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A Breath of Fresh Air: How to Balance Environmental Justice Concerns with Local Air Pollution and Cap-and-Trade

Mia Dohrmann

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By Mia Dohrmann

I: INTRODUCTION

In 2019 in Newark, New Jersey, a community school mourned the sudden loss of two elementary-aged students to asthma attacks.[1] This tragedy is unfortunately not surprising in a city where the child asthma rate is three times the national average, with an estimated 25% of child residents suffering from asthma and asthma-related illnesses.[2] Newark's asthma epidemic can be attributed to a number of factors, including the city's proximity to the country's third largest port and one of its busiest airports.[3] Notably, many Newark residents are low-income people of color, and air pollution studies overwhelmingly show that marginalized communities face higher exposure to harmful pollutants.[4] Experts estimate that most of the city's residents are burdened by air pollution and suffer the accompanying health and environmental effects.[5]

On the opposite coast of America, California residents also feel the repercussions of unrelenting air pollution and suffer chronic health effects. In 2017, Magali Sanchez Hall stood on her street in Wilmington, California, a working-class, predominantly Latino neighborhood only a

[1] Devna Bose, *'It's killing children and no one is talking about it': Asthma is taking a steep toll on Newark's students and their schools*, CHALKBEAT NEWARK (Dec. 17, 2019, 2:02 PM), https://newark.chalkbeat.org/2019/12/17/21055583/it-s-killing-children-and-no-one-is-talking-about-it-asthma-is-taking-a-steep-toll-on-newark-s-stude.

[2] *Id*.

[3] *Id*.

[4] *Disparities in the Impact of Air Pollution*, AMERICAN LUNG ASSOCIATION, https://www.lung.org/clean-air/outdoors/who-is-at-risk/disparities (last updated Apr. 20, 2020); Tara Failey, *Poor Communities Exposed to Elevated Air Pollution Levels*, NATIONAL INSTITUTE OF ENVIRONMENTAL HEALTH SCIENCES (Apr. 2016), https://www.niehs.nih.gov/research/programs/geh/geh_newsletter/2016/4/spotlight/poor_communities_exposed_to_elevated_air_pollution_levels.cfm.

[5] *See Citizen Science in Newark, New Jersey*, UNITED STATES ENVIRONMENTAL PROTECTION AGENCY (Oct. 2015), https://archive.epa.gov/epa/sciencematters/citizen-science-newark-new-jersey.html; Michael Sol Warren, *N.J.'s polluted cities are fighting to breathe. Meet their new environmental champion*, NJ.COM (Aug. 13, 2020), https://www.nj.com/news/2020/08/new-dep-boss-is-fighting-for-environmental-justice-in-njs-polluted-cities.html.

short distance from Los Angeles' congested freeways, bustling seaport, and oil refineries.[6] As she wiped her finger across the hood of a car, it stained with black soot.[7] Sanchez Hall motioned to the houses lining her street, recounting that nearly every resident has suffered from cancer.[8] Pollution continues to ravage the health and lives of residents in Wilmington, a neighborhood that experienced increased emissions after California's highly-anticipated cap-and-trade program went into effect in 2013.[9]

California's cap-and-trade system has been thoroughly critiqued and discussed within the environmental community, but it is not the United States' first prototype of a cap-and-trade scheme. The U.S. Acid Rain Program, launched in 1990 under Title IV of the Clean Air Act (CAA) Amendments, was the first American cap and trade system of its kind.[10] Under this regime, the federal government set an upper limit ("cap") on the amount of sulfur dioxide (SO_2) that could be emitted from the electricity sector, but left it to private actors to individually determine how they would meet the cap.[11] The Program achieved incredible results reducing sulfur dioxide and nitrogen oxide emissions, mitigating environmental damage, and improving human health outcomes around the country.[12]

While the Acid Rain Program inspired many other modern cap-and-trade initiatives, environmental justice (EJ) advocates have vigorously argued that market-based approaches to

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[6] Emily Guerin, *Is California climate law worsening pollution in communities of color?*, SOUTHERN CALIFORNIA PUBLIC RADIO (Feb. 2, 2017), https://www.scpr.org/news/2017/02/02/68616/is-california-climate-law-worsening-pollution-in-c/.
[7] *Id.*
[8] *Id.*
[9] *Id.*
[10] *Acid Rain Program Results*, UNITED STATES ENVIRONMENTAL PROTECTION AGENCY, https://www.epa.gov/acidrain/acid-rain-program-results (last updated Mar. 31, 2021).
[11] *Acid Rain Program*, UNITED STATES ENVIRONMENTAL PROTECTION AGENCY, https://www.epa.gov/acidrain/acid-rain-program (last updated Oct. 9, 2020); *How Economics Solved Acid Rain*, ENVIRONMENTAL DEFENSE FUND, https://www.edf.org/approach/markets/acid-rain (last updated Sept. 2018).
[12] *Acid Rain Program Results*, *supra* note 10.

climate policy sacrifice local air quality protections in favor of market profit, leaving low-income communities to endure the negative effects of pollution.[13] Cap-and-trade has proven to be an effective tool for reducing greenhouse gas (GHG) emissions, which are a major contributor to the *global* climate crisis, and which are not immediately detrimental to human health.[14] However, existing cap-and-trade systems are not designed to target the troublesome "co-pollutants" that are emitted from refineries and smokestacks alongside GHGs and are proven to directly harm public health.[15] Most cap-and-trade systems also create avenues for regulated companies to reduce their global GHG outputs and thus comply with the program without cutting down emissions at their home facilities.[16] In California, particularly, some residents argue that their state's system traded away more aggressive, prescriptive local air regulations to appease the industry, forgoing measures that they argue would have actually dealt with dirty air.[17] Today, over 30 years after the passage of the cap-and-trade provisions of the Clean Air Act and as domestic cap-and-trade systems continue to increase in popularity, we must ask ourselves how pollution trading fits in with the ideals of environmental justice.

Despite the promise of global benefits, some studies suggest that cap-and-trade may negatively impact disadvantaged communities through unabated co-pollutant emissions, and many EJ advocates argue that market-based, global approaches have been favored over measures to address local air pollution.[18] This Comment argues that in isolation, cap-and-trade systems are an

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[13] Daniel Farber, *Emissions Trading and Social Justice*, UNIVERSITY OF CALIFORNIA BERKELEY PROGRAM IN LAW AND ECONOMICS 20 (Sep. 20, 2011), https://escholarship.org/uc/item/9z66c05g.
[14] Nathanael Johnson, *Cap and Trade-Offs*, GRIST (Oct. 19, 2020), https://grist.org/climate/the-biggest-fight-over-cap-and-trade-isnt-about-what-you-think-it-is/; Guerin, *supra* note 6.
[15] Joseph Lam, *Spurring on Environmental Justice Through Cap and Trade*, 2 CHI.-KENT J. ENVTL. ENERGY L. 1, 6 (2011); Johnson, *supra* note 14; Guerin, *supra* note 6.
[16] Lisa Song, *Cap and Trade Is Supposed to Solve Climate Change, but Oil and Gas Company Emissions Are Up*, PROPUBLICA (Nov. 15, 2019, 5:00 AM), https://www.propublica.org/article/cap-and-trade-is-supposed-to-solve-climate-change-but-oil-and-gas-company-emissions-are-up; *See infra* Part II.D.
[17] Johnson, *supra* note 14.
[18] Johnson, *supra* note 14.

unsuitable tool to use to improve air quality in marginalized communities. Cap-and-trade systems that let companies stock up on allowances and utilize offsets lead to less substantial emissions reductions at their facilities, which allows for hazardous co-pollutant emissions that harm the communities surrounding them. This Comment proposes that the United States must enact stricter air pollution regulations and address the co-pollutant challenges to effectively reduce emissions while improving socioeconomic outcomes for environmental justice communities.

Part II of this comment sets out the mechanics of cap-and-trade, illustrates the dangers of co-pollutants, and describes the practices of allowance banking and offsetting. Part III explores the history of the environmental justice movement and examines the community's relationship with cap-and-trade systems. Part IV proposes a regulatory solution, including imposing stricter banking and offsetting rules, investing cap-and-trade auction proceeds in EJ communities, and promoting local air quality solutions through the Clean Air Act and state-level legislation.

