the path to broader conversations can also be blocked by a web of jurisdictional boundaries. Public utility commissions oversee utilities directly and make decisions to approve or disapprove the recovery of costs associated with generation and infrastructure, but the scope of their inquiry has traditionally been limited to matters of cost and reliability, not environmental impacts.[73] The Federal Energy Regulatory Commission regulates transmission infrastructure and wholesale power markets, and while scholars have argued that it has authority to move forward certain policies, like a carbon adder to wholesale power prices, it has no authority to green light new generation projects or to upgrade distribution infrastructure, which is essential to distributed energy resource development.[74] Meanwhile, regional efforts, like the Regional Greenhouse Gas Initiative and the Western Carbon Initiative have sought to create regional cap-and-trade markets, but they are significantly limited by their regional status to create comprehensive energy policy.[75]

In the end, avoiding zero-sum energy policies will require big-picture thinking that focuses on long-term, multi-dimensional goals like energy access, decarbonization, and environmental justice. This can be done. In New York State, the multi-year Reforming the Energy Vision process has dug into the long-term transformation of the electric utility sector, identifying policy goals before setting specific ratemaking policy and empowering a variety of state agencies to take action on their piece of the policy puzzle.[76] Similar processes have been initiated in other states, including California and Minnesota.[77]

Once holistic, long-term policy goals have been established, individual projects and policies can be considered; however, these incremental policies must be discussed in the context of how they can help further larger policy goals.

B. Consider Intersectionality of Energy, Justice, Climate, Race, and Economics

Intersectionality is the increasingly popular notion that discussions of human rights, discrimination, and public policy cannot be limited to single issues like gender, race, or class.[78] For example, gender-based discrimination does not operate the same way for a white woman as it does for a woman of color; similarly, programs seeking to address economic hardship must consider related issues of racism and sexism or they will be doomed to failure. Because systems of disadvantage and advantage work in related, and often overlapping ways, we cannot "solve" problems of economic disadvantage without considering racial discrimination, any more than we can "solve" gender-based discrimination without addressing systemic racism.

Affordable Solar Housing (MASH) Program, www.cpuc.ca.gov/General.aspx?id=3752 (last visited June 15, 2017).

71. There have been several larger policy conversations that have been initiated in recent years to consider the overall electric utility industry and goals for decarbonization, grid modernization, and distributed resource development, most notably in New York State. *See* Scott, *supra* note 66, at 351-52.

72. Or more commonly, any criticism of net metering is attributed to utilities. "Utilities have taken up the cause of low-income ratepayers as a way to advocate for caps on the amount of net metering allowed. But it is the threat to utility profits that drives their opposition to net metering." Herman K. Trabish, *Solar's Net Metering Under Attack*, GreenTech Media (May 3, 2012), www.greentechmedia.com/articles/read/solars-net-metering-under-attack. *See also* Evan Halper, *Minority Groups Back Energy Companies in Fight Against Solar Power*, L.A. Times, Feb 9, 2015, www.latimes.com/nation/la-na-solar-race-20150209-story.html (suggesting minority opposition to net metering can be traced to utility contributions); Joby Warrick, *Utilities Wage Campaign Against Rooftop Solar*, Wash. Post, Mar. 7, 2015, www.washingtonpost.com/national/health-science/utilities-sensing-threat-put-squeeze-on-booming-solar-roof-industry/2015/03/07/2d916f88-c1c9-11e4-ad5c-3b8ce89f1b89_story.html ("the [utility] industry and its fossil-fuel supporters are waging a determined campaign to stop a home-solar insurgency").

73. *See* Inara Scott, *Teaching an Old Dog New Tricks: Adapting Public Utility Commissions to Meet Twenty-First Century Climate Challenges*, 38 Harv. Envtl. L. Rev. 371, 412-13 (2014). The unwillingness of many regulatory commissions may be changing, as has been seen in a number of new utility dockets that consider the adoption of new regulatory policies, including a shift to distributed resources and decarbonization.

74. For an excellent overview of recent caselaw defining the Federal Energy Regulatory Commission/state regulatory jurisdictional split, see David P. Yaffe, *All Electrons Are Not Local: A Commentary on the Interplay of Recent U.S. Supreme Court Decisions and State Efforts to Guide Local Transitions to Clean Power*, 29 Elec. J. 1 (2016). *See also* Steven Weissman & Romany Webb, Addressing Climate Change Without Legislation: Vol. 2: FERC, www.law.berkeley.edu/wp-content/uploads/2016/08/FERC_rev-Aug-2016.pdf.

