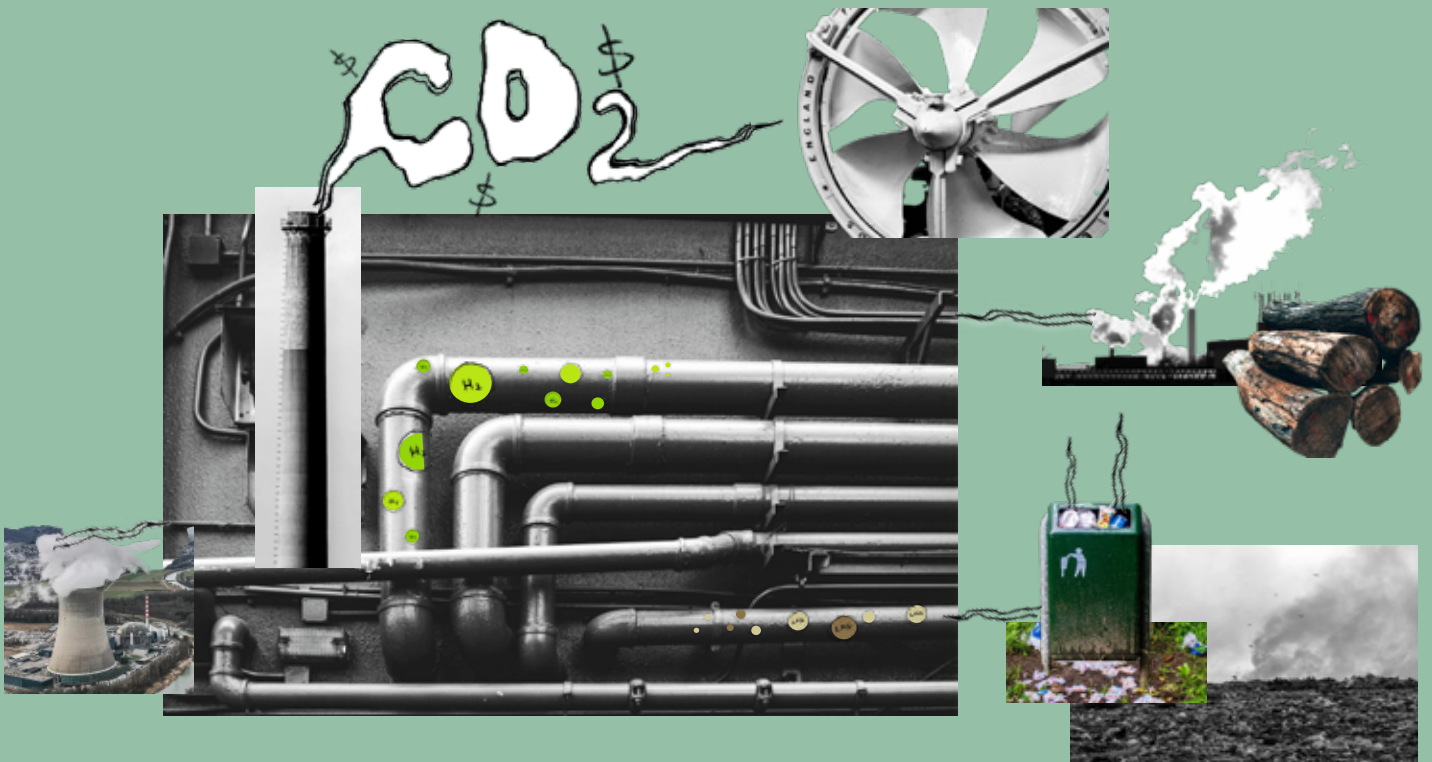


False Solutions for Just Climate Mitigation and Clean Energy Policies

Case studies of New Jersey,
Delaware, and Minnesota



ACKNOWLEDGEMENTS

This report was prepared by Ana Isabel Baptista, Ph.D. and Jennifer Ventrella, Ph.D. Student, who are part of the research team at the Tishman Environment and Design Center at The New School.

The report was completed with invaluable contributions from Stephanie Herron and Michelle Roberts, Environmental Justice & Health Alliance for Chemical Policy Reform; Delaware State Representative Larry Lambert; Ansha Zaman and Anahi Naranjo, The Center for Earth, Energy, and Democracy (CEED); and Angela Mahecha, Tishman Environment and Design Center.

Enrique Valencia at the Tishman Environment and Design Center reviewed and shared essential feedback on the draft. Adrienne Perovich, MPA and Anna Yulsman at the Tishman Environment and Design Center oversaw the writing and publication process.

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Released September 2022
Report Design: Jennifer Ventrella



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I. INTRODUCTION

False solutions is a term used to describe approaches to climate change mitigation that, in reality, further exacerbate the problem of climate change and inequality. The term was widely used among climate justice activists to describe some of the proposals coming out of the UN's climate talks, such as Reducing Emissions from Deforestation and Forest Degradation (REDD) and the Clean Development Mechanism (CDM). These proposals allowed for carbon trading schemes that imperiled indigenous and marginalized communities in the Global South through loss of sovereignty and increased emissions because of offset loopholes, among other injustices. Environmental and climate justice advocates have classified several economy-wide or sector-specific climate mitigation approaches and specific fuels or energy sources as false solutions. Economy-wide and sector-specific false solutions include mitigation policy goals framed as carbon neutrality and "net zero," technological or engineering strategies including carbon capture and sequestration, and geoengineering approaches such as stratospheric aerosol injection and marine cloud brightening.¹ Many climate mitigation policies proposed in the last decade are also increasingly turning to market-based mechanisms focusing on carbon emissions. These mechanisms include carbon cap and trade, carbon taxes, carbon fee and dividends, and carbon offsetting. In addition to market-based and engineering approaches, the third category of false solutions is loopholes in clean energy sources, which include biomass and waste incineration, nuclear, large-scale hydropower, biofuels, and natural gas (which are often framed as bridge fuels), hydrogen (green, blue, gray), renewable natural gas (RNG), and liquefied natural gas (LNG).^{2,3}

Environmental and climate justice advocates have classified several economy-wide or sector-specific climate mitigation approaches and specific fuels or energy sources as false solutions.

In the academic literature, the false solutions narrative is explored along divergent climate discourses.⁴ False solutions imply the concept of climate strategies that do not address the root or structural causes of climate change and environmental injustice and can include market-driven, technological, and economy-wide interventions. Environmental justice (EJ) and climate justice (CJ) movement actors take a critical perspective, placing false solutions in the context of the broader problem of climate change and inequality as products of global capitalism based on resource extraction and inequitable economic growth. Embedded in this critical perspective is not only a radical critique of false solutions but also alternative worldviews relating to a just transition to a fossil-free, less extractive, and regenerative economic and social systems (e.g., Climate Justice Alliance [diagram](#)).

Climate mitigation proposals that include false solutions often reflect a reformist, techno-centric ecological modernization logic. In this view, economic growth and efficiency are prioritized and market mechanisms, as well as technological innovations, are seen as effective means for achieving both ecological and economic gains.⁵ Private sector actors are often charged with developing and managing these solutions, leading to a diminishing role for state and civil society actors in response to climate mitigation.^{6,7} Proponents of the ecological modernization theory suggest that society

can preserve a capitalist economic development and growth model using “green” technologies to propel us towards more efficient and less carbon and materially intensive modes of production.⁸⁻¹⁰ This dematerialization approach demands rapid technological innovations governed by the same market principles and deployed by the same institutions that have profited from the climate crisis globally. Thus false solutions operate within the same neo-liberal market logic that perpetuates inequality by creating sinks or sacrifice zones for EJ communities globally. A product of industry power and the state’s subservience to industry interests, market mechanisms have dominated the climate mitigation policy arena in place of more traditional command and control regulatory approaches that mainstream environmental organizations and states previously supported. These market systems are preferred as more efficient and, in many cases, more politically palatable approaches to driving down carbon emissions across the economy. More recently, technological and fuel-based fixes, like hydrogen or carbon capture and sequestration, have been introduced, adding to the plethora of false solutions that threaten timely, point-source emission reductions.

One of the principal critiques of these market and technological approaches is their carbon-centric approach to mitigation.¹¹ Because carbon emissions are a global greenhouse gas, the focus is on reducing these emissions globally. There is little consideration for the geographic distribution of the reductions or the differential impacts these policies might have on other issues of concern such as human rights, land sovereignty, indigenous cultures, or social justice. While market mechanisms seek to reduce carbon emissions by following price signals and using global sinks and trading to reach a desired level of emissions, there are also concomitant pollutants such as particulate matter, sulfur dioxide, and black carbon, from the same sources that have localized impacts relatively close to the source. Since so much of our industrial and energy infrastructure is co-located in EJ communities, the health and environmental impact of these co-pollutants on EJ communities is significant, and existing regulatory laws have proven inadequate to address the cumulative, disparate impact of these pollutants. Market-based climate mitigation systems are typically agnostic about the location of the carbon drawdowns. Thus, they fail to aggressively draw down health-harming co-pollutants in the short term and the rapid elimination of these sources altogether.

EJ and climate justice advocates’ central critique of these systems is their inability to achieve equitable outcomes, but also their failure to fundamentally alter the control and commodification of energy systems by powerful industry elites.

Market mechanisms are also not well equipped to achieve aggressive decarbonization outcomes because of the price sensitivity of putting a punitively high price on carbon and the lack of consensus on an appropriate price.^{12,13} These market schemes were conceived to achieve more gradual transitions with modest pricing schemes. Even with modest price signals, these market schemes have not produced a political consensus with widespread adoption, and they have not produced deep cuts to emissions.¹⁴ EJ and climate justice advocates’ central critique of these systems is their inability to achieve equitable outcomes, but also their failure to fundamentally alter the control and commodification of energy systems by powerful industry elites.¹⁵ Thus these market solutions are deemed false solutions in a just transition framework that seeks to upend the capitalist control of energy systems. From a procedural justice standpoint, market-based processes often exclude or marginalize those directly impacted

by decision-making, and centralized energy sources diminish sovereignty and community capacities.

Likewise, EJ groups have leveled several key arguments against technological and fuel-based false solutions in the transition towards cleaner fuels and more equitable energy and climate policies. First, false solutions like waste and biomass incineration produce significant amounts of air pollutants. Further, from a distributional justice perspective that considers a just allocation of societal burdens and benefits, these sources produce pollution that disproportionately harms EJ communities and more broadly, harms human and nonhuman health. Energy sources that have been deemed renewable or “clean” but are based on finite material resources, such as uranium for nuclear plants, have lasting and damaging impacts on the environment and human health. Speculative technological solutions, like carbon capture and sequestration, can prolong the viability of the fossil fuel industry while continuing to impact EJ communities. CCS has been particularly relevant in the national context and has received recognition from the IPCC as well as substantial funding from the federal government. However, despite the strong recommendation for CCS in the IPCC Sixth Assessment’s Summary for Policymakers, a report by CIEL and the Heinrich Boell Foundation found inconsistencies between the summary and the full Working Group III report.¹⁶ On closer examination, the report finds that the IPCC report contains “warning signs flashing everywhere” about the limited potential for CCS due to its high cost and low potential for reducing emissions (see Figure 1).¹⁷ These inconsistencies are partly a result of political pressure from countries that profit from fossil fuel production, including the United States and Saudi Arabia.¹⁸

To better understand and contest false solutions, this paper will provide a snapshot of false solutions currently enacted or proposed in three case studies focused on New Jersey, Delaware, and Minnesota. These three state case studies can provide insight into both already entrenched and emerging false solution approaches in policy that EJ advocates have had to respond to across the country.

While climate mitigation policies have largely stalled at the federal level, many states have continued to advance diverse climate policies. These state-based efforts provide useful insights into the opportunities and risks around false solutions approaches becoming prominent features of climate policies. There are also significant state-level EJ responses to false solutions that can provide some useful models for national or trans-local approaches to climate change. Over the last two decades, environmental and climate justice groups have fought against false solutions and proposed alternatives to all three categories of false solutions. To better understand and contest false solutions, this paper will provide a snapshot of false solutions currently enacted or proposed in three case studies focused on New Jersey, Delaware, and Minnesota. These three state case studies can provide insight into both already entrenched and emerging false solution approaches in policy that EJ advocates have had to respond to across the country.