II: CAP-AND-TRADE BACKGROUND

A. The Mechanisms Behind Cap-and-Trade

Emissions trading systems employ both market-based mechanisms and governmental regulations, ensuring that companies can meet legal emissions limits while individually determining their own compliance strategy.[19] A cap-and-trade program allows the government to establish a cap on emissions of a pollutant and then, consistent with the amount of the cap, determine how many allowances are available to give to companies that emit the targeted

[19] *What is Emissions Trading?*, UNITED STATES ENVIRONMENTAL PROTECTION AGENCY, https://www.epa.gov/emissions-trading-resources/what-emissions-trading (last updated Dec. 17, 2019).

pollutant.[20] Emissions must not exceed the government's set cap, which in theory should become more restrictive every year to pressure polluters to keep reducing emissions.[21]

The participating government is usually responsible for setting and enforcing the cap, determining penalties for non-compliance, and setting up the trading platform.[22] The government may distribute some permits for free and sell others at auctions, where the generated funds might be dedicated to climate initiatives, like electric transportation or clean energy jobs, or earmarked for different communities throughout the region.[23] Allowances are sometimes given away for free to build broad political support or to reduce adverse competition in the market.[24] Alternatively, the government may choose to distribute most of their allowances through a permit auction.[25] Once permits are distributed, private companies dictate how they will use their allocated permits.[26] The permit market is where the "trade" aspect of the scheme takes shape, as companies work with each other to buy or sell excess permits.[27] GHGs mix in the atmosphere, so trading and reallocating emissions allowances does not affect overall emissions-reduction efforts, as long as some firm somewhere in the program pulls their weight to reduce total emissions.[28] This flexible trading market allows entities to cost-effectively achieve emissions reductions without adhering to stricter prescriptive standards, which is in large part what makes cap-and-trade attractive across the industry.[29]

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[20] *Id.*
[21] Song, *supra* note 16.
[22] Sarah Light, *The New Insider Trading: Environmental Markets within the Firm*, 34 STAN. ENVTL. L.J. 3, 21 (2015).
[23] *See RGGI Strategic Funding Plan, Years 2020 through 2022*, NEW JERSEY ECONOMIC DEVELOPMENT AUTHORITY 7, https://nj.gov/rggi/docs/rggi-strategic-funding-plan.pdf.
[24] Richard Schmalensee & Robert Stavins, *Learning from Thirty Years of Cap and Trade*, RESOURCES MAGAZINE (May 16, 2019), https://www.resourcesmag.org/archives/learning-thirty-years-cap-trade/.
[25] *Investments of Proceeds*, THE REGIONAL GREENHOUSE GAS INITIATIVE, https://www.rggi.org/investments/proceeds-investments.
[26] Song, *supra* note 16.
[27] Song, *supra* note 16.
[28] Dallas Burtraw, et. al, *Managing Greenhouse Gas Emissions in California*, THE CALIFORNIA CLIMATE CHANGE CENTER, UC BERKELEY 5-7, https://sallan.org/pdf-docs/Berkeley_Cap_and_Trade_Lessons.pdf.
[29] *Id.*

Various cap-and-trade systems have been adopted around the world, and many economists and environmentalists praise the scheme's flexible capability to cost-effectively reach aggregate emissions-reduction targets.[30] The European Union maintains a robust carbon dioxide (CO_2) cap-and-trade system and China is projected to implement the world's largest CO_2 emissions trading system in the 2020s.[31] The Canadian province of Quebec launched a cap-and-trade program in 2013 that targets GHG emissions in its industrial and electricity sectors, and Ontario launched a similar program in 2017.[32] In the U.S., following the lead of the Acid Rain Program's success, multiple states have either adopted cap-and-trade systems or joined regional programs.[33] Washington state legislators are debating whether to adopt a statewide cap-and-trade system.[34] California's signature cap-and-trade program, launched in 2013, is one of the world's largest emissions trading systems.[35] California's program is designed to reduce greenhouse gas emissions by setting an extensive statewide emissions limit and "employing market mechanisms to cost-effectively achieve [the State's] emission-reduction goals."[36] On the east coast, the Regional Greenhouse Gas Initiative (RGGI) is a cooperative effort between ten states to cap and reduce CO_2

[30] *Id.* at 5–3; Schmalensee & Stavins, *supra* note 24.
[31] Schmalensee & Stavins, *supra* note 24.
[32] Anthony D'Agostino & Sarah Thompson, *Cap-and-Trade in Canada: An Overview*, RBC CAPITAL MARKETS (June 2017), http://www.rbcroyalbank.com/commercial/campaign/supplychain/_assets-custom/pdfs/cap-and-trade-overview.pdf.
[33] Lam, *supra* note 15, at 3.
[34] Tim Gruver, *Washington state lawmakers want cleaner skies, Critics say cap and trade not the answer*, THE CENTER SQUARE (Jan. 20, 2021), https://www.thecentersquare.com/washington/washington-state-lawmakers-want-cleaner-skies-critics-say-cap-and-trade-not-the-answer/article_4e59bf66-5a90-11eb-a729-d73d98e27ab9.html.
[35] *California Cap and Trade*, CENTER FOR CLIMATE AND ENERGY SOLUTIONS, https://www.c2es.org/content/california-cap-and-trade/.
[36] *Cap-and-Trade Regulation Instructional Guidance*, CALIFORNIA AIR RESOURCES BOARD 1 (Sept. 2012), https://ww2.arb.ca.gov/sites/default/files/classic//cc/capandtrade/guidance/chapter1.pdf.

emissions from the electricity sector.[37] New Jersey, home to Newark, formally rejoined the RGGI in 2020.[38]

In American cap-and-trade systems, the cap may be set by the federal government, as is demonstrated by the Acid Rain Program.[39] The cap may also be determined by the states, as is the case for participating RGGI states (each state's CO_2 Budget Trading Program sets a cap in accordance with RGGI model rules) and in California's system (where the California Air Resources Board [CARB] sets a cap).[40] The cap may be set on emissions from a specific industry, and many existing systems commonly target carbon dioxide.[41] This comment focuses on cap-and-trade schemes designed to reduce carbon dioxide emissions, primarily using California and RGGI as case studies, and will propose a regulatory solution for American states to deal with the associated co-pollutants.

In theory, cap-and-trade boils down to a simple idea: if a company emits pollution, that company pays for it up front, and that payment is broadly dedicated to government programs and climate protection initiatives.[42] However, environmentalists and EJ advocates have voiced concerns that cap-and-trade mechanics create "loopholes" where regulated entities can utilize

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[37] *RGGI, Inc.*, THE REGIONAL GREENHOUSE GAS INITIATIVE, https://www.rggi.org/rggi-inc/contact.

[38] *The Regional Greenhouse Gas Initiative in New Jersey*, DEPARTMENT OF ENVIRONMENTAL PROTECTION, https://www.nj.gov/dep/aqes/rggi.html (last updated Mar. 18, 2021); *New Jersey Participation*, THE REGIONAL GREENHOUSE GAS INITIATIVE, https://www.rggi.org/program-overview-and-design/design-archive/nj-participation (last visited Apr. 14, 2021). New Jersey was originally one of RGGI's founding member states in 2005, and in 2008, the Global Warming Solutions Fund Act officially authorized the state to participate in a cap-and-trade initiative like RGGI. In 2011, former New Jersey Governor Chris Christie ended the state's participation with RGGI, although for compliance purposes and market stability, the state's CO_2 allowances were still recognized. In 2019, Governor Phil Murphy announced that New Jersey would fully rejoin the RGGI, and the state resumed participation on January 1, 2020.

[39] *Acid Rain Program*, *supra* note 11; Farber, *supra* note 13, at 8.

[40] *Elements of RGGI*, THE REGIONAL GREENHOUSE GAS INITIATIVE, https://www.rggi.org/program-overview-and-design/elements; *California Cap and Trade*, *supra* note 35.

[41] *How Cap and Trade Works*, ENVIRONMENTAL DEFENSE FUND, https://www.edf.org/climate/how-cap-and-trade-works. Notably, cap-and-trade mechanics have been used to regulate SO_X and NO_X emissions. *See REgional CLean Air Incentives Market (RECLAIM)*, SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT, http://www.aqmd.gov/home/programs/business/about-reclaim (Regional Clean Air Incentives Market [RECLAIM]) and *Acid Rain Program*, *supra* note 11 (Acid Rain Program).