75. *See* Hannah J. Wiseman & Hari M. Osofsky, *Regional Energy Governance and U.S. Carbon Emissions*, 43 Ecology L.Q. 143, 233-34 (2016) (arguing that coordination between state, federal, and regional authorities is necessary to facilitate effective energy governance and carbon reduction).

76. *See generally* New York State, Reforming the Energy Vision, https://rev.ny.gov (last visited June 15, 2017).

77. *See* Scott, *supra* note 66.

78. Definitions of intersectionality are as diverse as they are numerous. *See* Patricia Hill Collins & Sirma Bilge, Intersectionality 1-2 (2016). For a discussion of how intersectionality can be utilized in the public policy context, see Olena Hankivsky & Renee Cormier, *Intersectionality and Public Policy: Some Lessons From Existing Models*, 64 Pol. Res. Q. 217, 217-19 (2011). It is worth noting that this Article was written prior to the Green New Deal, which presents a promising opportunity to pursue an intersectional path.

Intersectionality is rarely discussed in the environmental context, but it should play a crucial role in the development of energy policy.[79] In a general sense, intersectionality requires that we consider the impact of systemic racism and economic polarization on our energy choices and responses to climate change. Intersectionality forces a broader contextual lens to policy discussions. For example, in the net metering context, intersectionality might ask how net metering policies reflect embedded and systemic racism, disadvantage historic minorities, or further existing economic inequalities.

On an international scale, this is something global climate negotiations have long tried to do under the principle of common but differentiated responsibilities.[80] Under this principle, rather than imposing equivalent expectations for carbon reductions on developed and developing nations, the international community adjusts those expectations based on historical and current realities, technical abilities, and the needs of vulnerable populations. The United States not only has created the lion's share of atmospheric carbon, it has significantly greater financial resources to modify its carbon use going forward.[81] We cannot say the same of small island nations, or countries most vulnerable to drought and desertification.[82]

What would this process look like on a more local scale? In the transportation sector, it may require acknowledging that alternative, low-carbon transportation options are not equally available to all people, and carbon taxes aimed at making car travel or gas use more expensive may have disproportionate impacts. Those who have to commute long distances may do so because they cannot afford housing closer to work; those who have to take children to and from day care while juggling multiple jobs may not be able to use public transportation.

In the energy generation sector, it may require considering the impact of closing electric generation facilities on the communities that depend on them. As noted above, the Beyond Coal campaign's focus on eliminating coal predictably aroused antagonism from affected communities. If an intersectionality lens had been applied, perhaps the campaign would have addressed economic transformation and restoration of health through environmental justice, rather than simply eliminating coal.[83]

Intersectionality also requires an analysis of whether the benefits of a program are equally available to all, or if they serve to reinforce existing economic barriers and privileges. For example, homeownership has been identified as playing a significant part in maintaining long-established economic inequities.[84] Buying a home leads to wealth accumulation,[85] yet people of color have been consistently discriminated against in housing markets and in lending practices.[86] When so many clean energy programs are designed around homeownership—from rooftop solar to energy efficiency—it takes no particular stretch of the imagination to understand why marginalized communities and people of color may believe this form of environmental energy activism is by and for whites.[87]

An excellent example of the failure to address intersectional concerns can be seen in recent efforts to institute a carbon tax in Washington State. Despite the state having a strong and active environmental community that is deeply committed to reducing GHG emissions, proponents of a carbon tax measure were unable to get support from key environmental and social justice groups, including the Sierra Club, the Washington Environmental Council, and Front and Centered, a large coalition of social justice and community groups.[88] One problem was financial: the Washington budget office found the tax would not be revenue-neutral, and would actually have resulted in a net cut to state revenues; in addition, one analysis suggested over 300,000 low-income families would not qualify for

79. It is worth noting that while the concept of intersectionality per se is not frequently raised, increasing attention has been paid to the lack of diversity in the environmental movement and the need for environmentalists to seek greater diversity in race and socioeconomic status. *See, e.g.*, Nicole Smith Dahmen et al., *The Overwhelming Whiteness of U.S. Environmentalisms Is Hobbling the Fight Against Climate Change*, Quartz, Jan. 4, 2017, https://qz.com/877447/the-overwhelming-whiteness-of-the-us-environmentalist-movement-is-hobbling-the-fight-against-climate-change/.

80. This concept is known as the principle of common but differentiated responsibilities. *See* Centre for International Sustainable Development Law (CISDL), The Principle of Common but Differentiated Responsibilities: Origins and Scope (2002), http://cisdl.org/public/docs/news/brief_common.pdf (last visited June 15, 2017); Justin Lee, *Rooting the Concept of Common but Differentiated Responsibilities in Established Principles of International Environmental Law*, 17 Vt. J. Envtl. L. 27, 30-31 (2015).