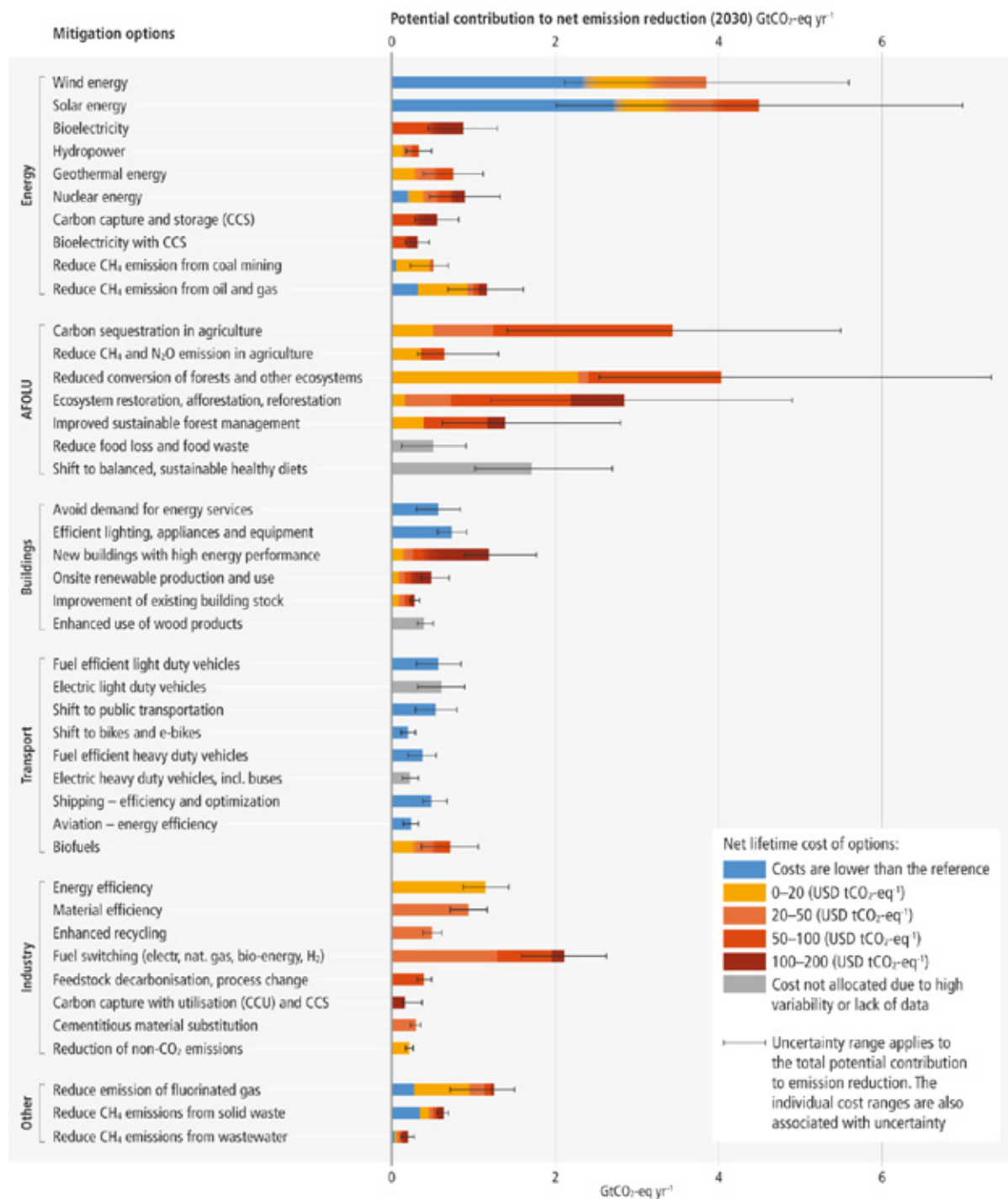


Figure 1: Cost and potential emissions reduction contribution for various energy sources and technologies¹⁹

II. POLICY CONTEXT

Support for false solutions has been driven by a powerful set of actors in the private and public sectors. Among the primary proponents of false solutions are fossil fuel industries and related corporate stakeholders that are seeking to maintain their profitability in the energy transition. Some of these industries co-opt “green” and sustainable practices²⁰ language, apply it to false solutions, and are thus able to advance proposals under the auspices of being “clean.” For example, companies within the aviation industry (Audi, Microsoft, and Stripe Inc.) have financially backed direct air capture companies like Carbon Engineering. Additionally, gas companies have voiced support for the US Department of Energy’s allocation of \$100 million in funding for hydrogen and fuel cell research and development.^{21,22}

In addition to industry proponents, state and federal policies increasingly favor adopting market-oriented and technological approaches, particularly cap-and-trade schemes and, more recently, hydrogen and carbon capture in states and regions throughout the US. This includes the northeast Regional Greenhouse Gas Initiative (RGGI), a regional cap and trade program that establishes a price on power plants’ greenhouse gas emissions and a market-based mechanism for trading allowances in the electricity-generating sector. Other examples include California’s Cap and Trade program (AB32), the inclusion of false solution energy sources like biomass, nuclear, and large-scale hydropower in state Renewable Portfolio Standards, and the adoption of federal tax credits for false solutions like carbon capture, utilization, and storage (CCUS).

Federal Policies

At the federal level, the popularity of false solutions can be seen in the 2020 federal stimulus package, which included over \$6 billion in funding for carbon capture and sequestration and enhanced oil recovery projects. This amount is compared to \$4 billion for regenerative projects such as solar, wind, hydropower, and geothermal energy.²³ At the same time, the Biden administration has extended Trump-era solar tariffs that drive up costs for true renewables.²⁴ The 2021 Infrastructure Investment and Jobs Act (IIJA) includes \$8.4 billion toward carbon capture, utilization, storage, and transportation, \$9.5 billion for hydrogen research and development, and \$6 billion for nuclear energy infrastructure, mainly micro and small modular nuclear reactors.²⁵ \$8 billion of the hydrogen funds will be used to establish four “clean” hydrogen hubs in the U.S. However, the Act considers hydrogen produced from biomass, fossil fuels with CCUS, and nuclear as “clean.” More broadly, the law defines a “clean energy project” to qualify several false solutions, including direct air capture, fossil-fueled electricity generation with CCUS, and advanced nuclear technologies. A separate ‘Miscellaneous’ category includes \$140 million toward solar and wind R&D. This funding breakdown shows that the federal government is including and prioritizing false solutions within its energy portfolio. Additionally, it signals to states and regions in the process of transitioning to cleaner energy sources that false solutions are an acceptable tool to address climate change mitigation.

There are several ways in which federal and state governments can drive market investments in false solutions and prop up economically infeasible and technologically unproven false solutions. These mechanisms include direct financial assistance (grants) to private firms developing technologies, off-take agreements, utility cost recovery mechanisms, inclusion in the Clean Energy Standard, and tax incentives.²⁶ Some of the most obvious ways governments support false solutions are through direct financial assistance to projects from the research and development phase to the implementation of projects with grants or forgivable loans.

An analysis conducted by Oil Change International found that the fossil fuel industry receives an estimated \$20 billion in direct subsidies for fossil fuel production alone from federal and state governments.²⁷ Other mechanisms include off-take agreements, which can require utility companies to provide a guaranteed buyer for electricity produced with specific technologies, such as CCS. Often utilities can then pass the cost of these agreements onto customers to ensure favorable rates of return even when the technologies are not viable or cost-effective. Many states have clean energy standards or renewable portfolio standards that allow utilities to gain credits for energy produced using false solutions such as nuclear, waste, or even CCS. A mechanism specific to CCS is when states assume long-term liability related to the geologic storage of CO₂, which may reduce long-term costs for private project developers. One of the most significant mechanisms for supporting the market growth of false solutions is the targeting of false solutions for tax incentives.

Incentivizing false solutions harms EJ communities in multiple ways, such as: (1) diverting scarce public funding that could go towards regenerative renewables and (2) sinking resources and time into stranded assets that will harm communities for decades beyond the initial investment (3) further delaying the complete decarbonization of the economy and independence from fossil fuels (4) exacerbating the localized impacts of false solutions projects on EJ communities at the fenceline, or border of a polluting site, making them even more vulnerable to climate change.

Federal Tax Incentives for False Solutions²⁸

Tax incentives have played a significant role in subsidizing the traditional fossil fuel industries like oil and gas extraction in the US. However, there are significant, lesser-known tax incentives that direct public funding towards CCS infrastructure like the 45Q and 45V corporate tax loopholes, which allow companies to reduce their corporate tax rates or exempt them from taxes altogether.

The Biden Administration's budget includes five categories of fossil fuel tax provisions, including cost recovery, percentage depletion, tax credits, an 'other' category, and international provisions that would raise taxes on U.S. production and ownership of fossil fuels.²⁹ Initially, there were two major fossil fuel tax credits that the budget proposal would eliminate. The first was the Enhanced Oil Recovery (EOR) Credit, which is a \$7.8 billion tax provision that allows companies to reduce tax liability related to EOR projects.³⁰ The second tax credit was the Credit for Marginal Oil and Gas Wells, which credits \$3.90 per barrel of oil and \$0.65 per 1,000 cubic feet of natural gas produced from marginal oil and gas wells.³¹ However, the EOR credit was ultimately extended under the 2022 Inflation Reduction Act (IRA).

The tax credit known as 45Q is a federally-funded tax incentive for carbon storage.^{32,33} Following the passage of the federal 'Furthering carbon capture, Utilization, Technology, Underground storage, and Reduced Emissions' (FUTURE) Act in 2018, the price of each ton of CO₂ stored underground for a minimum of 12 years was increased from \$20 to \$50, and from \$10 to \$35 per ton for use in Enhanced Oil Recovery (EOR). Under the IRA, the Biden administration increased the credit to \$85 per ton for geologically sequestered carbon and \$60 per ton for EOR, which further incentivizes CCS projects and subsidizes the fossil fuel industry.³⁴ EOR is a process that injects high-pressure CO₂ into depleted oil wells to extract new oil that will then be burned and result in pollution. Under the FUTUREs Act, Direct Air Capture (DAC) of CO₂ is also eligible for tax credits through 45Q, which was increased under the IRA to \$130-180 per ton. The federal Alternative Fuel Tax Credit applies to liquefied hydrogen fuel.³⁵ In early 2021, a bill was introduced that would extend an existing tax credit for 'renewable' biodiesel through the end of 2024 and extend tax credits to other alternative fuels, including compressed or liquefied biomass and certain liquefied fuels derived from biomass, excluding ethanol and others.³⁶ In May 2021, the Treasury Department produced the "Green Book," which proposes federal tax incentives. Some of the proposals included the expansion of the Code Section 48 investment tax credit (ITC) to include hydrogen storage for conversion to energy, a credit for electricity generation from existing nuclear power facilities, and a new six-year production tax