[42] Song, *supra* note 16.

banking and offsets to comply with the cap and lower their overall GHG emissions while continuing to pollute at their facilities.[43] The accompanying co-pollutant emissions from these facilities can harm the communities surrounding them, which are overwhelmingly low-income communities of color.[44]

B. Co-Pollutants

Atmospheric GHGs are not directly detrimental to human health, but GHG emissions from fossil fuel combustion are typically released along with dangerous co-pollutants that jeopardize public health outcomes.[45] While regulated entities in cap-and-trade systems can achieve an overall atmospheric reduction of GHGs, a cap-and-trade system might allow localized impacts of co-pollutants to continue unabated from covered facilities.[46] Without additional regulations to manage co-pollutants, cap-and-trade systems targeting GHGs can inadvertently lead to exacerbated "hot spots" of dirty air in areas where harmful pollution is already a threat.[47]

Common co-pollutants include particulate matter ($PM_{2.5}$), nitrogen oxides (NO_X), sulfur oxides (SO_X), and volatile organic compounds (VOCs), which are linked to cardiovascular and

[43] Song, *supra* note 16; *see also* Laura Beans, *Carbon Offsets Could Create Loophole for Industry to Pollute as Usual*, ECOWATCH (Jul. 5, 2013, 4:03 PM), https://www.ecowatch.com/carbon-offsets-could-create-loophole-for-industry-to-pollute-as-usual-1881773267.html. In RGGI's cap-and-trade system, the only "regulated entities" are electric power plants that generate 25 megawatts or more. In California, the cap-and-trade rules apply to electric power plants, industrial plants, and fuel distributors that emit 25,000 tons of carbon dioxide per year or more. *See* Jonathan Ramseur, Cong. Research Serv., R41836, The Regional Greenhouse Gas Initiative: Background, Impacts, and Selected Issues (2019), https://fas.org/sgp/crs/misc/R41836.pdf; *California Cap and Trade*, *supra* note 35.
[44] Cushing, Lara et al. *Carbon trading, co-pollutants, and environmental equity: Evidence from California's cap-and-trade program (2011–2015)*, PLOS MEDICINE 1–2 (Jul. 10, 2018), https://doi.org/10.1371/journal.pmed.1002604.
[45] *Id.* at 3.
[46] *Id.* at 3.
[47] Alice Kaswan, *CPR Perspective: Environmental Justice and Climate Change: Incorporating Environmental Justice into Greenhouse Gas Cap-and-Trade Programs*, THE CENTER FOR PROGRESSIVE REFORM (July 2009), http://progressivereform.org/our-work/energy-environment/perspejandcc/.

respiratory diseases and higher incidences of mortality.[48] The exact relationship between GHG and co-pollutant emissions is complex and highly fact-sensitive, and the risks and benefits of reducing co-pollutants may significantly vary across location and time.[49] However, there is some evidence that facilities regulated under cap-and-trade produce a positive correlation between emissions of GHGs and emissions of hazardous co-pollutants.[50] For example, one study in California found that certain co-pollutant emissions increased dramatically with GHG emissions, such as $PM_{2.5}$ in public service facilities, NO_X in metal manufacturing facilities, SO_X in refineries, and VOCs in co-generation facilities.[51]

In California, regulated entities[52] are overwhelmingly located in disadvantaged communities, where residents are disproportionately people of color, people with lower rates of educational attainment, and people with lower financial means.[53] If a facility experiences an increase in GHG emissions and thus, an increase in emissions of some accompanying co-pollutant, the disadvantaged communities surrounding that facility could bear an unequal burden of exposure.[54] Environmental justice advocates argue that because GHG reductions are treated equally regardless of where they occur, there is less of a focus on the neighborhoods that are home to the polluting companies and are likely to feel the detrimental effects.[55] Under cap-and-trade, companies could purchase offsets to fulfill their GHG reductions globally without affecting their

[48] Robert Sanders, *California's Cap-and-Trade Air Quality Benefits Go Mostly Out of State*, BERKELEY NEWS (Jul. 10, 2018), https://news.berkeley.edu/2018/07/10/californias-cap-and-trade-air-quality-benefits-go-mostly-out-of-state/; Cushing, *supra* note 44 at 3.
[49] Todd Schatzki & Robert Stavins, *Addressing Environmental Justice Concerns in the Design of California's Climate Policy*, ANALYSIS GROUP 6 (Oct. 2009), https://www.analysisgroup.com/globalassets/content/insights/publishing/environmental_justice.pdf.
[50] Cushing, *supra* note 44 at 12–13.
[51] Cushing, *supra* note 44 at 12–13.
[52] *See* Ramseur, *supra* note 43 (discussing how California and RGGI respectively define "regulated entities.")
[53] Cushing, *supra* note 44 at 9–10.
[54] Cushing, *supra* note 44 at 12–13.
[55] Cushing, *supra* note 44 at 4.

facilities' emissions and thus, the accompanying co-pollutants. Likewise, a company with excess allowances could hypothetically sell permits to a facility in a disadvantaged community, thus allowing for more dirty emissions in already polluted areas.[56]

The immediate and long-term health effects of co-pollutants can be devastating.[57] Exposure to unhealthy air pollutants has been associated with a variety of serious health effects, such as heart failure, strokes, and reduced life expectancy.[58] Specifically, exposure to SO_2 and NO_2 has been linked to reduced lung function, asthma, bronchitis, and increased risk of hospitalization.[59] $PM_{2.5}$ exposure is especially dangerous because the fine particulate matter can embed itself deep into humans' bloodstream and airways, causing asthma, bronchitis, strokes, heart attacks, and premature death in people with heart issues, lung disease, or cancer.[60] Despite the complexity of GHG and co-pollutant emissions, environmental justice advocates continue to raise concerns about the possibility of increasingly damaging health effects in disproportionately affected communities if co-pollutant emissions are not strictly regulated. Moreover, practices like banking and offsets create avenues allowing for more localized facility pollution and thus, unabated co-pollutants.

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[56] *See* Song, *supra* note 16. RGGI's model rule provides that eligible offset projects may be located in certain states or in any "United States jurisdiction in which a cooperating regulatory agency" understands the "certain obligations relative to CO_2 emissions offsets projects." *See 2017 Model Rule (Revised)*, THE REGIONAL GREENHOUSE GAS INITIATIVE 101-02 (Dec. 14, 2018), https://www.rggi.org/sites/default/files/Uploads/Design-Archive/Model-Rule/2017-Program-Review-Update/2017_Model_Rule_revised.pdf. In California, at least 50% of offset projects must directly benefit California, but many occur globally. *See California Cap and Trade*, *supra* note 35.

[57] Laurie Mazur, *Cap-and-trade? Not so great if you are black or brown*, GRIST (Sept. 16, 2016), https://grist.org/justice/cap-and-trade-not-so-great-if-you-are-black-or-brown/.

[58] *Particle Pollution and Your Patient's Health*, UNITED STATES ENVIRONMENTAL PROTECTION AGENCY, https://www.epa.gov/particle-pollution-and-your-patients-health/course-outlinekey-points (last updated Oct. 2, 2020).

[59] *Nitrogen Dioxide*, AMERICAN LUNG ASSOCIATION, https://www.lung.org/clean-air/outdoors/what-makes-air-unhealthy/nitrogen-dioxide (last updated Feb. 12, 2020); *Sulfur Dioxide*, AMERICAN LUNG ASSOCIATION, https://www.lung.org/clean-air/outdoors/what-makes-air-unhealthy/sulfur-dioxide (last updated Feb. 12, 2020).

[60] *Particulate Pollution*, AMERICAN LUNG ASSOCIATION, https://www.lung.org/clean-air/outdoors/what-makes-air-unhealthy/particle-pollution; *Health impacts of air pollution*, ENVIRONMENTAL DEFENSE FUND, https://www.edf.org/health/health-impacts-air-pollution.

C. Banking

Through either an auction or government distribution, or both, a regulated entity in a cap-and-trade program obtains a number of allowances that it can use to meet its emissions cap. In certain systems, if some allowances are not needed, the entity can stock up their existing allowances and "bank" them for future use.[61] Banking allows regulated entities to achieve "maximum gains" from allowance trading and also protects the general market from sudden price spikes and crashes.[62] However, without stringent limits, companies could stock up on permits and use them in later years when the state's emissions cap becomes more restrictive.[63]

In California's cap-and-trade system, an oversupply of allowances has significantly blunted the effectiveness of emissions-reduction goals, so much so that "industry could potentially cover most or all of its obligations out through 2030 using only stored-up allowances."[64] Because carbon dioxide emissions turned out to be lower than was predicted in the California program's early years, more allowances were initially issued to polluting companies than were necessary to meet the predetermined caps.[65] In California, entities can bank permits indefinitely, so companies could theoretically have a massive supply of permits obtained at an earlier, cheaper price to use against future emissions obligations, when the permit cost is higher.[66] One 2019 study found that over 226 million excess allowances were being held by private California entities from 2013–2018, far exceeding CARB's prediction of 150 million excess allowances circulating by 2020.[67]

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[61] *How Cap and Trade Works*, *supra* note 41.
[62] Schmalensee & Stavins, *supra* note 24.
[63] Song, *supra* note 16.
[64] David Roberts, *California's cap-and-trade system may be too weak to do its job*, VOX (Dec. 13, 2018, 12:43 PM), https://www.vox.com/energy-and-environment/2018/12/12/18090844/california-climate-cap-and-trade-jerry-brown.
[65] *Id.*
[66] *Id.*; *see also California Cap and Trade*, *supra* note 35 (noting that "regulated entities are subject to holding limits, restricting the maximum number of allowances that an entity may bank at any time," but that once held, these allowances never expire.)
[67] Jonah Kurman Faber, *The (other) problem with offsets in California*, CLIMATE XCHANGE (Oct. 18, 2019), https://climate-xchange.org/2019/10/18/the-other-problem-with-offsets-in-california.