81. Justin Gillis & Nadja Popovich, *The U.S. Is the Biggest Carbon Polluter in History, It Just Walked Away From the Paris Climate Deal*, N.Y. Times, June 1, 2017.

82. *See* Lee, *supra* note 80, at 43.

83. For an illustration of what such a campaign might include, see Erik Loomis, *Toward a Working Class Environmentalism*, New Republic, Dec. 5, 2016, https://newrepublic.com/article/139132/towards-working-class-environmentalism ("Environmental justice campaigns have to be waged at the grassroots level, in statehouses, and at the federal level. Centering these struggles on the plight of the working class and people of color will go far to bring the movement back to its democratic roots.").

84. Laura Sullivan et al., The Racial Wealth Gap 1-2 (2015), www.demos.org/sites/default/files/publications/RacialWealthGap_1.pdf (last visited June 15, 2017).

85. Tracy M. Turner, *Homeownership, Wealth Accumulation, and Income Status*, 18 J. Housing Econ. 104 (2009) (finding every year of homeownership resulted in $15K more wealth accumulation for high-income households, and $6-10K more for low- and middle-income households); Editorial Board, *Homeownership and Wealth Creation*, N.Y. Times, Nov. 29, 2014.

86. *See* Shaila Dewan, *Discrimination in Housing Against Nonwhites Persists Quietly, U.S. Study Finds*, N.Y. Times, June 11, 2013; Jeff Guo, *If You're Poor, Your Mortgage Rate Can Depend on the Color of Your Skin*, Wash. Post, Dec. 23, 2014.

87. *See* Resolution, *Updating Net Metering Policies*, Nat'l Pol'y Alliance (last visited Sept. 22, 2017) (policy resolution from organization of black public officials encouraging revisions in net metering policies and stating "shifting costs from those who can afford DG [distributed generation] systems to low-income customers and others unable to afford or qualify for rooftop solar leases is an unfair financial burden"), http://npalinks.org/resolutions/net-metering-policies/; *Low- and Moderate-Income Solar Policy Basics*, Nat'l Renewable Energy Lab. (last visited Sept. 22, 2017), www.nrel.gov/technical-assistance/lmi-solar.html ("access to solar power remains elusive for a large segment of the U.S. population, particularly low- and moderate-income communities").

88. Marianne Levelle, *Washington State Voters Reject Nation's First Carbon Tax*, InsideClimate News, Nov. 9, 2016, https://insideclimatenews.org/news/09112016/washington-state-carbon-tax-i-732-ballot-measure.

rebates under the plan.[89] Importantly, a variety of groups, including those who did not support the measure, worried that the carbon tax would have a disproportionate impact on low-income communities and communities of color.[90] Prominent social justice activist and CNN contributor Van Jones, who released two Facebook ads urging Washingtonians to vote against the measure, put it this way: "A proposal can only be environmentally sustainable if it's politically sustainable."[91]

Supporters of the Washington carbon tax argued that they were not trying to solve social problems, they were only trying to reduce carbon emissions.[92] The problem with this mindset is that it ignores persistent social and racial inequalities that can be perpetuated by narrow policies. Environmental actions must be paired with social and economic justice programs, ensuring that efforts to create a "win" for the environment do not create a "loss" for vulnerable populations. Similarly, energy policy should not focus in a zero-sum way on closing coal mines—it must broadly consider energy access and justice for imperiled communities. Environmentalists should be cautious about trying to "fix" the environment and then, as an afterthought, worrying about the impacts of environmental policies on people.

Environmentalists who appreciate the looming threat posed by climate change may see a need for speed that overrides complicated discussions of long-term policies and big-picture goals and priorities. But failing to engage in big-picture conversations or to address intersectionality can result in protracted battles over inefficient policies, policies that fail to achieve larger goals, and losses for the environment. Moreover, by failing to articulate overarching policy goals and priorities and focusing instead on individual initiatives, we create zero-sum debates that highlight differences, rather than finding common ground.

Though they are not common, examples of successful intersectional approaches do exist. In late 2016, Illinois managed to pass a bipartisan energy bill (The Future Energy Jobs Bill) that addressed an aging nuclear power plant, energy efficiency, a renewed renewable portfolio standard that includes community solar, and an investment in environmental justice and job training in the solar industry.[93] These coalition-style compromise bills are easily characterized as "wins" for some and "losses" for others, but when they support decarbonization and economic justice in a bipartisan package, they would better be characterized as beyond zero-sum.