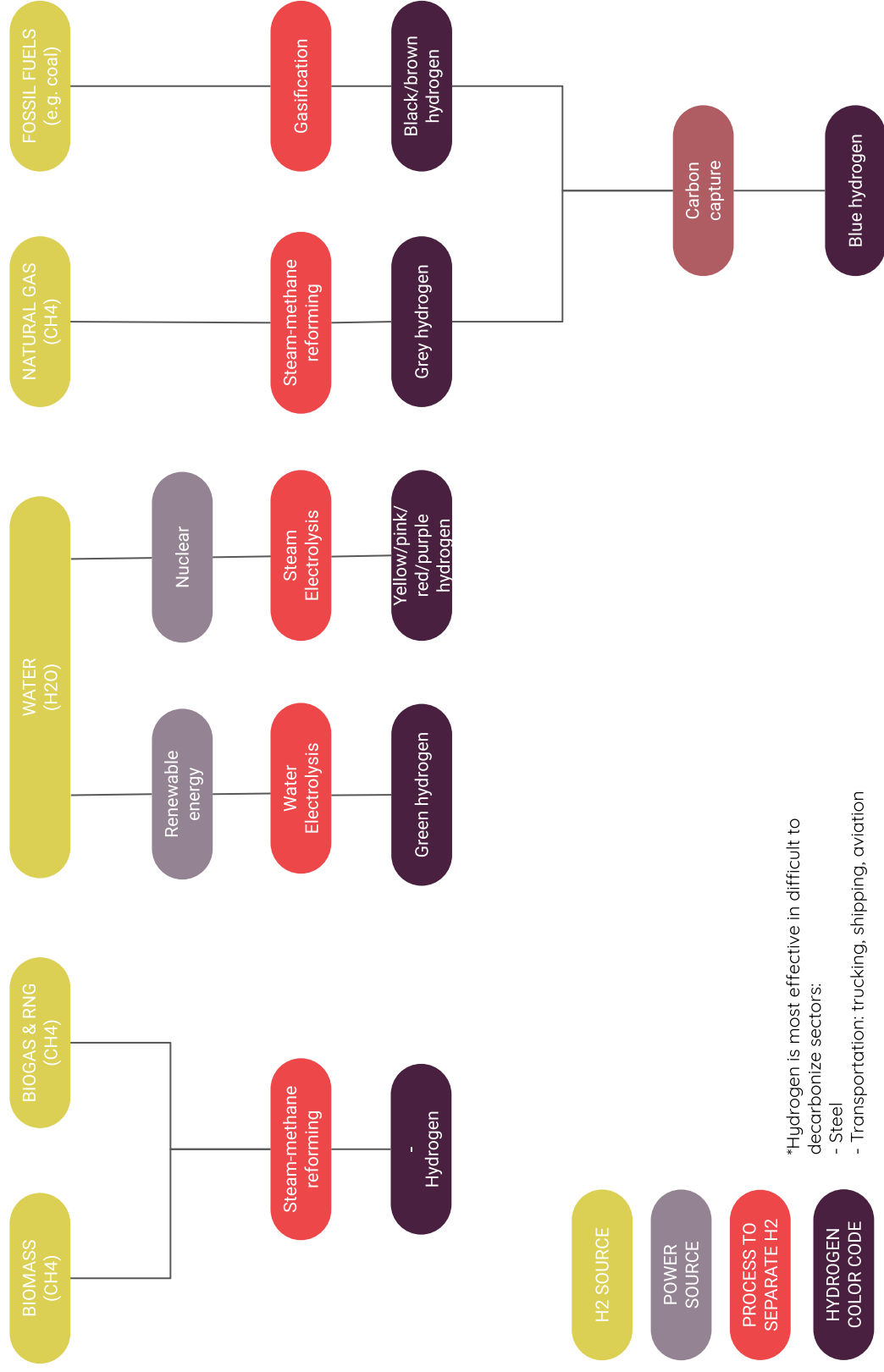


Figure 2: Different colors of hydrogen and their sources

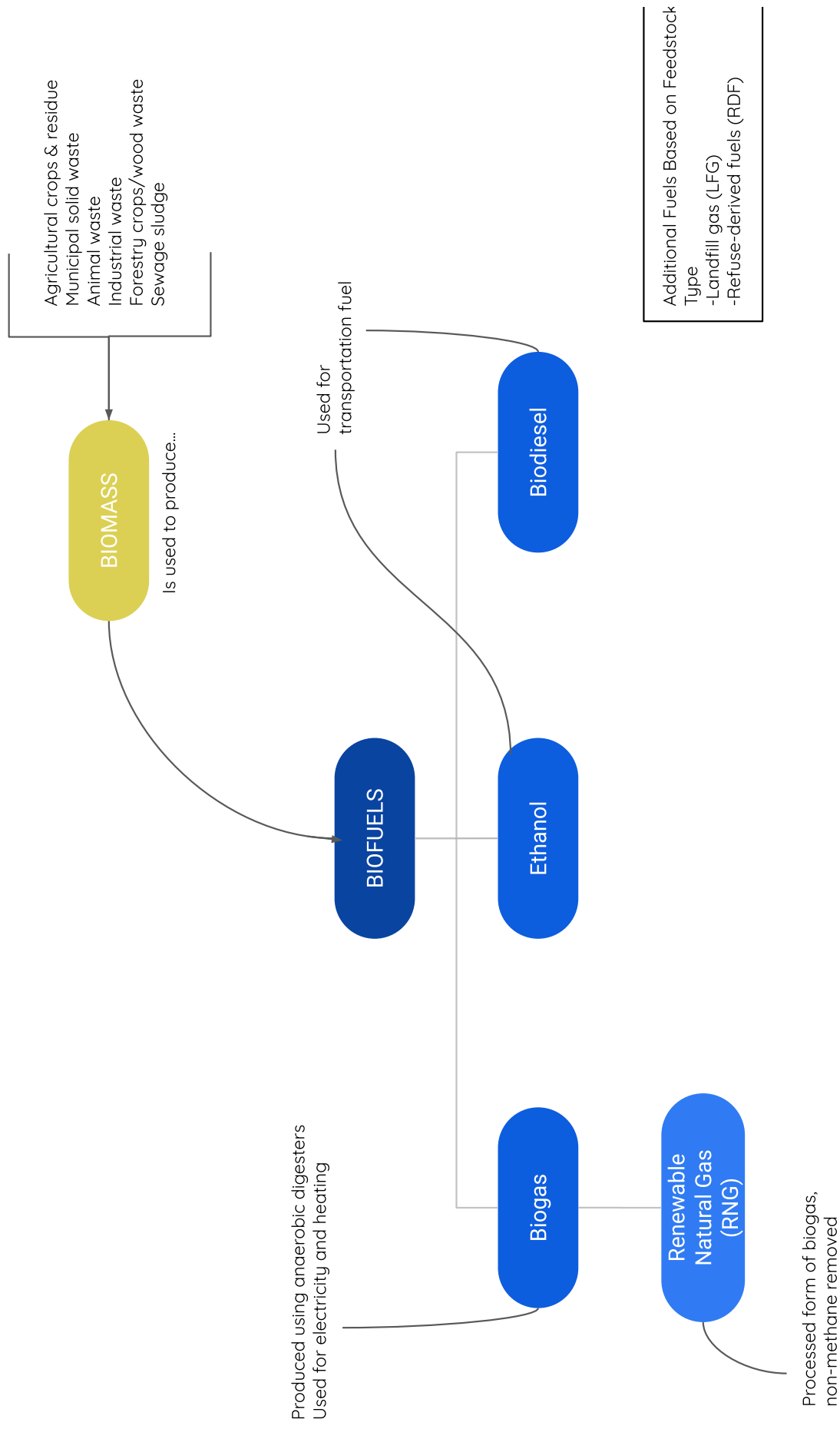


Figure 3: Types of biofuels and their sources

credit (PTC). The PTC would help subsidize the production of low-carbon hydrogen in qualified facilities for which construction begins before 2026 and would qualify both green (renewables derived) and blue (natural gas derived with carbon capture) hydrogen.³⁷ When the IRA was passed in August 2022, it created a new tax credit known as 45V, which subsidizes clean hydrogen via investment and production tax credits.

Reformist Support for False Solutions

While the federal and state government support for false solutions is the main driver for these approaches, many instrumental supporters also come from mainstream environmental non-governmental organizations (NGOs) both within the US and internationally. These NGOs represent a powerful interest group that can shape environmental policy agendas and largely embody a reformist, standard environmental management approach to climate change. This reformist approach implies an often technical and incremental set of strategies aimed at tweaking the current energy systems but not the wholesale transformation of these systems. For example, in the 2000s, some of the most influential environmental organizations promoted natural gas investments as a “bridge” fuel to transition away from coal plants.³⁸ One of the main points of divergence between mainstream environmental organizations and EJ groups is the former’s support of market-based climate mitigation strategies such as cap and trade or carbon pricing to achieve large-scale climate mitigation policies. For example, the Citizens’ Climate Lobby promotes a carbon pricing scheme that can generate a carbon dividend for households as a way to make carbon pricing more palatable to the general public and gain greater political support for an economy-wide approach to reducing carbon.³⁹ A majority of the largest environmental organizations in the US have voiced support for some form of carbon trading, pricing, or offsetting policy to address climate mitigation.⁴⁰ A notable outlier is Greenpeace, which is actively calling for an end to the use of carbon offsets and calling them a “scam.”⁴¹ While these organizations seem to be shifting away from offsets in the fossil fuel sector toward land sector carbon and calling for high-quality offsets that consider co-benefits and require free prior informed consent, they are still actively promoting them to some extent.⁴²⁻⁴⁶ The Nature Conservancy partnered with BlackRock, Disney, and JPMorgan for carbon offsets, and after coming under fire for the practice, is now undergoing an internal audit for transparency.^{47,48}

While these same environmental groups catalyzed the adoption of the regulatory command and control apparatus of the state in use today, they have become among the most avid supporters of market-based climate mitigation proposals in recent decades. This decidedly market-centric approach to climate policy means that mainstream environmental organizations are often in direct opposition to EJ and climate justice advocates calling for more transformative and equity-centered approaches.

Private Sector Drivers of False Solutions

While market-based approaches are still pervasive in policy, the second wave of engineering-based solutions became prevalent around 2010 and has increased in popularity. One of the key drivers of the techno-fixes approach to climate change is largely private sector investments coming from individual actors to traditional fossil fuel corporations and private equity investment firms seeking out new frontiers for capitalizing on climate change transitions. For example, in early 2021, Bill Gates announced financial backing for a solar geoengineering project that has since been put on hold over ethical concerns.⁴⁹ Gates’ foundation also committed \$1 billion from several corporations, including BlackRock, General Motors, American Airlines, and Bank of America, to accelerate a “new industrial revolution.” Investments from this fund include technologies for carbon capture and hydrogen generation.⁵⁰ Also in 2021, Elon Musk put up \$100 million for a prize to award the best technology for capturing carbon emissions to support a SpaceX program that would take CO₂ out of the atmosphere and convert it to rocket fuel using DAC.^{51,52} India’s Mukesh Ambani has pledged millions for his company Reliance Industries Ltd. to develop new technologies that convert carbon dioxide emissions into products and chemicals, also investing in CCS and chemical recycling processes.⁵³ Bill Gates’ investment fund, Breakthrough Energy Ventures, funds

green hydrogen and biofuel companies and is a proponent of technological and natural carbon removal.^{54,55}

Fossil fuel industries are also capitalizing on investments from the federal government in false solutions like CCS and hydrogen. In 2021, Exxon announced an investment of \$15 billion toward CCS hubs, biofuels, hydrogen, and market-driven policies.^{56,57} A blue hydrogen production plant is being planned and a CCS project near Houston's Baytown refinery, which is all part of Exxon's plan for a \$100 billion CCS zone at the Houston Ship Channel.^{58,59} This public-private project would use funding from government and private investors.⁶⁰ BP also has a blue hydrogen project planned to be the UK's largest project, generating 1 GW of power; the company has signed an agreement with Venator, Northern Gas Networks, and Tees Valley Combined Authority. BP is also working on projects with Shell and Equinor.⁶¹ Projects are popping up across Europe with service dates as early as 2023.⁶² Among several green hydrogen projects, BP and the Aberdeen City Council are pitching a green hydrogen hub in Scotland, where a final investment decision will be made in 2023.⁶³ A study by the watchdog group Geo-engineering Monitoring estimates that, globally, the fossil fuel industry accounts for a majority of the investments in CCS and CCUS projects, stating, "The data shows that the fossil fuel industry is involved with about 85% of the known CCS projects. It can be assumed that fossil industry participation is actually higher than 85%, given that not all CCS projects disclose all of their sponsors. Fossil fuel companies involved in CCS projects include, among others, BP, ConocoPhillips, Enhanced Energy, Equinor, Gassco AS, INEOS, PEMEX, Perdure Petroleum, Petrobras, Santos, Shell, Total, TUPRAS, and Vattenfall."⁶⁴ Major firms like Chevron, Occidental Petroleum, and BHP have also invested in new firms like Carbon Engineering, focused on carbon capture for disposal and synthetic fuel production.⁶⁵ The technology is attractive to many fossil fuel companies seeking to use the captured carbon to inject into their oil fields to increase pressure and extract more oil. This process called "enhanced oil recovery" (EOR) is one of the primary and longest-standing uses of CCS to date and where the interest of fossil fuel companies originates. The Center for International Environmental Law (CIEL) produced a report in 2019 detailing the significant role that the fossil fuel industry plays in driving false solutions grounded in geo-engineering and CCS, "For oil companies, CCS presents an opportunity for additional oil production because the primary uses of captured carbon thus far identified are the production of more oil or other petrochemical products."⁶⁶

These emerging proposals use technical solutions driven by the fossil fuel sector, incentivized by the federal government and supported by reformist NGOs, to gain a powerful foothold in climate and energy policies. These alliances allow fossil fuel industries to avoid responsibility for their emissions, exacerbate environmental injustices, and increase their profits by driving a popular narrative around climate "solutions."