As a result, companies could still comply with the program using banked allowances but not actually have to buy new allowances at market rate to meet the cap.[68]

However, the European Union Emissions Trading System and the RGGI states have demonstrated that it is possible to combat the oversupply conundrum.[69] Namely, RGGI maintains a "rule-based ratchet" that makes emissions caps stricter once banked allowances reach a certain level.[70] Under this ratchet, as of 2020, the RGGI states have made two interim adjustments to their overall caps to account for banked allowances, amounting to 139.5 million CO_2 allowances.[71] It is estimated that if CARB implemented a rule-based ratchet, permit prices would increase, thus making it more difficult for investors to over-purchase cheap allowances.[72] While banking is important to protect economic considerations, indefinite banking without restrictions could lead to a less effective cap, as is currently taking shape in California. An optimal system would implement increasingly strict caps and restrict banked allowances as stringently as possible, while continuing to account for economic stability.

D. Offsets

Allowance banking has been criticized for allowing polluting entities to avoid making meaningful emissions reductions, and there is similar debate surrounding whether offsets in cap-and-trade programs effectively address localized air pollution. Regulated entities in cap-and-trade programs can procure "offsets" that allow them to make up for the pollution they produce by reducing emissions somewhere else, hypothetically cancelling out the effect of their own

[68] Roberts, *supra* note 64.
[69] Roberts, *supra* note 64.
[70] Roberts, *supra* note 64.
[71] *Elements of RGGI*, *supra* note 40.
[72] Roberts, *supra* note 64.

emissions.[73] For example, a polluting company, such as a coal-fired power plant, may choose to purchase offset credits from a timber company, which in exchange agrees not to cut down a certain amount of trees.[74] Offset projects exist in areas such as forestry, mine methane capture, and livestock maintenance, to name a few.[75] Policymakers consider offsets to be a vital avenue for investing in unique climate solutions and providing regulated entities with flexible options to meet compliance obligations.[76] However, the EJ movement criticizes offsets because as companies buy into offsite carbon sequestration projects, they can avoid making emissions cuts at their home facilities, allowing co-pollutant emissions to continue unabated and leaving nearby residents to deal with the resulting unhealthy air.[77]

In the U.S., cap-and-trade programs have detailed specific compliance qualifications and have set certain limits on the availability of offsets. In California, a capped entity may use offsets to satisfy at most only 8% of their compliance obligations.[78] The proposed offset project must be approved by a CARB-accredited verification body.[79] The number of offsets allowed to satisfy compliance obligations is set to become more restrictive. Offsets will be allowed for 4% of an entity's total compliance obligations between 2021 and 2025 and 6% between 2026 and 2030.[80] Further, as of 2021, at least 50% of the offsets utilized to satisfy compliance obligations "must come from projects that directly benefit California."[81]

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[73] *Cap and Trade FAQs*, NICHOLAS INSTITUTE FOR ENVIRONMENTAL POLICY SOLUTIONS, DUKE UNIVERSITY, https://nicholasinstitute.duke.edu/focal-areas/cap-and-trade/cap-and-trade-faqs.
[74] Kaswan, *supra* note 47.
[75] *Compliance Offset Protocols*, CALIFORNIA AIR RESOURCES BOARD, https://ww2.arb.ca.gov/our-work/programs/compliance-offset-program/compliance-offset-protocols.
[76] Faber, *supra* note 67.
[77] *Environmental Justice Issues in California's Cap and Trade System*, CALIFORNIA ENVIRONMENTAL JUSTICE ALLIANCE, https://caleja.org/wp-content/uploads/2017/04/EJissuesinCAcapandtrade.pdf.
[78] *The Role of Offsets in California's Cap-and-Trade Regulation Frequently Asked Questions*, ENVIRONMENTAL DEFENSE FUND 2 (Apr. 2012), https://www.edf.org/sites/default/files/OffsetsPercentagesFAQFinal%20041612.pdf.
[79] *Offset Verification*, CALIFORNIA AIR RESOURCES BOARD, https://ww2.arb.ca.gov/our-work/programs/compliance-offset-program/offset-verification.
[80] *California Cap and Trade*, *supra* note 35.
[81] *California Cap and Trade*, *supra* note 35.

Under RGGI's scheme, to propose an offset project, the project sponsor is required to submit a Consistency Application detailing its compliance with state regulatory requirements.[82] Once approved, the project sponsor must consistently submit "monitoring and verification reports demonstrating the achievements of CO_2e emissions reductions or carbon sequestration."[83] These requirements must be met before the state can award any CO_2 offset allowances.[84] RGGI's offset requirements are designed to ensure that the project's CO_2 emissions reductions are "real, additional, verifiable, enforceable, and permanent."[85] Additionally, RGGI requires offset projects to be located within an RGGI state that provides for CO_2 offset allowances.[86] The use of CO_2 offset allowances is restricted to 3.3% of a facility's CO_2 compliance obligation for each period.[87] Seven of the ten participating states award CO_2 offset allowances.[88]

Despite the specifications and limitations contemplated in RGGI's and California's schemes, many argue that offsets ultimately hinder local air quality benefits. For instance, while an offset transaction between a power plant and timber company limiting tree harvesting may result in globally reduced CO_2 emissions and technically satisfy the plant's compliance obligations, the targeted entity could still continue to pollute locally, potentially releasing harmful co-pollutants into the atmosphere.[89] Many argue that it is morally unjust for polluters to buy into faraway decarbonizing projects instead of investing in the communities where their facilities are

[82] *Offsets Requirements*, THE REGIONAL GREENHOUSE GAS INITIATIVE, https://www.rggi.org/allowance-tracking/offsets/requirements.
[83] *Id.*
[84] *Id.*
[85] *Id. See also Cap-and-Trade Regulation Instructional Guidance*, *supra* note 36 (detailing that an offset credit in California's system must be "real, additional, quantifiable, permanent, verifiable, and enforceable and may only be issued to offset projects using approved Compliance Offset Protocols.")
[86] *Offsets*, THE REGIONAL GREENHOUSE GAS INITIATIVE, https://www.rggi.org/allowance-tracking/offsets.
[87] *Id.*
[88] *Id.* Three states, Massachusetts, New Hampshire, and Rhode Island, do not provide CO_2 offset allowances, but facilities in these states "may use CO_2 offset allowances awarded by another RGGI state."
[89] Kaswan, *supra* note 47.

located and where co-pollutants could most directly impact residents.[90] EJ advocates recognize that because cap-and-trade programs are solely focused on reducing global GHG emissions, the same tool cannot be used to account for localized pollutants, and without additional regulation, overburdened communities will continue to suffer.

III: ENVIRONMENTAL JUSTICE

Environmental justice is steeped in the principles of equity and inclusion and strives to involve all people in environmental decision making.[91] Advocates of the movement posit that the ability to breathe fresh air, drink clean water, and live on safe land are fundamental human rights.[92] Traditionally, environmental justice communities have been overburdened by industrial pollution and often bear disproportionate health impacts.[93] EJ communities have raised concerns about cap-and-trade programs, which are heavily dependent on market forces and overall emissions reductions rather than localized, distributive environmental impacts, values that are more in line with the movement's principles.

A. Movement Background

[90] Faber, *supra* note 67.

[91] *Environmental Justice*, CENTER FOR SUSTAINABLE SYSTEMS, UNIVERSITY OF MICHIGAN (Sept. 2020), http://css.umich.edu/sites/default/files/Environmental%20Justice_CSS17-16_e2020.pdf.

[92] *EJ Principles*, ENVIRONMENTAL JUSTICE FOR ALL, https://ej4all.org/ej-principles.