89. *Id.*
90. *Id.*; *see also* Lewis Kamb, *Washington Voters Reject Initiative to Impose Carbon Tax on Fossil Fuels*, Seattle Times (updated Nov. 9, 2016), www.seattletimes.com/seattle-news/politics/carbon-emissions-tax-initiative-732/.
91. Chelsea Harvey, *The Battle Over Washington State's Proposed Carbon Tax Has Gotten Even Weirder*, Wash. Post, Nov. 7, 2016, www.washingtonpost.com/news/energy-environment/wp/2016/11/07/the-bizarre-political-fight-over-washington-states-ballot-measure-to-tax-carbon/.
92. *Id.*
93. David Roberts, *Illinois Passes Huge, Bipartisan Energy Bill, Proves Democracy Still Works*, Vox.com, Dec. 8, 2016, www.vox.com/energy-and-environment/2016/12/8/13852856/illinois-energy-bill.

C. *Reject Standard Characterizations of Villains and Heroes*

Environmentalists and corporations are used to standing on either side of a zero-sum divide.[94] Increasingly, the environmental divide also pits Democrats against Republicans.[95] Environmentalists may find it hard to work with or trust multinational corporations—particularly those with ties to the fossil fuel industry. Multinational corporate giant ExxonMobil appears to have been particularly egregious in its attempts to hide what it knew, and deceive the public about, the consequences of climate change.[96] On the other hand, activist environmental groups, such as Greenpeace, may rely on extreme displays and no-compromise strategies in their interactions with corporations, preferring conflict over actual negotiations.[97] Reducing corporations, Republicans, Democrats, and environmentalists to stereotypical good guys and bad guys and refusing to negotiate in good faith or hear their concerns—whichever side of the divide you stand on—is simply another form of a zero-sum game.

The corporation versus environmentalist framing ignores real collaborative efforts between groups,[98] and effort by corporations to address climate change.[99] A recent study of Fortune 500 companies found almost one-half had made voluntary clean energy or climate change commitments,[100] while 87 businesses have pledged to move

94. At a base level, many feel that climate change is a direct result of global capitalism, and cannot be addressed without addressing the capitalist system. *See, e.g.*, Naomi Klein, This Changes Everything (2016). Daniel Fiorino finds a divide between environmental regulation and industry sprung up in response to the first wave of environmental regulation in the 1970s. "From the perspective of industry . . . it was as if government had thrown down the gauntlet. Nearly thirty years of postwar economic growth had brought unprecedented prosperity, and it looked now as if it all would be risked on a dubious response to 'soft' environmentalism." Daniel J. Fiorino, The New Environmental Regulation 43 (2006). Over the next four decades, he concludes, regulation in the United States became "characterized by high conflict, adversarial relationships, and low trust." *Id.* at 75.
95. *See supra* notes 44-46 and accompanying text.
96. Marcelo Gleiser, *ExxonMobil vs. the World*, National Public Radio (Nov. 30, 2016), www.npr.org/sections/13.7/2016/11/30/503825417/exxonmobil-vs-the-world; Shannon Hall, *Exxon Knew About Climate Change Almost 40 Years Ago*, Sci. Am., Oct. 26, 2015, www.scientificamerican.com/article/exxon-knew-about-climate-change-almost-40-years-ago/.
97. Priscilla Murphy & Juliet Dee, *Du Pont and Greenpeace: The Dynamics of Conflict Between Corporations and Activist Groups*, 4 J. Pub. Rel. Res. 3 (1992).

> The strategy chosen by Greenpeace . . . is characteristic of the zero-sum approach. Because the zero-sum model emphasizes winning at the expense of the other player, its favored communications methods include manipulation of the issues to slant arguments in its favor, the use of flamboyant symbols to depict choices in absolute terms, and the refusal to cede any points, even in the interest of creating dialogue between parties.

Id. at 10.
98. Claudia H. Deutsch, *Companies and Critics Try Collaboration*, N.Y. Times, May 17, 2006, www.nytimes.com/2006/05/17/business/businessspecial2/17partner.html.
99. Benjamin Hulac, *Corporations Move to Curb Global Warming*, Sci. Am., Apr. 21, 2016, www.scientificamerican.com/article/corporations-move-to-curb-global-warming/; Samantha Masunaga, *Business Leaders Bash Trump's Decision to Withdraw From Paris Climate Accord*, L.A. Times, June 2, 2017, www.latimes.com/business/la-fi-business-paris-20170602-htmlstory.html.
100. Gina-Marie Cheeseman, *Report: Almost Half of Fortune 500s Set Climate Change, Clean Energy Targets*, Triple Pundit, Apr. 28, 2017.