Climate Justice Responses to False Solutions

Support for false solutions from industry, NGOs, and public institutions and the underlying logic used to justify this support are highly contested by EJ and CJ actors. Historically, the United Nations Framework Convention on Climate Change (UNFCCC) Conference of Parties (COP) has been a key convening point for EJ and indigenous groups to have more targeted pushback and influence on global climate agendas. Although many EJ and CJ groups were geographically disparate, they united over the common goal of reducing pollution at the source and putting an end to the creation of sacrifice zones. Once these groups became aware of early COP's proposed market-based interventions, they began to mount concerted campaigns to communicate the harms of carbon pricing to the general public.

Today, EJ discourses are also becoming more prominent in official policy arenas at the national, international, and subnational levels, including specific callouts of false solutions and proposals for alternatives. While there is no single, unifying multi-scalar EJ definition, part of the work of groups like the Climate Justice Alliance is to develop a common framework. In the U.S., a group of environmental and EJ organizations wrote a letter to Congress in March 2021⁶⁷ expressing concern about the Clean Futures Act (H.R. 1512), which sets clean energy standard targets for 2035. Specifically, the groups were concerned with the characterizations of

natural gas, biomass, and nuclear power as clean energy sources and called for the rejection of these types of false solutions. Jacqueline Patterson, the former director of the environmental and climate justice program at the National Association for the Advancement of Colored People (NAACP), published an op-ed warning against using false solutions, including “techno-fixes,” which go hand in hand with attempting to treat complex issues with single-issue solutions.⁶⁸ At the state level, both the Global Alliance for Incinerator Alternatives (GAIA) and the Union of Concerned Scientists (UCS) have called for a complete shutdown of municipal solid waste (MSW) plants. The Climate Justice Alliance published a letter protesting the regional carbon trading program, Transportation and Climate Initiative (TCI), explicitly identifying it as a false solution.

EJ and CJ leaders propose alternatives in response to false solutions, including several guiding philosophies and movements. A Just Transition, which the Just Transition Alliance considers a principle, process, and practice, aims to transition communities and workers from “unsafe workplaces and environments to health, viable communities with a sustainable economy” under the principle that a healthy economy and environment can co-exist. Further, the process of a just transition must be equitable and prioritize frontline workers and frontline communities in decision-making.⁶⁹ Climate justice and energy democracy are also important alternative frameworks used by EJ movement actors in response to false solutions.⁷⁰ Rather than a single, technical fix to climate change or the false promise of a gradual business-as-usual, market-driven approach to climate mitigation, many EJ advocates are proposing diverse, multi-sectoral, complementary policies to drive a more transformative, practical, and just transition away from fossil fuels. For example, EJ groups are advocating for:

- mandatory emissions reductions policies from the power sector and as part of any climate mitigation strategy⁷¹
- legislation and policies for a cumulative impacts approach to permitting and regulatory oversight of existing industries, for example, New Jersey’s Cumulative Impacts Legislation⁷²
- moratoriums or bans on health-harming proposals in EJ communities⁷³
- targeted regulatory mandates that require increased mitigation from a wide spectrum of sources of climate change and pollution, for example, EPA mercury rules⁷⁴
- community owned and other collective ownership models for renewable energy such as solar and wind installations, such as New Jersey’s community-owned solar program⁷⁵
- investing in renewable energy battery storage and microgrids for decentralized solar and wind energy installations, such as New Jersey’s Town Center Distributed Energy Resources Microgrid Program^{76,77}
- community energy planning to identify targeted needs and resources for EJ communities, facilitated by programs like NJ Board of Utilities’ (NJBUS) Community Energy Plan Grant Program⁷⁸
- weatherization and energy efficiency deployment in low and moderate-income households along with, such as Minnesota’s Weatherization Assistance Program⁷⁹
- training and workforce development, job placement and job creation in renewable energy manufacturing, installation and energy efficiency implementation, like Renewable Energy Partners (REP), Minnesota Minority Business Enterprise that provides green jobs training⁸⁰
- development of community or municipally owned utilities focused on renewable energy.⁸¹

Under a climate justice approach to climate mitigation, the focus is on driving down all the harmful air pollutants and toxins associated with fossil fuels and promoting bottom-up solutions, starting in the EJ communities most impacted by fossil fuels and climate change. Community-owned solar and renewably powered microgrids are some examples of alternatives to the status quo business model of energy systems.⁸² In one conceptualization of this paradigm, residents are not only passive consumers of energy from big, private utilities, but take charge of their own energy supply to redistribute ownership of energy resources to communities as a form of social, political, and economic empowerment.

State Policy Context for False Solutions

The presence or prevalence of false solutions across states varies widely according to the political climate, incentive structures, legacy of industry and state regulation, and the existing base of organized EJ groups and communities. There are a variety of false solutions that show up in state-level policies, beginning with sector-specific or economy-wide carbon mitigation policies like California's cap and trade program and the Northeast's Regional Greenhouse Gas Initiative. There are also false solutions embedded into the renewable portfolio or clean energy standards for many states where the definition of "clean" or "renewable" energy is often contested by industry and environmental or EJ groups. For example, several states include incineration and nuclear energy in their RPS. There are also industry-led pushes to incentivize emerging false solutions under the guise of green or clean technologies. For example, 14 states have passed similar bills to exempt plastics incineration or "chemical recycling" from solid waste regulations, a proposal developed and promoted by the American Chemistry Council. Both Louisiana and Texas already have tax incentives promoting investments in CCS and are seeking increased oversight authority in the permitting of the infrastructure and development of these new facilities.⁸³ Lobbying by industry groups seeking regulatory and financial support for false solutions targets state legislatures to promote little-known and unproven technologies using the guise of clean and renewable climate solutions to wedge into local contexts. These efforts can sometimes be difficult to counter or recognize due to the limited resources of EJ groups to watchdog rapidly emerging state legislative proposals.

The following state-based case studies serve as a snapshot of the emerging trends and landscape of false solutions found in state policies. The review of current and proposed false solution policies is not meant to be exhaustive but illustrative. It provides a window into trends across different states where EJ advocates can work to counter false solutions and advance a much more transformative climate justice platform.

False solutions to climate mitigation have arisen in various policy venues and have a particularly powerful place in state-level approaches to climate change. While the federal government has been unable to advance any significant climate change policy to date (notwithstanding the enactment and subsequent repeal of the Clean Power Plan rules), states and regions in the US have been advancing a variety of climate mitigation policies. These state-level policies serve as important testing grounds both politically and strategically in the race to implement ambitious climate targets. Which version of climate mitigation these states adopt and how well they meet both climate and environmental justice aims are important signals to the federal government about the direction of a national climate agenda. The following state case studies of New Jersey, Delaware, and Minnesota help to inform the ongoing debate over false solutions to climate change by highlighting the potential equity implications of such policies. The case studies delineate the types of false solution policies adopted or proposed, the political and policy context of adoption, and the equity implications of and responses to these policies.

Desk research using keyword searches of each state and each false solution was conducted from the study period of 2020-2022, resulting in a snapshot list of policies, projects, and plans. The keywords used for the search included: net zero, carbon cap and trade, carbon tax, carbon offset, carbon capture and sequestration, geoengineering, biomass, incineration, nuclear, hydropower, biofuel, natural gas, hydrogen, renewable natural gas, and liquefied natural gas. The research examined state bills enacted and proposed in the last few years (2018-present), state agency plans, policies, and programs, and statewide initiatives or funded projects driven by state government entities. The search compiled information about these policies and initiatives from state legislative websites, newspaper articles, agency reports, academic journal articles, and websites, as well as any NGO websites or reports specific to each state. This compilation is not meant to be an exhaustive list but provides a sample of the most prominent false solutions currently in the landscape of climate mitigation responses in each state. False solutions that appeared in the early stages of desk research were then tracked to add updates and changes that occurred throughout the study period. Desk research was triangulated with information from semi-structured key informant interviews with EJ leaders from each of the case study states, conducted in Summer 2021. The case studies may also serve as a guide for interrogating future proposed state and federal climate policies with respect to equity outcomes.

III. CASE STUDIES

NEW JERSEY

New Jersey has enacted several false solution strategies both in its definition of “renewable” energy and in its overall approach to climate mitigation. The false solutions adopted in New Jersey include market-based approaches to climate mitigation such as participation in the Regional Greenhouse Gas Initiative (RGGI), and the promotion of false “renewable energy” sources such as waste incineration and nuclear power. These false solutions have generated considerable opposition and debate in the state as environmental justice advocates contest these false solutions and propose alternatives. The following sections detail the false solution policies in New Jersey, some of the equity implications of these policies, and any proposed alternatives or responses to these policies to date.

Climate Mitigation Goals & Policies

New Jersey’s [Energy Master Plan](#) (EMP), reissued in 2019, sets the goal of 100% clean energy by 2050, defined as 100% carbon-neutral electricity generation and maximum electrification of the transportation and building sectors.⁸⁴ The EMP sets seven main strategies to achieve carbon neutrality. These include reducing energy consumption and emissions from the transportation sector, accelerating the deployment of renewable energy and distributed energy resources, maximizing energy efficiency and conservation and reducing peak demand, reducing energy consumption and emissions from the building sector, decarbonizing and modernizing the energy system, supporting community energy planning and action, and expanding the clean energy innovation economy. However, the plan has been criticized for its continued support of the inclusion of ‘waste-to-energy’ incineration and nuclear energy as qualifying energy sources in the renewable portfolio. It also lacks sufficient support for a less utility-driven monopoly of its mitigation programs, such as decentralized micro-grids, community-owned solar, or local control over its energy efficiency programs.

In 2020, the NJ Department of Environmental Protection (DEP) released [New Jersey’s Global Warming Response Act 80x50 Report](#), setting targets for reducing greenhouse gas emissions by 80% from 2006 levels by 2050.⁸⁵ The plan follows DEP’s [New Jersey Scientific Report on Climate Change](#), which projected increased erosion due to sea-level rise that would affect the state’s tourism industry and economy.⁸⁶ To achieve these emissions targets, three main strategies are proposed, including (1) replacing internal combustion vehicles with electric vehicles, (2) converting space and water heating in residential and commercial buildings to electric heat, and (3) replacing fossil fuels in the electric generation sector with renewable energy sources, such as wind and solar. However, in addition to wind and solar, the plan also includes false solutions such as renewable biogas, renewable natural gas, renewable diesel, and renewable hydrogen. The plan also recommends retaining all three of New Jersey’s nuclear plants. Additionally, waste-to-energy processes, such as waste incineration, are considered a Tier II class renewable energy source under New Jersey’s Renewable Portfolio Standard (RPS).⁸⁷ The plan also recommends evaluating the potential for forest carbon markets in the state. In response to the 80x50 Goal, the New Jersey Department of Environmental Protection and Agriculture investigated the potential for carbon sequestration in the [Natural and Working Lands Strategy Scoping Document](#) released in December 2021.⁸⁸ The Scoping Document includes carbon capture and sequestration in

forests, grasslands, wetlands, agricultural lands and aquaculture, developed lands, and aquatic resources and habitat but does not include industrial or geologic forms of CCS that have been opposed previously in the state.

The plan recommends the evaluation of trading allowed under the RGGI Cap and Trade System. New Jersey withdrew from the regional cap and trade program in 2012 and rejoined in January 2020.⁸⁹ EJ advocates in New Jersey led efforts that were initially aimed at halting New Jersey's re-entry into the program. When those efforts were unsuccessful, the state's EJ community attempted to ensure the state's RGGI plan incorporated equity considerations for communities most affected by the energy sector, including a mandatory emissions reduction mechanism tied to the power sector.⁹⁰

In the transportation sector, New Jersey has participated in the regional [Transportation and Climate Initiative](#) (TCI) since 2018.⁹¹ Launched in 2010, the Transportation and Climate Initiative (TCI) is a regional collaborative of Northeast and Mid-Atlantic states as well as the District of Columbia that coalesces around the goal of reducing greenhouse gas emissions in the transportation sector. Members of the TCI developed the Transportation and Climate Initiative Program (TCI-P), which proposes requiring large gasoline and diesel fuel suppliers to purchase allowances related to pollution generated by their fuels. Purchasing allowances is a market-based strategy that enables fuel suppliers to continue to produce polluting gasoline and diesel fuel at the same rates. Funds generated through the purchase of allowances can then be spent based on the specific transportation needs of each jurisdiction.⁹² As one of the participating states, NJ has worked with other states in hosting listening sessions, hearings and reviewing program scenarios. However, the state was not an initial signatory to the TCI-P in the first round of states signing on to the model rule, citing concerns raised by EJ advocates.^{93,94} EJ organizations across the U.S. criticized the program for its reliance on carbon trading, its inattention to equity concerns about emissions reductions in the diesel sector, regressive nature of revenue generation, and the general lack of transparency or accountability to EJ communities.⁹⁵ To date, although New Jersey has participated in the overall TCI collaborative, it has yet to endorse the TCI program. The lack of support for this program in New Jersey is, in part, due to the active mobilization of opposition and alternatives led by EJ advocates in the state. This demonstrates the potential of alternative, climate justice-centered proposals to counter false solutions to climate change.