[93] *The Environmental Justice Movement*, NATURAL RESOURCES DEFENSE COUNCIL (Mar. 17, 2016), https://www.nrdc.org/stories/environmental-justice-movement. The EPA uses the term "Overburdened Community" to refer to areas "that potentially experience disproportionate environmental harms and risks." See EJ 2020 Glossary, UNITED STATES ENVIRONMENTAL PROTECTION AGENCY, https://www.epa.gov/environmentaljustice/ej-2020-glossary (last updated Aug. 2, 2019). The EPA uses a screening and mapping tool, EJSCREEN, to consider environmental justice in its programs and policies, but the agency is careful not to use the tool as a means to label any area as an "EJ community." See *How Does EPA Use EJSCREEN?*, UNITED STATES ENVIRONMENTAL PROTECTION AGENCY, https://www.epa.gov/ejscreen/how-does-epa-use-ejscreen. For an analysis of different methodologies used to define EJ communities and how such definitions may affect planning outcomes, see generally Dana Rowangould, Alex Karner & Jonathan London, *Identifying environmental justice communities for transportation analysis*, 88 TRANSPORTATION RESEARCH PART A: POLICY AND PRACTICE 151–162 (June 2016).

The U.S. Environmental Protection Agency (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."[94] One of the major catalysts of the modern environmental justice movement occurred during the Civil Rights Movement.[95] In 1968, black public works employees in Memphis, Tennessee mobilized a strike against abusive sanitation practices and garnered national attention.[96] Rev. Dr. Martin Luther King, Jr. and many other national civil rights leaders came to the aid of the striking workers, ultimately culminating in a deal that brought safer regulations and a stronger union.[97] In 1982, African Americans organized a national sit-in demonstration protesting a toxic landfill in Warren County, North Carolina.[98] Although the protest did not halt construction and over 500 activists were arrested, this event is widely understood to be the spark that ignited the environmental justice movement.[99]

In the wake of the sit-in, the United States General Accounting Office conducted a study using 1980 census data.[100] The Office concluded that three out of four hazardous waste landfills studied were located in predominantly low-income African American neighborhoods. [101] In 1987, the United Church of Christ (UCC) Commission for Racial Justice published a groundbreaking study, *Toxic Wastes and Race in the United States*.[102] The report found that toxic waste sites were

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[94] *Environmental Justice*, UNITED STATES ENVIRONMENTAL PROTECTION AGENCY, https://www.epa.gov/environmentaljustice (last updated Mar. 4, 2021).
[95] *Id*.
[96] *Memphis Sanitation Workers' Strike*, THE MARTIN LUTHER KING, JR. RESEARCH AND EDUCATION INSTITUTE, STANFORD UNIVERSITY, https://kinginstitute.stanford.edu/encyclopedia/memphis-sanitation-workers-strike.
[97] *Id*.
[98] *Environmental Justice Timeline*, UNITED STATES ENVIRONMENTAL PROTECTION AGENCY, https://www.epa.gov/environmentaljustice/environmental-justice-timeline (last updated June 2, 2017).
[99] *Id*.
[100] *Id*.
[101] *Id*.
[102] Commission for Racial Justice, *Toxic Wastes and Race in the United States*, UNITED CHURCH OF CHRIST (1987).

statistically more likely to be located in communities with large minority populations.[103] Hazardous waste areas were disproportionately concentrated in Black, Hispanic, Asian, and Native American communities.[104] This pioneering study was the first of its kind to examine the intersection between race, class, and the environment on a national scale.[105]

In the following years, a number of community environmental action groups were founded, and as the grassroots movement gained substantial traction, the government took notice.[106] In 1992, the George H.W. Bush Administration created the Office of Environmental Equity (now known as the Office of Environmental Justice).[107] In 1994, President Clinton signed an executive order requiring federal agencies to incorporate environmental justice concerns into their initiatives.[108] Each federal agency would need to address the "disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations in the United States."[109]

Over the next 25 years, the EPA, state legislatures, and environmental groups have reflected the needs of environmental justice communities in their work and policies.[110] What started out as a small, radical coalition in the 1960s is now largely recognized as a national movement. However, despite the movement's decades of hard work and progress, the racial injustices in polluted regions are deeply entrenched and low-income communities continue to

[103] *See generally* Robert D. Bullard, Paul Mohai, Robin Saha & Beverly Wright, *Toxic Wastes and Race at Twenty*, UNITED CHURCH OF CHRIST (Mar. 2007), https://www.nrdc.org/sites/default/files/toxic-wastes-and-race-at-twenty-1987-2007.pdf.
[104] *Id.* at viii.
[105] *Environmental Justice Timeline*, *supra* note 98.
[106] *Environmental Justice Timeline*, *supra* note 98.
[107] S.2549, 110th Cong. (2007–2008), https://www.congress.gov/congressional-report/110th-congress/senate-report/498/1.
[108] *Id.*
[109] Exec. Order No. 12,898, 59 Fed. Reg. 7629 (Feb. 11, 1994).
[110] *Environmental Justice Timeline*, *supra* note 98.

experience significant toxic air quality levels and high incidences of disease.[111] A 2017 study found that African Americans are 75% more likely to experience toxic pollution in their neighborhoods than other American citizens.[112] A 2020 study of 3,000 American counties found that a person living in a county with significant levels of fine particulate matter pollution is 11% more likely to die from COVID-19 than someone who lives in a community with even 1 unit less of such pollution.[113]

The movement emphasizes that a more socially, racially, and economically equitable world is not achievable without a keen eye to environmental justice. Despite the setbacks, environmental justice organizations have established themselves as powerful forces in communities across the world and continue to be key advocates in the fight for a healthier environment.[114]

B. Environmental Justice Communities' History with Cap-and-Trade Programs

Climate change has proven to be devastating for marginalized communities, and as climate impacts worsen, the inequality gap will only be exacerbated for socioeconomically disadvantaged people.[115] Vulnerable communities tend to have less resources and capacity to deal with climate catastrophes and are more likely to experience negative impacts on their livelihoods.[116] Cap-and-trade is designed to combat climate change by reducing GHG emissions, but EJ advocates argue

[111] *See Disparities in the Impact of Air Pollution*, *supra* note 4.
[112] *Fumes Across the Fence-Line*, CLEAN AIR TASK FORCE, NATIONAL ASSOCIATION FOR THE ADVANCEMENT OF COLORED PEOPLE (Nov. 2017), https://www.naacp.org/wp-content/uploads/2017/11/Fumes-Across-the-Fence-Line_NAACP-and-CATF-Study.pdf.
[113] Xiao Wu, Rachel C. Nethery, Benjamin M. Sabath, Danielle Braun & Francesca Dominici, *Air pollution and COVID-19 mortality in the United States: Strengths and limitations of an ecological regression analysis* (Nov. 4, 2020), SCIENCE ADVANCES 1, https://advances.sciencemag.org/content/6/45/eabd4049.
[114] *The Environmental Justice Movement*, *supra* note 93.
[115] Alice Kaswan, *Environmental Justice and Equity: Seven Principles for Equitable Adaptation*, 13 SUSTAINABLE DEVELOPMENT L. & POL'Y 41, 41 (2013).
[116] *Fourth National Climate Assessment Volume II: Impacts, Risks, and Adaptation in the United States*, UNITED STATES GLOBAL CHANGE RESEARCH PROGRAM, https://nca2018.globalchange.gov.

that utilizing market-based solutions by themselves gives industry an easy way to maximize their profits and meet CO_2 reduction targets without addressing the localized impacts of pollution.[117] As the United States confronts its deep-rooted legacy of racial injustice and faces the perils of climate change, questions about the fairness of cap-and-trade are of paramount importance.[118]

While many cap-and-trade systems have taken steps to integrate environmental justice concerns, tensions between the EJ community and cap-and-trade proponents are still prevalent. California has been a leader in including the environmental justice movement in its policymaking, but many of the movement's supporters feel that the government is not doing enough as pollution continues to ravage their communities.[119] Still, environmental justice was at the forefront of the state's first major climate law in 2006, known as AB-32.[120] The bill created an Environmental Justice Advisory Committee (EJAC)[121] and required CARB to make sure "that the activities undertaken to comply with [its] regulations do not disproportionately impact low-income communities."[122] The original 2006 bill left decisions about emissions reduction mechanisms up to CARB and did not include cap-and-trade, largely due to many activists' concerns about the lack of public participation in cap-and trade schemes and the ability for facilities in disadvantaged communities to find workarounds to actually reducing emissions.[123] However, the state government and the oil and gas industries continued to support cap-and-trade, and despite EJ

[117] Lam, *supra* note 15, at 24–25.
[118] Julia Rosen, *Can California's Cap and Trade Actually Address Environmental Justice?*, YES! MAGAZINE (Nov. 20, 2020), https://www.yesmagazine.org/environment/2020/11/20/california-pollution-cap-trade/.
[119] *Id.*
[120] Alice Kaswan, *A Broader Vision for Climate Policy: Lessons from California*, 9 SAN DIEGO J. CLIMATE & ENERGY L. 83, 88 (2018).
[121] Cal. Health & Safety Code § 38591(a).
[122] Cal. Health & Safety Code § 38562(b)(2).
[123] Kaswan, *supra* note 120, at 88, 92, 102.