to 100% renewable energy, including multinational giants Unilever (by 2030) and Nike (by 2025).[101] As market drivers, these companies can foster significant improvements in technology, while consistent, long-term demand can drive down the price of renewables, spurring a positive cycle of demand growth and price decreases. Powerful coalitions of businesses, individuals, and policymakers, from the left and the right, have offered potential paths to addressing climate change, including a carbon tax, impact investing, and sustainable business practices like the "circular economy."[102] Renewable energy access projects around the world often rely on public-private partnerships that include local social enterprises, government organizations, and large corporations.[103]

It is worth noting that the extreme divide between Republicans and Democrats on climate change legislation is relatively new.[104] As recently as 2008, both candidates for president (John McCain and Barack Obama) advocated for policies to address climate change.[105] Potential for fresh bipartisan action still exists. Even in the midst of a highly charged political environment, in September 2017, Sen. Lindsey Graham (R-S.C.) suggested he is working with a bipartisan coalition to create legislation for a carbon tax.[106] Another group of high-profile Republican statesmen have put together a proposal for a gradually increasing carbon tax with dividends.[107] Bipartisan solutions are still possible, and may be crucial to solve the existential crisis the world faces.

III. Conclusion

Energy policy is enormously complex, with technology constantly changing the economics of sources and options available to meet future energy needs. While there are positive and negative consequences to resource options, the ability to mitigate negative consequences may change at a bewildering pace,[108] even as the industrial and technological landscape evolves and changes. In this complex arena, zero-sum games that frame policies as binary choices and simple designations of winner and loser are not only inaccurate, they are downright dangerous.

To reform energy policy and avoid zero-sum formulations, this Article proposes looking more creatively and holistically at long-term objectives and policy choices. Policies impacting energy and the environment must be analyzed together for their impacts on communities and individuals through a lens of intersectionality. Narrow contexts create winners and losers, while broad conversations allow for deeper compromises and the potential to reach across ideological divides. Effective energy policy requires the optimism to consider uncertainty, the foresight to challenge assumptions, and the courage to look for ways to work together to reach common goals.

101. RE100, Accelerating Change: How Corporate Users Are Transforming the Renewable Energy Market (2017), www.theclimategroup.org/sites/default/files/downloads/re100_annual_report_2017.pdf (last visited June 15, 2017).

102. *See supra* note 37; Michael Bloomberg & Carl Pope, Climate of Hope: How Cities, Businesses, and Citizens Can Save the Planet (2017); Frederic C. Rich, Getting to Green: Saving Nature: A Bipartisan Solution (2016); Susan Phillips, *Climate Activists Court Hill Republicans With "Civil Conversations,"* Nat'l Pub. Radio, June 14, 2017.

103. *See* Benjamin Sovacool, *Expanding Renewable Energy Access With Pro-Poor Public Private Partnerships in the Developing World*, 1 Energy Strategy Rev. 181, 181 (2013); Sue George, *Corporations and NGOs Working in Partnership to Create Social Change*, Guardian, Dec. 11, 2014 www.theguardian.com/sustainable-business/2014/dec/11/corporations-and-ngos-working-in-partnership-to-create-social-change (discussing partnerships including the World Wildlife Fund and Coca-Cola).

104. Coral Davenport & Eric Lipton, *How G.O.P Leaders Came to View Climate Change as Fake Science*, N.Y. Times, June 3, 2017, www.nytimes.com/2017/06/03/us/politics/republican-leaders-climate-change.html?mcubz=3. In 2008, Newt Gingrich, former House Speaker and frequent surrogate for President Trump, wrote: "We need two political parties equally committed to solving difficult environmental problems; two parties willing to engage in a constructive civil debate to reach consensus and implement action." Newt Gingrich & Terry L. Maple, *Forging a New, Bipartisan Environmental Movement*, Issues Sci. & Tech., Winter 2008, at 24, 26.

105. Andrew C. Revkin et al., *Election 2008: On the Issues: Climate Change*, N.Y. Times (last visited Sept. 21, 2017), www.nytimes.com/elections/2008/president/issues/climate.html?mcubz=3.

106. Justin Worland, *Republican Senator Endorses "Price on Carbon" to Fight Climate Change*, Time, Sept. 20, 2017, http://time.com/4947960/lindsay-graham-climate-change-carbon-tax/.

107. *See* Climate Leadership Council, www.clcouncil.org/ (last visited Sept. 21, 2017).

108. Susan Kraemer, *One Weird Trick Prevents Bird Deaths at Solar Towers*, CleanTechnica, Apr. 16, 2015, https://cleantechnica.com/2015/04/16/one-weird-trick-prevents-bird-deaths-solar-towers/.