False Solutions to “Clean” and “Renewable” Energy Sources

Renewable Portfolio Standard

New Jersey updated its RPS requirements in May 2018. They established a target that 35% of energy sold in the state come from renewable sources by 2025 and 50% by 2030 from Class I renewable energy sources. Class I energy sources include solar, wind, wave or tidal action, geothermal, landfill gas, anaerobic digestion, fuel digestion, fuel cells with alternative fuels and some sustainable biomass with permission from DEP officials. The state requires 2.5% of electricity to come from Class II, including hydropower facilities between 3 and 30 megawatts and the incineration of municipal solid waste or “waste to energy” facilities. In 2018, the state also passed a net metering bill (*AB 2204, an act concerning certain electric generation facilities, and supplementing P.L.1999, c.23 (C.48:3-49 et al.)*) that applied specifically to Class II renewables to enable waste incinerators to qualify for net metering incentives that pay a premium for the sale of their excess energy production.⁹⁶ Under this bill, incinerators can also sell power directly to end-use customers located within 10 miles of the facility and net-metered within the service territory of a single electric utility, allowing for an additional revenue stream for incinerator facilities.

New Jersey also set the carve-out of electricity generation from solar energy to be 5.1% by May 31, 2021 and gradually reduced to 1.1% by May 31, 2033.⁹⁷ In practice, New Jersey has been meeting its RPS goals with almost as much energy from garbage incineration as from solar power.⁹⁸ New Jersey is projected to source only 9% of its energy from wind, solar and geothermal alone by 2038.⁹⁹ Since 2004, New Jersey has provided

nearly \$30 million in renewable energy credits, paid for by ratepayers, to one waste incineration company, Covanta.¹⁰⁰ During this same period, Covanta registered more than 1,700 air permit violations from their facilities in the state.¹⁰¹⁻¹⁰³ Covanta operates almost all the waste incineration facilities in the state and these facilities are disproportionately located in EJ communities.¹⁰⁴ EJ groups have called for a total shutdown of all existing incinerators in the state to be replaced with a zero waste initiative.¹⁰⁵ Advocates are also exploring reforming the RPS to exclude waste incineration from consideration as a Tier II class renewable energy.

Hydrogen Hub

New York's Governor Hochul signed a multi-state agreement, including New Jersey, Connecticut, and Massachusetts to develop a proposal to become one of four regional clean energy hydrogen hubs designated through the federal Regional Clean Hydrogen Hubs program included in the Bipartisan Infrastructure Investment and Jobs Act. The proposal opens the door for New Jersey to be host to hydrogen projects that could impact the industrial corridors that are home to most of the state's EJ communities.¹⁰⁶

LNG Export Terminal

Despite resistance from environmental groups,^{107,108} a recent proposal to build a liquefied natural gas export terminal in South Jersey on the Delaware river was approved in late 2020 by the Delaware River Basin Commission.¹⁰⁹ Following the approval, environmental groups, 14 states, and the District of Columbia sued federal agencies that would allow for LNG transport by rail.¹¹⁰ Local governments within New Jersey have also passed legislation to oppose the transport through their respective jurisdictions.¹¹¹ As of March 2022, the project to build the facility in Pennsylvania that would liquefy natural gas has been put on hold.

Nuclear Bailout Plan

New Jersey also approved a \$300 million nuclear bailout plan that was released in 2019, and Camden Company is now proposing the construction of a new nuclear reactor in a decommissioned nuclear zone.^{112,113} Regulators unanimously extended the \$300 million dollar annual bailout subsidized by ratepayers for three additional years in April 2021.¹¹⁴ Per the EMP, plants are planned to be phased out by 2050 but currently comprise almost 38% of New Jersey's total energy supply.

Sewage Sludge Gasification Facility

In 2018, a private firm, Aries Clean Technologies, received capital commitments of over \$46 M from private equity firms to fund the development of plants that use a gasification process to convert sewage sludge to biochar. These processes then attempt to market the end product for industrial or commercial applications such as concrete manufacturing.¹¹⁵ In 2019, Aries received a permit from the NJDEP to construct a sludge processing facility in Linden, NJ on the same site as the city's sewage treatment plant, which is nearing completion.^{116,117} Aries has also proposed building another facility in Kearny, NJ, which has been met with opposition. A public hearing scheduled for December 2021 was postponed for rescheduling and the project is still awaiting environmental permits from NJDEP.¹¹⁸ A third facility was planned for Newark, which has faced backlash from residents and partners across the state.¹¹⁹ The proposed facility in Newark was undergoing review by the City of Newark's Planning Board for site approval in 2020. The project became the subject of a dispute over its adherence to the City's zoning prohibitions against sludge processing and its non-compliance with the local Environmental Justice and Cumulative Impacts ordinance.¹²⁰ This type of sludge processing and the production of biochar products is being marketed by the industry as a climate-friendly form of carbon sequestration.¹²¹ Currently, there are not any federal subsidies or tax credits that subsidize sludge processing. However, there is a 2022 \$1 billion USDA grant program for agricultural carbon sequestration pilot projects that includes funding for biochar projects.¹²² Additionally, there is a market for biochar carbon credits and the potential for state tax credits to expand to this market. It is possible that such proposals could gain added investments and state subsidies under emerging proposals and policies that purport to spur "clean" energy technologies.

Renewable Natural Gas (RNG) Legislation

In May 2021 and February 2022, respectively, two bills, A-5655 and S-1366 to promote RNG, were introduced into the New Jersey Assembly and Senate.^{123,124} The bill defines RNG as (1) biogas that is upgraded to meet natural gas pipeline quality standards such that it may blend with, or substitute for, geologic natural gas; (2) hydrogen gas derived from Class I renewable energy or Class II renewable energy; or (3) methane gas derived from any combination of biogas, hydrogen gas or carbon oxides derived from renewable energy sources, or waste carbon dioxide. Class I and Class II renewables include electricity from solar, small-scale hydroelectric, wind, wave, geothermal, landfill gas, anaerobic digestion, and with written permission from NJDEP, other forms of “sustainable biomass.” Class II includes large-scale hydropower and municipal solid waste, approved by DEP.¹²⁵ In addition to establishing a program to encourage procurement of RNG and investment in RNG infrastructure by public gas utilities, the bill also sets portfolio targets for the distribution of RNG to consumers from 2022-2050.^{126,127} In December 2021, the NJ Division of Rate Counsel sent a letter to Members of the Assembly in opposition on the grounds that it would increase utility bills for NJ ratepayers and would shift rate-making from the Board of Public Utilities (BPU) to the Legislature.¹²⁸ Environmental groups also pushed back, asserting that the bills would incentivize and enable natural gas companies to build out their infrastructure and use more fossil fuels.¹²⁹

Hydrogen Projects and Supporting Policy

The New Jersey Resources Corp. is piloting a green hydrogen project in Howell, NJ, which commenced operation in October 2021.¹³⁰ The company is a gas utility operator blending hydrogen into its existing distribution system. Hydrogen electrolysis is currently powered by wind generation and is intended to be powered using an on-site solar array eventually.¹³¹

Plastic Waste Bill

Starting in 2017, the American Chemistry Council (ACC) has been leading a country-wide effort to promote the Plastic Waste Reduction and Recycling Research Act, which would allow for pyrolysis¹³² of plastic waste, which is similar to the direct burning of plastic, results in fossil fuel emissions.^{133,134} The legislation would exempt certain plastic materials processed at advanced plastic processing facilities from state laws that regulate solid waste disposal and recycling. An amendment to the bill text excludes plastic materials from polyethylene terephthalate (PETE) or high-density polyethylene (HDPE).¹³⁵ Plastic pyrolysis can emit relatively high emissions levels of toxic NO, a source of NOx, ammonia (NH₃), and hydrogen cyanide (HCN).¹³⁶ In addition, a primary output of the pyrolysis process is oil-based fuel that has properties similar to conventional diesel, which would then be combusted and result in PM and other co-pollutants.¹³⁷ The ACC has promoted the legislation as a “green” way to reduce plastic pollution, thereby exempting these facilities from scrutiny under solid waste regulations. As the act is gaining traction and has even been passed in multiple states, EJ groups are strongly opposed, stating that the process is expensive, polluting, and a distraction from real solutions to eliminate or reduce plastics.¹³⁸ In June 2021, the Plastic Waste Reduction and Recycling Act was introduced in the NJ Assembly (A-5803),¹³⁹ but faced opposition from groups like ICC, Global Alliance for Incinerator Alternatives (GAIA), Beyond Plastics, NJ Environmental Justice Alliance (NEJA), Clean Water Action NJ, and Environment New Jersey.^{140,141} The bill was reintroduced in the 2022 legislative session but has not yet advanced.¹⁴²

Emerging Challenges and Opportunities

There are emerging threats in the form of false solutions that continue to arise within New Jersey. For example, two separate proposals by two public agencies have focused on the development of new natural gas power plants to provide backup power generation related to climate resilience. Both projects were proposed using federal resiliency funds awarded post-Hurricane Sandy, to provide auxiliary power in the

event of severe flooding.¹⁴³ The first proposal was made by the NJ Transit agency for the development of a 140-megawatt natural gas plant that would power a micro-grid (estimated to cost \$400-500 million) in an area that is in close proximity to overburdened EJ communities.¹⁴⁴ The proposal was fiercely opposed by environmental and EJ advocates, and in 2020, the agency replaced the plan with a call for renewable alternatives to develop the microgrid.¹⁴⁵ In 2021, the Passaic Valley Sewerage Commission (PVSC) in Newark, NJ proposed building an 84-megawatt power plant with over \$180 million from FEMA to provide backup power generation in the event of a prolonged power outage. The proposed natural gas plant was also opposed by a coalition of EJ advocates, and in January 2022, the Governor intervened on a key vote to delay the project from moving forward.¹⁴⁶ In both cases, the facilities would be developed in EJ areas already home to several major fossil fuel plants (Newark and Kearny collectively host four natural gas plants). They also, ironically, seek to use power sources that are exacerbating the very climate risks that the proposing entities seek to relieve. Furthermore, small-scale, fossil fuel auxiliary power plants can sometimes skirt the existing regulations of larger power plant facilities and further entrench reliance on fossil fuels in areas already suffering the burden of localized air pollution from power plants.