opposition, the December 2008 scoping plan of the bill included an extensive cap-and-trade program to target 85% of the state's emissions.[124]

Evidence from the first few years of the cap-and-trade program may prove that some of the EJ activists' fears came true. A 2018 study found that in the first few years after California's cap-and-trade program was implemented, more than half of the targeted facilities reported increased in-state GHG emissions and thus, increased co-pollutant concentrations.[125] While California boasted a total reduction in GHG emissions, the result could be attributed more to reduced purchasing of carbon-intensive electricity and offsets, rather than local facility emission reductions.[126] Importantly, the neighborhoods that suffered the effects of these increased emissions were usually near the regulated facilities and chiefly composed of people of color and working class, non-English speaking residents.[127] Despite the evidence that air quality had worsened in California, the study's authors admit that there could have been factors at play besides cap-and trade, such as economic recovery after the 2008 recession.[128] Regardless, many environmental justice supporters argue that direct regulations would have simply resulted in more tangible air quality improvement, but that such regulations were traded away in favor for a weaker cap-and-trade program.[129] While it is difficult to discern the exact pollution effects of cap-and-trade, the regime's effect on EJ communities continues to be hotly debated.

Many states recognize that environmental justice communities are statistically more likely to be exposed to harmful air pollution and suffer the effects of climate change, and accordingly, a

[124] Kaswan, *supra* note 120, at 92, 102–05.
[125] Cushing, *supra* note 44 at 10.
[126] Cushing, *supra* note 44 at 10.
[127] Cushing, *supra* note 44 at 9–10. *See also* Kaswan, *supra* note 120 at 108 (adding that in early 2017, a report from the California Office of Environmental Health Hazard Assessment found strong correlations between GHG emissions and toxic emissions and indicated that changes in GHG emissions were likely to have a disproportionate effect on disadvantaged communities.)
[128] Johnson, *supra* note 14.
[129] Johnson, *supra* note 14.

number of cap-and-trade programs require that auction revenue be invested directly in environmental justice initiatives.[130] California requires that 35% of allowance auction proceeds be invested in projects that directly benefit disadvantaged communities, and since 2014, the state has delegated closer to 60% of proceeds to disadvantaged areas, or roughly $3 billion.[131] However, the success of the auctions can be unpredictable, as evidenced by one California auction in 2020 that produced just $25 million in revenue, compared to the $600 million to $850 million usually raised at similar auctions.[132] A more advantageous system would consistently dedicate government resources to EJ communities, without linking the funding stream solely to auction revenue.

IV: THE PROPOSED SOLUTION

Most cap-and-trade systems in their current form show considerable promise, but mechanisms like banking and offsetting may undermine their efficacy. Additionally, energy experts recognize that cap-and-trade alone is not a one-size-fits-all solution, and that more policy mechanisms are needed to fully transition to a clean energy economy, address harmful co-pollutants, and harmonize climate policy with EJ communities and values.[133] A model system

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[130] *See California Climate Investments*, CALIFORNIA AIR RESOURCES BOARD, https://ww2.arb.ca.gov/our-work/programs/california-climate-investments; Carlie Clarcq, *New Jersey's Plan for Investing RGGI Funds Intends to Put Equity at the Forefront*, CLIMATE XCHANGE (Apr. 23, 2020), https://climate-xchange.org/2020/04/23/new-jerseys-plan-for-investing-rggi-funds-intends-to-put-equity-at-the-forefront/. For a discussion about how reinvesting auction revenue to marginalized communities promotes EJ values, see Robert B. McKinstry, *Viewing the Environmental Justice Critiques of Greenhouse Gas Auction-Cap-Trade-and-Invest Programs Through an Ethical Lens* (Jan. 24, 2021), http://dx.doi.org/10.2139/ssrn.3772045.

[131] Rosen, *supra* note 118.

[132] Kevin Stark, *California's Cap-and-Trade Program Generates Severely Reduced Revenue*, KQED (May 28, 2020), https://www.kqed.org/science/1965124/californias-cap-and-trade-program-generates-severely-reduced-revenue. This decrease might be attributable to the coronavirus pandemic and lessened demand for fossil fuels, but some critics view the decrease as a signal of a "weak program design that was vulnerable to surprises."

[133] Alice Kaswan, *Carbon Pricing: Essential but Insufficient*, CENTER FOR PROGRESSIVE REFORM 1,4 (Jun. 2019), https://cpr-assets.s3.amazonaws.com/documents/Kaswan-Carbon-Pricing-0619.pdf.

would (1) reform banking, offsetting, and investment practices, while still preserving some of the flexibility and autonomy of cap-and-trade and (2) stand as one component of a multifaceted climate policy that integrates environmental justice concerns in State Implementation Plans (SIPs) and designates resources toward local air quality monitoring and regulation.

A. Fixing Existing Cap-and-Trade Systems

While cap-and-trade is focused on fighting the greater goal of global climate change, existing systems, in isolation, leave many people to suffer inequitable effects. An ideal system would ensure that companies make more localized emissions cuts by restricting banking and offset use and dedicating auction revenue to EJ initiatives, thus ensuring that more benefits accrue to disadvantaged communities.

i. Reforming Banking and Offsetting

Without specific limitations on banking allowances and offsetting practices, cap-and-trade systems could leave open the possibility for polluters to satisfy compliance obligations without actually reducing their localized facility emissions. Some cap-and-trade systems have demonstrated that stringent caps and rule-based ratchets to control banking are successful, and likewise, some have taken steps toward restricting offsets.[134] While cap-and-trade is designed to reduce global GHG emissions, it can be fashioned to maximize the localized benefits of co-pollutant reductions and address environmental justice concerns by maintaining a stringent and consistently adjusted cap and restricting the use of offsets.

[134] *See* Roberts, *supra* note 64; *California Cap and Trade*, *supra* note 35. *See also* Cushing, *supra* note 44 at 12–13 (explaining that facilities' GHG emissions are often positively correlated with co-pollutant emissions.)

An overallocation of allowances allows polluters to avoid making dramatic emissions cuts while still meeting the government's cap. This has crystallized in California, where an overabundance of permits at the beginning of the program has left regulated entities sitting atop over 100 million banked allowances.[135] While CARB has proposed an increasingly stringent cap, the system will merely act as a "low, steadily rising carbon tax" and companies can easily comply with banked allowances without actually producing the emissions cuts needed to effect change.[136] This conundrum can be easily resolved in a number of ways. As the EU and RGGI have demonstrated, a rule-based ratchet would reduce caps once the system contains too many banked allowances, thus restricting the possibility of indefinite allowances for an indefinite period of time.[137] Additionally, regulators can consider setting a lower price limit for allowances sold at an auction.[138] While cap-and-trade is not designed to set specific carbon prices, a hard price floor can still spur high carbon prices, and the resulting revenue can be invested into environmental justice communities.[139] A successful cap-and-trade system would implement a progressively strict cap combined with periodic cap adjustments and a minimum auction permit price, accounting for the changing allowance market, and ensuring that polluters effectively cut their local emissions and pay for it.