Alternatives to False Solutions

There are also a number of initiatives to address the wide range of false solutions in New Jersey. For example, EJ organizations championed the passage of a groundbreaking EJ law (S232) that requires DEP to consider the cumulative impacts of polluting facilities on ‘overburdened communities’ for new permits and triggers a review of existing permits being renewed or modified.¹⁴⁷ Existing power plants that undergo regular five-year renewals can be subject to conditions that may require the further mitigation of their co-pollutant emissions if they are located in an EJ or overburdened community.¹⁴⁸

With respect to renewable energy policy, EJ advocates are proposing increased investments to pilot community solar, renewably powered microgrids, renewable battery storage, community energy planning, improved energy efficiency, and access to solar and wind energy incentives in the state’s EJ communities. In the transportation sector, New Jersey has initiated the adoption of a series of new rules to target the electrification of the medium and heavy-duty diesel sector which has a significant impact on EJ communities.¹⁴⁹ Additionally, more targeted diesel reductions and investments in pollution-free public transit options will be required to meet the needs of EJ communities. There also challenges to the inclusion of dirty energy sources for consideration of renewable energy incentives. For example, Covanta has faced legal challenges in accessing Renewable Energy Credits (RECs) based on non-compliance.^{150,151} Advocates are also exploring legislative proposals to remove waste from New Jersey’s RPS.¹⁵²

New Jersey False Solution Policies & Projects¹⁵³

Name	Description	Type of False Solution	Reference/Resource
Renewable Portfolio Standard (RPS)	Adopted state by state, the RPS requires that a specific portion of utility-sold electricity comes from 'renewable' resources. Fuels considered renewable vary from state to state. New Jersey's RPS includes false solutions such as municipal solid waste.	Landfill gas, anaerobic and fuel digestion, biomass, municipal solid waste incineration	RPS Overview Food and Water Watch RPS Report Card
Regional Greenhouse Gas Initiative (RGGI)	A regional cap and trade program that establishes a price on power plants' greenhouse gas emissions and market-based mechanism for trading allowances in the electricity-generating sector ¹⁵⁴	Market-based approach	RGGI Overview
NJ Energy Master Plan (2019)	Sets the goal of 100% clean energy by 2050 with seven main strategies to achieve carbon neutrality	Carbon neutral/net zero	Energy Master Plan
NJDEP Global Warming Response Act 80x50 Report (2020)	Sets targets for reducing greenhouse gas emissions by 80% from 2006 levels by 2050	Carbon neutral/net zero	80x50 Report
Transportation and Climate Initiative (TCI)	A regional collaborative of Northeast and Mid-Atlantic states as well as the District of Columbia that coalesces around the goal of reducing greenhouse gas emissions in the transportation sector	Market-based approach	TCI Overview TCI Sacrifices EJ Communities, Climate Justice Alliance TCI Opposition, CEED
LNG Export Terminal	Liquefied natural gas export terminal in South Jersey on the Delaware river that was approved in late 2020 by the Delaware River Basin Commission	LNG	Export terminal press coverage Facing delays
Nuclear Bailout Plan and proposed plant	Regulators unanimously extended the \$300 million dollar annual bailout subsidized by ratepayers for three additional years in April 2021. Camden Company is now proposing the construction of a new nuclear reactor in a decommissioned nuclear zone.	Nuclear	Subsidies Proposed plant
Natural and Working Lands Strategy Scoping Document	Investigated the potential for carbon sequestration in natural areas of New Jersey The plan recommends the evaluation of trading allowed under the RGGI Cap and Trade System.	CCS	Scoping document
Aries sewage sludge gasification	Aries facilities use gasification to convert biosolids to biochar that is used in making concrete. One facility is nearing completion in Linden, NJ, and two others are planned for Kearny and Newark, which have both been opposed.	Biochar	Opposition letter from Ironbound Community Corporation, Newark News article on opposition

A-5655 and S-1366 Bills to Promote RNG and Hydrogen (Introduced 2021 and 2022)	Establishes a program to encourage procurement of RNG and investment in RNG infrastructure by public gas utilities and sets portfolio targets for the distribution of RNG to consumers from 2022-2050.	RNG and Hydrogen	News article on opposition
New Jersey Resources Corp. Green Hydrogen Pilot Project (Commenced October 2021)	A pilot project in Howell, NJ that blends hydrogen produced into existing fuel distribution systems. Hydrogen electrolysis is powered by wind and planned to be powered by an on-site solar array.	Green hydrogen	News article
A-5803 Plastic Waste Bill (Introduced 2021)	Enables pyrolysis of plastic waste and would exempt certain plastic materials from State regulation of solid waste disposal and recycling.	Plastic waste	Opposition statement, Clean Water Action NJ Spotlight News op-ed opposing A-5803

The presence of false solutions is also evident in climate mitigation and energy policies in Delaware. Examples include the inclusion of dirty energy sources in the state's Renewable Portfolio Standard (RPS), the proposed adoption of the Transportation and Climate Initiative (TCI), and incentives for the production of 'renewable' natural gas from poultry waste. The following sections detail the nature and extent of false solution policies in Delaware, some of the equity implications of these policies, and any proposed alternatives or responses that these policies have elicited to date.

Climate Mitigation Goals & Policies

As of 2021, the Delaware legislature approved an updated goal to increase the rate of renewable energy in the state to 40% by 2035.¹⁵⁵ In 2020, the state developed a [Climate Action Plan](#),¹⁵⁶ which also references a technical greenhouse gas analysis conducted by the consulting firm ICF.¹⁵⁷ Using business as usual projections, coupled with different mitigation scenarios, the analysis found that decarbonizing the electricity grid has the largest impact on GHG reductions and can enable further decarbonization via electrification of the transportation and building sectors. Results also indicated that energy efficiency could be a lower-cost, short-term strategy for emissions reductions. Delaware is also an original participant in the Regional Greenhouse Gas Initiative (RGGI) program (2005) and the state generates close to \$300 million in annual proceeds from the program.¹⁵⁸ However, only 15% of the proceeds from this program are allocated specifically for low and moderate-income households, mostly in the form of direct utility payments or energy efficiency programs.¹⁵⁹

Although Delaware expressed interest in working with the initial signatories of the TCI-P, it is not part of the initial Memorandum of Understanding. Delaware Department of Natural Resources and Environmental Control's (DNREC) Clean Transportation Incentive Program, which provides rebates for electric vehicles and charging stations, was extended through mid-2021. Additional funding to expand electric vehicle (EV) charging stations was announced in late 2021.¹⁶⁰ While mainly focused on EVs, the program also incentivizes false solutions, providing rebates for natural gas and propane vehicles.¹⁶¹

False Solutions to "Clean" and "Renewable" Energy Sources

Renewable Portfolio Standard

As a part of the Renewable Energy Portfolio Standards Act passed in 2005, Delaware's utilities are required to get 25% of their energy from renewable sources by 2025.¹⁶² In January 2021, lawmakers introduced a bill that proposed changes to the existing RPS, including increasing the required minimum percentage of electricity sales from renewable energy sources through 2035.¹⁶³ Eligible technologies include biomass, hydroelectric, fuel cells using non-renewable fuels, landfill gas, and anaerobic digestion, in addition to traditional renewables. There is a scheduled minimum cumulative percentage from eligible energy resources as well as a scheduled minimum cumulative percentage from solar photovoltaics (PV). By 2025 solar PV must account for 3.5% of the renewable energy target.¹⁶⁴ Food and Water Watch found that Delaware performed weakly across all three of their metrics—lower RPS targets, more dirty energy sources in their portfolios, and an insufficient shift to wind, solar, and geothermal energy, and received a D rating, which was the average rating across all RPS states.¹⁶⁵ Although this may change given the new legislation, as of 2018 the state

was projected to have sourced only 6% of its energy from wind, solar, and geothermal sources by 2038.¹⁶⁶

Renewable Natural Gas from Poultry Waste

One of the most controversial forms of dirty energy incentivized in the state under the guise of renewable energy includes the incineration of poultry waste. The poultry industry has a significant presence in the state with more than 700 commercial poultry farms representing more than 75% of the state's agricultural output.¹⁶⁷ BioEnergy Devco, a Maryland-based company, has proposed a process that would [convert poultry waste to renewable natural gas](#). Profits would come from selling both the natural gas and compost by-product from the anaerobic digestion process. The company announced a 20-year contract with Perdue Farms for a \$60 million anaerobic digestion system constructed by Chesapeake Utilities Corporation in Sussex County, DE, which has been met with backlash from environmental groups, EJ organizations, and residents.¹⁶⁸⁻¹⁷⁴ On the environmental side, groups have cited the risk of methane pollution and voiced concern that the fertilizer will run off into streams, creating algae blooms that damage the ecosystem.^{175,176} Others have cited the inequitable placement of the facility where 20% of the population is below the poverty line and have already incurred the health impacts of past industry pollution.¹⁷⁷ In January 2022, 35 national, regional, and Delaware and Maryland-based groups including Food & Water Watch, Sierra Club Delaware, and the Delaware Working Families Party sent a letter of opposition to the Governor requesting a denial of state permits to the facility.¹⁷⁸ Food & Water Watch Delaware organizer Greg Layton said of the system, "to burden a local population already surrounded by Superfund sites and poultry factory farms with this factory farm gas scheme will only invite greater public health and safety risks."¹⁷⁹ Others have cited that monetizing waste disincentivizes poultry companies from reducing their overall waste and will result in more factory farming and bring in more waste from surrounding plants.¹⁸⁰ In late 2021, BioEnergy Devco secured an additional \$100 M managed by investing firm Irradiant Partners and was in the process of seeking a digester permit.¹⁸¹ The project was approved by Sussex County, but the company is still awaiting approval from DNREC as of 2021.¹⁸²

A second RNG project by CleanBay Renewables' in Sussex County has also come under scrutiny by advocates. In November 2021, Food & Water Watch filed a lawsuit with a local resident against the Sussex County Planning & Zoning Commission for a zoning decision that exceeded its jurisdiction.¹⁸³ The company has a 15-year agreement with BP to sell the RNG originating in California, which is incentivized by the Low Carbon Fuel Standard.¹⁸⁴ This California policy incentivizes the development of alternative fuels that can meet the LCFS but which can include a mix of dirty energy fuels lumped under the label of 'clean' energy under this policy.

Plastic Waste Bill

In June 2019, a plastic waste bill to promote pyrolysis and gasification processes was introduced in the Delaware House.¹⁸⁵ The bill would distinguish post-use plastics from other forms of solid waste, thereby exempting plastic processing facilities from state laws regulating solid waste disposal and recycling.¹⁸⁶

Emerging Challenges and Opportunities

Carbon Offsets

Advocates are tracking emerging false solutions in Delaware, including initiatives that incentivize mass tree planting as carbon offsets. Tree planting initiatives can lead to land grabs, threaten biodiversity, and encourage harmful monoculture practices in the Global South, where land tenure for indigenous or peasant farmers is unclear and human rights laws are frequently violated. Delaware's Department of Agriculture's Forest Service is the first state agency in the U.S. to make a pledge that supports the 1 Trillion Trees initiative's global goal to conserve, restore, and grow one trillion trees by 2030 globally.¹⁸⁷ In 2020, Delaware created the Tree for Every Delawarean Initiative (TEDI) and planted its first tree in November 2021. However, the program relies on volunteers to help plant and maintain the trees,

which is a challenge to scale. Further, the initiative may detract attention from the management and conservation of existing trees that are essential to the longevity of a healthy tree canopy.¹⁸⁸

RNG

Dirty energy sources like poultry waste pose a special challenge for the state because of the complexity and scale of the industry in the state. According to one state advocate, “managing poultry waste is a complex effort, and alternative processing methods such as storage and landfills or spraying can contaminate groundwater and result in eutrophication issues when dumped in streams and rivers.”¹⁸⁹ Thus, despite its downsides, some have supported poultry waste-based renewable natural gas (RNG) to address groundwater contamination from traditional poultry waste disposal practices. But this advocate goes on to note the potential impacts of this form of RNG, citing it as an “emerging threat” because of the high number of poultry farms in the state.¹⁹⁰ There are also powerful proponents for RNG in the state. For example, Honeywell International, which serves the oil and gas industry, also advocated for the capture of landfill gas to be converted to RNG.^{191,192} This emerging trend is exemplified by the proposed CleanBay and BioEnergy Devco projects, which are facing mounting opposition. In addition to the backlash to the BioEnergy Devco plant detailed earlier, the Delaware-based group Socially Responsible Agriculture Project (SRAP) created a petition in opposition to the plant, citing its impact on residents, who are primarily People of Color.¹⁹³ In May 2021, SRAP, Food & Water Watch, NAMATI, Delaware Civil Rights Commission, Delaware Alliance for Community Advancement (DelACA), and Sussex Health and Environment Network (SHEN) filed a complaint with the Attorney General against Sussex County because it did not adhere to public notice and participation requirements to approve \$60 million in bonds to fund the plant.¹⁹⁴

Barriers to Renewables

Beyond these novel dirty energy sources, there are significant barriers to more ambitious renewable energy investments led by traditional utility stakeholders in the state. For example, electric utilities Delaware Electric Cooperative and Delaware Municipal Electric County serve the majority of Sussex county, and have been outwardly opposed to introducing more renewable energy to the state.¹⁹⁵ However, more recently in January 2022, Delaware Electric Coop announced that it will purchase power from seven new utility-scale solar farms upon their scheduled completion in 2024.¹⁹⁶ The project is a partnership between DE Electric and Old Dominion Electric Cooperative, which also operates a natural gas-fired plant in Maryland. In addition to increasing widespread support for cleaner energy sources, a new cumulative health impacts proposal that would allow DNREC to consider existing environmental impacts and social vulnerability in areas where plants are being proposed may also help address these barriers.¹⁹⁷

Opportunities

A Cumulative Health Impacts Proposal would allow DNREC to consider existing environmental impacts and social vulnerability in areas where plants are being proposed.¹⁹⁸ In 2021, Delaware Representative Larry Lambert introduced a resolution to create a Justice 40 Oversight Committee to study and make findings and recommendations related to EJ in Delaware.¹⁹⁹

Delaware False Solutions Policies and Projects

Name	Description	Type of False Solution	References/Resource
Climate Action Plan (2020)	Plan for greenhouse gas mitigation and climate adaptation measures Mitigation strategies include expanding clean and renewable energy, energy efficiency measures, transition to EVs, reducing non-CO ₂ GHGs, and forest-based carbon offsets.	Carbon offsets, net-zero buildings, RNG, biomass, hydropower	https://dnrec.alpha.delaware.gov/climate-plan/
Renewable Portfolio Standard (RPS)	Adopted state by state, the RPS requires that a specific portion of utility-sold electricity comes from 'renewable' resources. Fuels considered renewable vary from state to state. Delaware's RPS includes false solutions such as biomass, hydroelectric, and anaerobic digestion.	Biomass, hydroelectric, fuel cells using non-renewable fuels, landfill gas, and anaerobic digestion	Delaware's RPS Food and Water Watch RPS Report Card
Regional Greenhouse Gas Initiative (RGGI)	A regional cap and trade program that establishes a price on power plants' greenhouse gas emissions and market-based mechanism for trading allowances in the electricity-generating sector.	Cap and trade	Delaware RGGI Overview
BioEnergy Devco Renewable Natural Gas Plant	A proposed \$60 million anaerobic digestion system to convert poultry waste to RNG. The company acquired the facility through a \$7 million deal with Perdue Farms.	RNG	News article on plant approval Opposition letter
CleanBay Renewables Renewable Natural Gas Plant	A proposed RNG plant with a 15-year agreement with BP to sell the RNG	RNG	Food and Water Watch lawsuit
Tree for Every Delawarean Initiative (TEDI)/ 1 Trillion Trees Initiative (1t)	Pledge that supports the 1 Trillion Trees initiative's global goal to conserve, restore, and grow one trillion trees by 2030 globally	Tree planting and conservation / carbon offsets	News article announcement of pledge Opposition letter

MINNESOTA

Minnesota has several forms of dirty energy or false solutions embedded in “renewable” energy and climate mitigation policies. Minnesota includes carbon capture and storage, and various fuel conversion projects, including incineration of poultry waste and renewable natural gas (RNG) production from landfill gas and manure in its Renewable Portfolio Standard (RPS). The state has included several forms of false solutions including carbon offsets, carbon capture and sequestration technologies, and a mix of dirty energy sources in its energy and climate mitigation policies. The following sections detail some of the policies promoting false solutions in Minnesota as well as the equity implications of these policies.

Climate Mitigation Goals & Policies

While Minnesota has a number of state and municipal-level energy efficiency and renewable energy programs, a report commissioned by the Business Council for Sustainable Energy (BCSE) found rising rates of local wind and solar replacing electricity imports in the state.²⁰⁰ Meanwhile, California’s Low Carbon Fuel Standard (LCFS), is simultaneously creating new demand for RNG projects across the Midwest.²⁰¹ Additionally, Minnesota adopted the Next Generation Energy Act in 2007 which required an 80% greenhouse gas emissions reduction by 2050 (from 2005 levels), with an interim goal of 30% by 2025.²⁰² However, the Minnesota Pollution Control Agency (MPCA) released a report finding that emissions had decreased only 8% since 2005, indicating that the 2025 target will not be reached.²⁰³ Despite the setback, Minnesota Governor Tim Walz set a goal in early 2021 to reach 100% carbon-free electricity by 2040, with some policymakers urging for carbon-free energy across all sectors of the economy.²⁰⁴ To address emissions from the transportation sector, the most polluting sector in the state, Minnesota’s Department of Transportation (MNDOT) released a report in 2019 outlining decarbonization strategies, which include enabling electric vehicle development and promoting the use of biofuels. In 2021, the Center for Energy and Environment and Great Plains Institute published a report summarizing recommendations from a stakeholder engagement process on decarbonizing Minnesota’s natural gas end uses.²⁰⁵ The state is also proposing to adopt their own LCFS to meet their transportation sector emissions reduction goals, which would qualify liquefied natural gas (LNG) as well as biofuel. Supported by ethanol and biodiesel trade groups, the Future Fuels Act²⁰⁶ proposes a cap-and-trade system based on the lifecycle emissions, or carbon intensity, of different fuels. Although it was not passed in the Republican-led Senate, it is going to be re-introduced in the 2022 legislative session.²⁰⁷

False Solutions to “Clean” and “Renewable” Energy Sources

Renewable Portfolio Standards

Minnesota’s RPS sets the goal of achieving 26.5 percent renewable energy by 2025 for investor-owned utilities (IOUs) and 25 percent by 2025 for other utilities. Eligible technologies under the category of “renewable” include true renewables like solar, wind, and false solutions, including hydroelectric facilities less than 100 megawatts (MW), hydrogen generated by another eligible renewable energy, and biomass, which includes landfill gas, anaerobic digestion, municipal solid waste, the organic components of wastewater effluent, and sludge from public treatment plants. Despite its inclusion of dirty energy in its RPS, the state is on track to reach a 49% real renewable energy mix by 2038 composed primarily of solar and wind sources. In 2013, a 1.5% carve-out for solar for IOUs was created to be met by the end of 2020, 10% of which must be met with photovoltaic systems.

Natural Gas

Nemadji Trail Energy Center is a natural gas-fired power plant that is being proposed in Wisconsin. While the plant will be located in Wisconsin, Minnesota Power is pushing to charge Minnesota ratepayers

for its construction and operation. This \$700 million natural gas plant has come under fire despite opposition in Minnesota on the grounds that it would contribute to climate change. The Minnesota Court of Appeals upheld the Public Utilities Commission (PUC)'s approval of the plant.²⁰⁸ The three-judge panel referred to a cost-benefit analysis by the MN Department of Commerce that compared the plant to renewables.²⁰⁹ However, it is unclear if health impacts were considered in the analysis, which does not seem to be publicly available. In addition, in 2018, another judge issued a non-binding recommendation that the PUC should reject the plan because it was not needed and was not in the public interest.²¹⁰

Carbon Offsets

While carbon offsets do not figure prominently in Minnesota's energy portfolio, it is worth noting that the state is exploring opportunities to use Minnesota's extensive forestlands as carbon offsets for states like California that do have carbon offset incentives. California's offset program promises potentially significant investments for forest owners to maintain carbon sinks that allow pollution levels at the source to continue in California. The Minnesota-based, Indian-led non-profit program National Indian Carbon Coalition (NICC) consulted with two indigenous tribal groups in the state to explore this option,²¹¹ and the Fond du Lac Band of Minnesota approved the project in July 2020.²¹² Expected to generate \$4 million over its 40 year-lifetime,²¹³ this project is one of multiple forest-based carbon sequestration projects that the NICC in partnership with the USDA pledged as part of the 1 Trillion Trees initiative.²¹⁴

Recently, projects focused on carbon capture sequestration and storage have been developed in the state. Summit Carbon Solutions is an Iowa-based company that has proposed the world's largest carbon capture and storage project called the Midwest Carbon Express project, which would run through Minnesota and connect 31 ethanol refineries throughout the Midwest (Figure 4).²¹⁵ The company is an affiliate of Summit Agricultural Group, which invests in farmland and private equity. Its COO previously worked for BP and CEO Bruce Rastetter served on Donald Trump's Agricultural and Rural Advisory Committee.²¹⁶ This project would transport 12 million tons of CO₂ annually to store underground. The company has agreements with bio-refineries and other industrial polluters across the Midwest to fund the \$4.5 billion construction of a pipeline that would end in North Dakota, where the CO₂ would be stored.²¹⁷ The plants that have signed on to the project in Minnesota include Granite Falls Energy, Green Plain (Fergus Falls), Green Plains (Fairmont), Heron Lake Bioenergy, and Highwater Ethanol (Lamberton). Funding for the project would come partially from selling ethanol on the low-carbon fuel market²¹⁸ as well as the federal 45Q tax credits.²¹⁹ Local group Clean Up the River Environment (CURE),²²⁰ a rural social justice group in Minnesota, along with the Iowa chapters of Food and Water Watch and Sierra Club voiced concern over the project and its environmental impacts.²²¹ As referenced on the Summit Carbon Solutions webpage, the project has to undergo a tribal consultation process, indicating that at least some of these proposed pipeline routes may affect tribal lands. At a forum hosted by the Great Plains Action Society, a group of tribal leaders expressed that even if pipelines don't run directly through their land, even the proximity might affect water and other resources for Indigenous communities.²²²

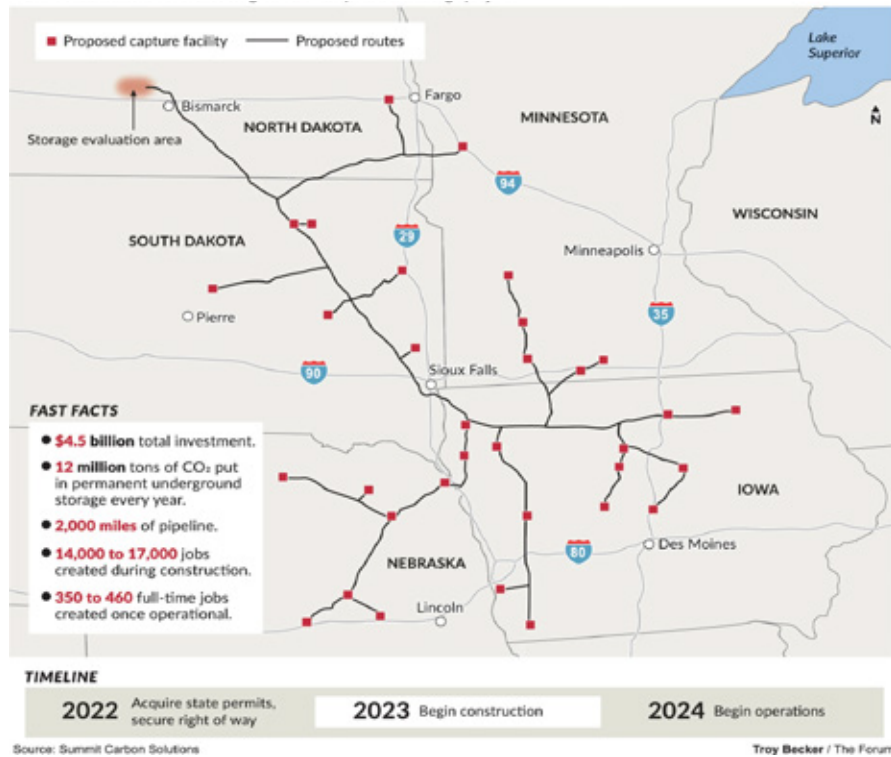


Figure 4. Map of proposed pipeline routes for Summit Carbon Solutions' Midwest Carbon Express

In late 2021, the company, Navigator CO₂ Ventures, LLC. proposed a second CCS pipeline 'The Heartland Greenway', which would bring CO₂ from South Dakota, Nebraska, Minnesota, and Iowa, and end in Illinois.^{223,224} Navigator CO₂ Ventures is managed by Navigator Energy Services, which is backed by a \$575 million equity commitment from funds managed by BlackRock Real Assets group.²²⁵ Partners on the project include Valero Energy, a fossil fuel refinery, Tenaska Inc., a natural gas company, and Advanced Resources Intl., which works on Enhanced Oil Recovery (EOR).²²⁶ CURE has also voiced opposition to this project, which would be partially funded with the 45Q tax credit.²²⁷