Offsets in cap-and-trade programs have also proven problematic for meeting environmental justice goals. Offsets are a significant contributor in allowance oversupply issues, as is demonstrated in California's system, where the amount of allowances held in private accounts from 2013–2018 was nearly equal to the amount of CO_2 that the program was expected to

[135] Roberts, *supra* note 64.
[136] Roberts, *supra* note 64.
[137] Roberts, *supra* note 64.
[138] Jonah Kurman Faber, *Carbon Pricing in a Just Transition*, CLIMATE XCHANGE (Sept. 26, 2019), https://climate-xchange.org/2019/09/26/carbon-pricing-in-a-just-transition/.
[139] *Id.*; *See also infra* Part IV.A.ii.

reduce.[140] One study estimated that "if one allowance was removed from the market for every offset previously used for compliance, California's current oversupply problem would be nearly cut in half."[141] Further, offsets are widely criticized for allowing polluters to meet global GHG compliance obligations without reducing local emissions, leaving communities near their plants to bear the brunt of threatening co-pollutants. Some groups, like California's EJAC, have called on regulators to eliminate offsets entirely and prioritize directly reducing emissions in EJ communities.[142]

There is some economic merit for keeping offsets in a cap-and-trade system, as they can protect the market in the event of a sudden change in allowance prices, but there are feasible ways to limit their use.[143] The government must impose more geographic restrictions on offsets to ensure that the communities where pollution often occurs do not bear an unequal burden of harm.[144] For instance, the government could require regulated entities to invest in local, impactful offset projects like "electrification of railyards and ports, cleaning up truck fleets, or financing retrofits to reduce GHGs and co-pollutant emissions from other local emission sources."[145] As of 2021, California is already working to geographically restrict offsets, requiring 50% of offset projects to directly benefit California.[146] However, an ideal system would have a more aggressive in-state or regional offset goal, requiring closer to 100% of a cap-and-trade system's offset projects to directly benefit in-state residents. Limiting the use of offsets can generally be beneficial for technological innovation—if companies could not buy offsets, they would be incentivized to invest

[140] Faber, *supra* note 138.
[141] Faber, *supra* note 138.
[142] *AB 32 Environmental Justice Advisory Committee (EJAC) Recommendations*, CALIFORNIA AIR RESOURCES BOARD – 2017 SCOPING PLAN 6 (Nov. 2017), https://ww2.arb.ca.gov/sites/default/files/classic/cc/scopingplan/2030sp_appa_ejac_final.pdf.
[143] Kaswan, *supra* note 47.
[144] Rosen, *supra* note 118.
[145] Cushing, *supra* note 44 at 17.
[146] *California Cap and Trade*, *supra* note 35.

in more long-term solutions, like upgrading their facilities or investing in renewable energy.[147] California is working toward this goal, allowing only up to 4% of a company's compliance obligations to be met with offsets from 2021 to 2025, down from 8%.[148] An ideal system would not only geographically restrict offsets to ensure local benefits, but it would also keep the total of permissible offsets consistently low and limited, which would encourage substantial facility emission reductions and spur more innovative solutions.

ii. Investing Auction Proceeds in Environmental Justice Initiatives

Most existing cap-and-trade programs have deliberately dedicated auction revenue to support disadvantaged communities. However, some EJ advocates take issue with the idea that the auction revenue depends on pollution that often jeopardizes community health.[149] Still, cap-and-trade mechanisms continue to play a significant role in climate policy across the U.S. and can be multidimensional, impactful, and politically viable.[150] While seemingly dismaying to the EJ movement, it is possible to harmonize EJ concerns and successful cap-and-trade mechanisms by consistently dedicating significant revenue to disadvantaged communities.

While only a recent player in RGGI again, New Jersey has this time around demonstrated that strategic, intentional planning can include a pathway to reduce emissions, spur economic growth, and protect disadvantaged communities.[151] The state's Strategic Funding Plan has outlined four major initiatives: (1) catalyzing clean, equitable transportation; (2) promoting blue carbon in coastal habitats; (3) enhancing forests and urban forests; and (4) creating a New Jersey

[147] Eric Niiler, *Do carbon offsets really work? It depends on the details*, GRIST (Jan. 24, 2020), https://grist.org/climate/do-carbon-offsets-really-work-it-depends-on-the-details.
[148] *California Cap and Trade*, *supra* note 35.
[149] *See* Rosen, *supra* note 118.
[150] Kaswan, *supra* note 133 at 1.
[151] Clarq, *supra* note 130.

Green Bank.[152] The initiatives are deliberately designed to give special focus to environmental justice communities, detailing plans such as prioritizing transportation solutions in overburdened communities and giving residents in EJ communities primary access to job training in the Green Bank sector of the economy.[153] The Plan intentionally focuses on projects that will benefit "communities that historically have borne disproportionate burdens of air pollution," a nod to EJ values.[154] While funding is shared across various government programs, New Jersey's Strategic Funding Plan shows that it is possible to incorporate EJ concerns in each and every initiative. An ideal system must consider the EJ communities' input when designating auction proceeds and must deliberately connect initiatives to disadvantaged communities, thus ensuring the most distributive and efficient impacts.

B. Cap-and-Trade as One Component of Multi-Faceted Climate Legislation

With a global climate crisis on the horizon, much of the scientific consensus is that we need multi-faceted environmental policies to achieve a dramatic shift to a clean energy economy.[155] Cap-and-trade is understandably popular as a mechanism to create economically viable carbon dioxide reductions, but even the most efficient system would not adequately provide for GHG reductions and environmental justice concerns.[156] In a model climate policy, cap-and-trade would be just one component of a much more coordinated, effective, and accountable government mechanism. This comment proposes tackling harmful air pollution on a more granular level

[152] *RGGI Strategic Funding Plan, Years 2020 through 2022*, *supra* note 23 at 7.
[153] *RGGI Strategic Funding Plan, Years 2020 through 2022*, *supra* note 23 at 4, 8–10, 17.
[154] Press Release, New Jersey Economic Development Authority, Murphy Administration Releases RGGI Strategic Funding Plan; Announces New Investments in Climate Change Reduction, Environmental Justice and Clean Energy (Apr. 17, 2020) (on file with the New jersey Department of Environmental Protection).
[155] Kaswan, *supra* note 47; Kaswan, *supra* note 133 at 4.
[156] Kaswan, *supra* note 133 at 1–4.

through both 1) State Implementation Plans through the Clean Air Act and 2) enhanced local air quality monitoring at a state legislative level.

i. Federal and State Collaboration through the Clean Air Act

Although companies celebrate cap-and-trade for its flexibility, environmental justice advocates are wary about whether market forces can do much to include and empower disadvantaged peoples.[157] Moreover, cap-and-trade is specifically designed to address global GHG concentrations and is not sufficient to address local air quality issues that EJ communities are primarily concerned with. Fortunately, the United States has a successful legislative framework in place with the Clean Air Act. The CAA has already demonstrated great success in improving American health outcomes[158] and has the potential to be a powerful environmental justice tool, particularly through its State Implementation Plans (SIPs).

In 1970, the CAA was passed with overwhelming bipartisan support, approved unanimously in the U.S. Senate and with only one dissenting vote in the House of Representatives.[159] Over the past 50 years, the Act has led to major improvements in American air quality, with one study estimating that its programs led to a national average annual benefit of $1.1 trillion (adjusted for inflation) from 1970 to 1990, when considering "avoided human health effects, visibility improvements, and damage to buildings and crops."[160] The study also found that the energy waste reduction alone outweighed all of the costs of the CAA, as the economic savings directly benefit

[157] Rosen, *supra* note 118.
[158] Simon Mui and Amanda Levin, *Clearing the Air: The Benefits of the Clean Air Act*, NATURAL RESOURCES DEFENSE COUNCIL 2 (May 2020), https://www.nrdc.org/sites/default/files/benefits-clean-air-act-ib.pdf.
[159] *Id.* at 1.
[160] *Id.* at 4. The study focused specifically on concentrations of SO_2, $PM_{2.5}$, NO_X, and volatile organic compounds (VOCs).

American taxpayers.[161] The Acid Rain Program, which was particularly effective in curbing Acid Rain, is part of the Clean Air Act Amendments of 1990 (CAAA).

The Environmental Protection Agency (EPA) retains oversight of the CAA's implementation and encourages states to work collaboratively with local, federal, and tribal governments to combat air pollution and improve health outcomes.[162] The EPA operates with a unique "cooperative federalism" model, working directly with states to implement environmental laws, a system that it touts is more effective than "one-size-fits-all mandates."[163] The CAA requires the EPA to establish National Ambient Air Quality Standards (NAAQS) guidelines for six criteria air pollutants, which are often of concern to the EJ community as they are detrimental to human health and the environment.[164] States can develop their own SIPs that describe how it will meet the NAAQS.[165] The EPA reviews and validates each SIP and retains the authority to provide guidance or intervene if noncompliance occurs.[166] SIPs are designed to monitor air quality and determine appropriate pollution control strategies, and while they already provide significant opportunities for community engagement, states can build upon this existing framework and intentionally integrate EJ values into the development and implementation of their SIPs.[167]

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[161] *Id.*
[162] *Cooperative Federalism at EPA*, UNITED STATES ENVIRONMENTAL PROTECTION AGENCY, https://www.epa.gov/home/cooperative-federalism-epa (last updated June 22, 2020).
[163] *Id.*
[164] *Criteria Air Pollutants*, UNITED STATES ENVIRONMENTAL PROTECTION AGENCY, https://www.epa.gov/criteria-air-pollutants (last updated Mar. 22, 2021). The six criteria air pollutants are particulate matter ($PM_{2.5}$), photochemical oxidants (such as ozone), carbon monoxide (CO), sulfur oxide (SO_X), nitrogen oxide (NO_X), and lead.
[165] *Government Partnerships to Reduce Air Pollution*, UNITED STATES ENVIRONMENTAL PROTECTION AGENCY, https://www.epa.gov/clean-air-act-overview/government-partnerships-reduce-air-pollution (last updated Jan. 10, 2017). In the absence of a state implementation plan or if an existing plan does not properly comply with the NAAQS, the EPA must develop a Federal Implementation Plan (FIP*). See Basic Information about Air Quality FIPs*, UNITED STATES ENVIRONMENTAL PROTECTION AGENCY, https://www.epa.gov/air-quality-implementation-plans/basic-information-about-air-quality-fips (last updated Oct. 15, 2018).
[166] *Cleaner Air Cleaner Communities*, WE ACT FOR ENVIRONMENTAL JUSTICE 1, https://www.weact.org/wp-content/uploads/2018/01/Cleaner-Air-booklet-24-pg-111517.pdf.
[167] *Id.* at 1–2.