Minnesota also has ongoing fuel conversion projects, a few of which were announced in 2021 and are just beginning to receive attention. To deal with its factory farm waste, the state constructed poultry litter incinerators, which represent a dirty energy source due to the significant co-pollutants released by these plants. In 2019, the largest of these poultry waste incinerators was demolished because Xcel Energy claimed it was no longer economically viable and bought itself out of the contract with the city of Benson for \$22 million.²²⁸ Danish firm Nature Energy is now proposing to replace the incinerator with an LNG plant powered with dairy cow manure, turkey litter, and food waste.²²⁹ Amp Americas, a company that operates seven of the largest biogas-to-transportation fuel projects in the U.S.,²³⁰ developed an RNG project in Morris, Minnesota that processes 700,000 gallons of manure a day.²³¹ The project is a partnership with Riverview, a farming company that has its own anaerobic digesters and is planning to expand its digester projects across Minnesota.²³² Funding sources for the project, which started delivering fuel to the Alliance pipeline in October 2020, include LCFS credits and an equity investment from private equity firm EIV Capital, LLC.^{233, 234} In partnership with several farms, Amp Americas bought five digester projects and registered them in California to access the LCFS credits.²³⁵ In addition to the Amp Americas project, a first of its kind in Minnesota, a \$40 million RNG plant will be constructed on the Inver Grove Heights landfill and is expected to start operation in March 2022.^{236,237} The plant, which will capture landfill gasses and convert it to RNG instead of flaring it, will then send the fuel to an Xcel Energy pipeline.²³⁸ Opal Fuels LLC, a Fortistar portfolio company, which is an investment firm

based in White Plains, NY, and NextEra Energy Marketing LLC will construct and operate the plant.²³⁹ This project qualifies for credits under the Energy Policy Act's 2005 Renewable Fuel Standard law.²⁴⁰ These types of projects have faced past scrutiny because of their local health impacts and concerns over the labeling and incentivizing of these fuels as “renewable” sources of energy that compete with solar and wind for subsidies. It is not clear if these projects are all impacting EJ areas or not; more research is needed to track this.²⁴¹

Plastic and Waste incineration

Minnesota has seven incinerators across the state, six of which are located in EJ communities.²⁴² A 2021 report that investigated plastic waste practices in five cities across the U.S. found that most plastic waste in Minneapolis is not being recycled, and is instead burned at an incinerator located near EJ communities.²⁴³ An estimated 87% of all recyclable and non-recyclable plastic is incinerated in Minneapolis, emitting over 11 tons of PM2.5 annually.²⁴⁴ Hennepin Energy Recovery Center (HERC) is an MSW incinerator in Minneapolis in the heart of an EJ community that incinerates 100% of its waste bound for disposal, which represents 61.5% of total waste in the city.²⁴⁵ HERC and the state's other incinerators receive renewable energy credits under the state's RPS.

Hydropower

Minnesota also relies on hydropower as part of its energy portfolio, much of which is sourced from dams in Manitoba, Canada that have burdened First Nation tribes and lands. In 2015, some lawmakers pushed for large-scale hydro to be included as part of the state's RPS, which representatives of the Manitoba tribe opposed.²⁴⁶ The change was not approved, and the state's RPS only includes hydropower less than 100 MW.²⁴⁷

Nuclear and Hydrogen

While Minnesota currently has a ban on new nuclear plants, one of its two existing nuclear plants, Xcel Energy's Prairie Island Nuclear Plant, is located next to the Prairie Island Indian Community reservation, which is considered an EJ community.^{248,249} Despite a judge's opposition in the 1990s, the state, and the federal government approved siting the waste on Prairie Island, and for decades the indigenous community has lived next to a growing nuclear waste stockpile.²⁵⁰ Following the announcement of \$9.5 billion in federal clean hydrogen funding, Xcel Energy is now looking into using a portion of their nuclear power to produce hydrogen at the site, showing how hydrogen can enable the continuation of false solutions.^{251,252}

Emerging Challenges and Opportunities

To date, there has been limited, visible opposition to fuel conversion or carbon capture projects in Minnesota.²⁵³ There are several reasons why opposition may be limited. First, the majority of EJ's attention has been focused on opposing the Line 3 crude oil pipeline replacement,²⁵⁴ halting incineration in the state, and shutting down Hennepin Energy—or, at minimum, classifying it as a non-renewable energy source.^{255,256} Also, there is a diversity of EJ concerns across rural, urban, and indigenous lands around the state with a range of issues of concern. For example, CURE and the Minnesota Center for Environmental Advocacy focus on both urban and rural legal issues, including the proposed Nemadji natural gas plant. Several projects are located near tribal areas and indigenous communities, including Granite Falls Energy, which signed on to the CCS Summit Carbon project to connect to their pipeline and is located near the Upper Sioux Community, as well as the proposed nuclear-hydrogen project near the Prairie Island reservation. Existing EJ organizations may also be under-resourced in relation to other groups like environmental organizations that may have greater access to state legislative processes. It is also difficult to introduce legislation that disincentivizes gas and prevents utilities from building out because utilities have significant lobbying power with the state, and Minnesota's split House and Senate create political barriers for more equity-centered climate policies.²⁵⁷

However, EJ groups are beginning to engage at the state level on a variety of climate and environmental justice priorities.²⁵⁸ For example, in March 2021, a bill was introduced that would require a packaging

fee for packaging manufacturers to fund municipal solid waste composition analysis. In February 2022, a bill was introduced in the House and Senate that would require the Minnesota Pollution Control Agency to identify environmental justice areas, require demographic analysis, and consider cumulative levels and effects of past and current environmental pollution in environmental permitting and review.²⁵⁹

²⁶⁰ In 2022, COPAL, which is a grassroots group dedicated to uniting Latinxs in Minnesota, co-authored a [report](#) entitled “On the Road to 100% Renewables for Minnesota,” which shows that Minnesota can meet its electricity needs with only truly renewable energy sources by 2035. COPAL’s policy efforts have been focused on passing HF 3146, the MN Frontline Communities Protection Act, which would address cumulative impacts, through the MN House of Representatives.²⁶¹ These are just a few examples of statewide efforts to address false solutions and propose climate justice alternatives by EJ groups in the state.

Minnesota False Solution Policies and Projects

Name	Description	Type of False Solution	References/Resources
MN Future Fuels Act (Introduced 2021)	Supported by ethanol and biodiesel trade groups, the Future Fuels Act is a LCFS that proposes a cap-and-trade system based on the lifecycle emissions, or carbon intensity, of different fuels. Although it was not passed in the Republican-led Senate, it is going to be re-introduced in the 2022 legislative session.	Cap and trade, transportation fuels (e.g., RNG, ethanol, etc.)	MN Future Fuels Act (2021) Clean Fuels Standard in Minnesota: Summary Report of Stakeholder Feedback (2022) A Clean Fuels Policy for the Midwest (2020) Future Fuels Coalition
Renewable Portfolio Standard (RPS)	Adopted state by state, the RPS requires that a specific portion of utility-sold electricity comes from 'renewable' resources. Fuels considered renewable vary from state to state. Minnesota's RPS includes false solutions such as biomass, hydrogen, municipal solid waste, anaerobic digestion (which is the process to create RNG), and landfill gas.	Biomass, hydrogen, MSW, anaerobic digestion, landfill gas	Minnesota's RPS Food and Water Watch RPS Report Card
Next Generation Energy Act (2007)	Requires an 80% greenhouse gas emissions reduction by 2050 (from 2005 levels), with an interim goal of 30% by 2025	CCS	Overview
Nemadji Trail Energy Center	\$700 million proposed natural gas plant. Minnesota Court of Appeals upheld the Public Utilities Commission (PUC)'s approval of the plant.	Natural gas	Clean Wisconsin: We can stop the Nemadji Trail Energy Center Environmental Assessment for the Nemadji Trail Energy Center Project 2018 recommendation to reject
Midwest Carbon Express Project	A proposed CCS project that would run through Minnesota and connect 31 oil refiners throughout the Midwest. Pipeline construction would cost \$4.5 billion. Received some funding from 45Q and selling ethanol on low-carbon fuel market.	CCS	Clean Up the River Environment (CURE): Rural social justice group opposed to CCS Iowa Chapters of Sierra Club and Food & Water Watch opposed
'Heartland of Greenway' CCS Pipeline	A proposed CCS pipeline that would carry CO2 from South Dakota, Nebraska, Minnesota, and Iowa to store in Illinois.		Clean Up the River Environment (CURE) : Rural social justice group opposed to CCS

Nature Energy LNG Plant	A LNG plant proposed by Danish Firm Nature Energy that would replace the largest, now-demolished poultry waste incinerator in Benson, MN. The LNG plant would use dairy cow manure, turkey litter, and food waste.	LNG	LNG plant moving forward
Amp Americas RNG Plant	A RNG project operated by Amp Americas that processes 700,000 gallons of manure a day. Partial funding from LCFS credits and investment from private equity firm EIV Capital, LLC.	RNG	News coverage of its operation
RNG Plant, Inver Grove Heights	A \$40 million RNG plant expected to start operation March 2022 (no updates as of April 2021). The project qualifies for credits under the Energy Policy Act's 2005 Renewable Fuel Standard law.	RNG	News coverage of proposed plant
Hennepin Energy Recovery Center (HERC) Incinerator	A 2021 report found that most plastic waste in Minneapolis is not being recycled and is instead burned at an incinerator located near EJ communities.	Waste incineration	Global Alliance for Incinerator Alternatives (GAIA) Report Included in MN Climate Action Plan 2021 MN Climate Action Plan
Hydrogen from Xcel Energy Prairie Island Nuclear Plant	Following the announcement of federal funding for clean hydrogen, Xcel is looking into using a portion of their nuclear power to produce hydrogen at the site. The site is located next to the Prairie Island Indian Community reservation; their proximity to the site and its growing nuclear waste stockpile have been an EJ issue for decades.	Hydrogen, nuclear	News coverage

IV. CONCLUSION

False solutions perpetuate climate and environmental injustice. These false solutions incentivize dirty energy sources that often overburden EJ communities globally, invest in technologies that prolong the life of the extractive economy, and exacerbate existing inequalities. They serve as a subterfuge for fossil fuel industries to continue to exploit the current energy markets and hinder the wide-scale and rapid adoption of more aggressive pollution-free alternatives. Climate and energy policies that include incentives for false solutions divert precious time, resources, and attention from truly renewable and more just alternatives. Policies in Delaware, New Jersey, and Minnesota demonstrate that false solutions are ubiquitous and have inherent risks for EJ communities. Even carbon market mechanisms such as RGGI that promise greenhouse gas reductions fall short of achieving ambitious climate mitigation goals. Many of the climate mitigation policies that include market mechanisms also pay scant attention to questions of equity or environmental justice when it comes to the legacy of pollution in EJ communities. All three states include dirty energy sources in policies meant to drive renewable or clean energy goals. While all three states have signaled a commitment to EJ policies, these commitments have not been explicitly embedded across climate and energy policies to date.

Future and emerging trends in false solutions include increasing incentives for policies like low carbon fuel standards, fuels such as RNG, LNG, and hydrogen, and engineering technologies like DAC. Climate mitigation policies continue to turn to market-based solutions like carbon cap-and-trade, and ecological interventions like mass tree planting, all of which enable business-as-usual practices and do not reduce emissions in the most harmed communities. Finally, there is a growing interest in investments in carbon sequestration and storage technologies as the federal government passed record-breaking tax breaks for CCS, and states and firms seek to capitalize on these new opportunities.

While solar and wind are considered the cleanest and greenest energy sources, they have also been linked to extractive practices and unjust siting processes, although not nearly as frequently as large hydropower and fossil fuels.^{262,263} This extractive element can be mitigated through community ownership of the process, from defining the initial need to implementation. However, all energy production will require input resources, and so the challenge is to create practices that prevent harm to people and the planet while also lowering overall energy consumption at the scale of some of the largest polluters like corporations and militaries.

The three case studies presented in this paper have implications for other states and federal policies, as they highlight the multitude of false solutions that can arise from clean energy policies. Identifying examples of projects that detract from the goal of reducing emissions in the most harmed communities can help inform more just policymaking for energy transitions. Further, pushback from EJ groups in each of these states shows that they can make significant advances in creating an environmentally just energy policy. The successes of grassroots efforts point to the need for more community-oriented solutions, as there is no one-size-fits-all solution to climate change.²⁶⁴ Locally, there is a need for greater awareness of how communities on the ground are impacted by false solutions through the creation of toolkits and popular education, like the CJA's educational and advocacy toolkits on carbon pricing^{265, 266} and just transitions.²⁶⁷ The fight against false solutions must continue to harness the collective power of local and translocal grassroots groups.

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