First, it is imperative for state agencies developing a SIP to evaluate social and environmental disparities and identify which communities are most vulnerable to detrimental air pollution.[168] Once disadvantaged communities are identified, state agencies must continuously engage with community stakeholders and collect feedback, structure partnerships, and candidly communicate goals, worries, and limitations.[169] Each community may have different concerns—for example, in areas where the state participates in a cap-and-trade program, residents may be especially troubled by the potential of hotspots near facilities, out-of-state offsets, or disproportionate allocation of auction proceeds.[170]

By developing meaningful relationships with various stakeholders, such as community leaders, educators, industry workers, and residents, the state can assess each community's individualized needs and determine the most effective pollution control strategies.[171] For instance, where the negative externalities of cap-and-trade are a priority, the state may structure their SIP to specifically focus on tracking criteria air pollutant emissions from regulated entities, developing risk management plans, and ensuring that auction proceeds will be earmarked for EJ communities. After a SIP is approved by the EPA, states must take care to continue engaging communities and build on the trusting relationships established during the development phase.[172] A state may accomplish this by enhancing notice-and-comment procedures for disadvantaged communities to ensure meaningful citizen involvement.[173] Additionally, states may consider sharing simple

[168] *Id.* at 6.
[169] *Id.* at 8–11.
[170] *Id.* at 10.
[171] *Id.* at 6–8.
[172] *Cleaner Air Cleaner Communities*, WE ACT FOR ENVIRONMENTAL JUSTICE 16, https://www.weact.org/wp-content/uploads/2018/01/Cleaner-Air-booklet-24-pg-111517.pdf.
[173] *Guidance on Considering Environmental Justice During the Development of Regulatory Actions*, UNITED STATES ENVIRONMENTAL PROTECTION AGENCY 33 (May 2015), https://www.epa.gov/sites/production/files/2015-06/documents/considering-ej-in-rulemaking-guide-final.pdf.

"report cards" and tracking progress surrounding community health, economy, and job creation.[174] Not only do these collaborative stakeholder relationships empower EJ communities, but by memorializing EJ partnerships in a SIP, the state can identify its most pressing climate needs and encourage federal attention toward the plight of EJ issues.

Clean Air Act State Implementation Plans provide a meaningful avenue for EJ communities to have a voice in improving local air quality and create beneficial, symbiotic relationships with the state (and by extension, federal) government. For now, SIPs appear to be one of the most important existing opportunities for EJ communities to have a say in federal policy, as political divisions have made the potential of new federal climate legislation extremely difficult, if not impossible.[175] Independent of the power that the CAA and the EPA vest in states to improve air quality in EJ communities, states must also look to implementing local legislation, using California as a guidepost.

ii. State Legislation to Improve Air Quality

In California, EJ advocates have made their opposition to the state's cap-and-trade program abundantly clear, arguing that the system fails to guarantee local air quality improvements.[176] AB-32 was designed to direct unprecedented attention toward EJ causes, but in practice, the bill overpromised with its broad goals to tackle local pollution and global GHGs in one legislative stroke.[177] When it came time to renew California's cap-and-trade bill in 2017, the state attempted to assuage some EJ concerns with a companion bill, Assembly Bill 617.[178] AB 617 was designed

[174] *Cleaner Air Communities*, *supra* note 166 at 16.
[175] Meredith Fowlie, Reed Walker, and David Wooley, *Climate policy, environmental justice, and local air pollution*, BROOKINGS ECONOMIC STUDIES PROGRAM 18 (Oct. 2020), https://www.brookings.edu/wp-content/uploads/2020/10/ES-10.14.20-Fowlie-Walker-Wooley.pdf.
[176] *Id.* at 5.
[177] *Id.* at 11.
[178] 2017 Bill Text CA A.B. 617. *See also* Fowlie, *supra* note 175 at 12.

to directly address local air pollution while carefully integrating community engagement procedures and placing emphasis on EJ communities' input in the development and implementation of community-level emission reduction plans.[179]

AB 617 created a new regulatory authority and designated funding toward enhanced local air pollution monitoring systems, with a goal to better diagnose specific pollution hotspots.[180] In its first phase, the California Air Resources Board selected 10 regional communities to participate and created "community steering committees," or CSCs, composed of various community stakeholders to identify the residents' needs and concerns.[181] The CSCs then create community air monitoring plans to gather data about local air quality issues, which help to inform comprehensive emission reductions plans.[182] Aggressive air quality monitoring can shed light on how harmful emissions give rise to issues like odor, noise, respiratory diseases, and smog.[183] Steering committees have wide discretion to determine how to best tackle the air pollution affecting their communities, and CARB must ultimately approve each plan and can provide more specific guidance on local emissions reduction strategies.[184] While the program is still early in its implementation phase and its success remains to be seen, it is unique in its collaborative nature and hyper-local focus.[185]

To address local air quality concerns, states can learn from California and earmark funding toward enhanced air quality monitoring systems and community engagement procedures. With

[179] Fowlie, *supra* note 175 at 12.
[180] Fowlie, *supra* note 175 at 12. *See also* Kaswan, *supra* note 120 at 117-19.
[181] Fowlie, *supra* note 175 at 12–13. Some of these stakeholders included business owners, labor organizations, and local residents.
[182] Fowlie, *supra* note 175 at 13–14.
[183] Raul P. Lejano, Wing Shan Kan, and Ching Chit Chau, *The Hidden Disequities of Carbon Trading: Carbon Emissions, Air Toxics, and Environmental Justice*, FRONTIERS IN ENVIRONMENTAL SCIENCE (Nov. 10, 2020), https://www.frontiersin.org/articles/10.3389/fenvs.2020.593014/full.
[184] Fowlie, *supra* note 175 at 14.
[185] Fowlie, *supra* note 175 at 14-15.

more comprehensive and nuanced air quality information, communities are empowered to understand the problems facing their communities, decide how to prioritize immediate action, and advocate for long-term solutions.[186] Environmentally disadvantaged communities are not unique to California, and California's AB 617 can serve as a blueprint for other states and regions. AB 617 also serves as an important reminder (in large part due to tireless EJ advocacy) that the greater beast of global climate change cannot be solved with the same policy tools that tackle local air pollution. Legislators must recognize that in order to empower marginalized communities and further the cause of environmental, racial, and social justice, we need to identify and integrate more collaborative, meaningful, and localized air quality solutions.

V: CONCLUSION

Cap-and-trade systems are appealing to economists, politicians, and environmentalists alike. Emissions trading systems allow companies to comply with pollution caps in an individualized, economic manner, and can be highly effective in reducing atmospheric GHGs, a key contributor to climate change. The U.S. Acid Rain Program demonstrates how cap-and-trade mechanisms can be successfully employed to curb harmful emissions, and California and the RGGI states have shown how EJ concerns may be incorporated into their policies. However, there is still much work to be done to achieve a clean energy economy that addresses deleterious co-pollutants and delivers the most impactful, effective solutions to EJ communities. The EJ movement has fought tirelessly against industry forces and EJ communities have traditionally dealt with the brunt of air pollution. Advocates continue to voice legitimate concerns that companies

[186] Fowlie, *supra* note 175 at 16.

are still able to continue polluting under cap-and-trade and disproportionately burden their communities.

Cap-and-trade systems in their current form are not designed to properly accommodate EJ concerns nor protect disadvantaged communities. However, cap-and-trade programs can reform banking and offsetting practices to ensure real, substantial emissions reductions. States must use existing regulatory authority in their SIPs to integrate EJ concerns and must also impose more governmental regulations to ensure greater accountability, oversight, and public participation. Through careful, cooperative, and multifaceted strategy, we can achieve climate policy that not only addresses the most devastating effects of climate change but also supports and advances environmental justice causes.[187]

[187] *See* Kaswan, *supra* note 133 at 9–11.