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DUQUESNE KLINE ENERGY & ENVIRONMENTAL LAW JOURNAL

FOREWORD — ***April Milburn-Knizner***

STUDENT ARTICLES

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THREAT TO ENDANGERED SPECIES HABITATS: AN ANALYSIS OF THE PROPOSED RULE AND COMMENTS TO RESCINDING THE DEFINITION OF HARM UNDER THE ENDANGERED SPECIES ACT — ***Delaney Szekely***

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It is with great pride that I introduce Volume 14 of Joule, a journal that reflects the scholarship and spirited debate of students committed to the field of energy and environmental law and policy.

This collection of articles engages with some of the most widely-discussed issues of the previous year—from federal regulatory rollbacks to local efforts aimed at fostering technological innovation while simultaneously protecting communities from accelerating climate impacts, biodiversity loss, and natural resource depletion.

The year 2025 was marked by 23 extreme weather and climate events, causing an estimated 276 fatalities and totaling an estimated $155 billion in damages.[1] Unsurprisingly, climate change litigation in the United States is on the rise, with 3,324 cases logged in the Sabin Center For Climate Change database.[2] In her article, *Growing a Greener Future: The Development of a Legal Framework for Solar Energy in Pennsylvania*, Mia Shipley considers the benefits of alternative energy sources and examines how Pennsylvania's policies can evolve to promote solar energy.

The weakening of federal protections under the Endangered Species Act comes at a time when a reported one-third of U.S. wildlife is at risk of extinction.[3] Delaney Szekely takes a hard look at the rule to rescind the definition of harm, first published in the Federal Register on April 17, 2025. In *Threat to Endangered Species Habitats: An Analysis of the Proposed Rule and Comments to Rescinding the Definition of Harm Under the Endangered Species Act*, Szekely argues that limiting the definition of harm to actual kills or injuries is short-sighted and in contravention of the legislative history of the Endangered Species Act.

[1] *2025 in Review: U.S. Billion-Dollar Disasters*, CLIMATE CENTRAL: CLIMATE MATTERS (Jan. 8, 2026), https://www.climatecentral.org/climate-matters/2025-in-review.
[2] *The Climate Litigation Database*, Sabin Ctr. For Climate Change L., https://climatecasechart.com (last visited Apr. 7, 2026).
[3] Over One-third of Biodiversity in the United States is at Risk of Disappearing, NATURERESERVE (Feb. 6, 2023), https://www.natureserve.org/news-releases/over-one-third-biodiversity-united-states-risk-disappearing.

Changes in environmental law and policy emerge from more than just shifting political priorities; they evolve from the complex interplay of science and technology, economics and ethics. AI data centers are growing rapidly as companies like Microsoft, Meta and others strive to meet the demands of modern artificial intelligence. In his article, *The Future is Nuclear: Why the Growth of AI Data Centers Needs Nuclear Energy*, Andrew Jack Forsythe considers water consumption and resource scarcity, grid pressure, and consumer costs associated with the explosion of AI data centers, and proposes that the solution is nuclear.

Likewise, the growing sector of the fast fashion industry has companies like Shein and Zara producing inexpensive, low-quality clothing that may present health risks and undermine sustainability efforts. Shaylin McGuire notes in her article *Unraveling the Cost: An Analysis of Environmental Harm and Regulatory Solutions in the Fast Fashion Industry* that over 11 million tons of textile waste are sent to landfills each year, yet the industry is largely unregulated. She calls for the enactment and implementation of state legislation and argues that the California Responsible Textile Recovery Act and New York Fashion Act serve as good models.

Finally, beyond industry-specific shifts, the very procedural foundations of environmental oversight are undergoing a transformation. In his case note, *NEPA Declawed in a Post-Loper World - A Seven County Case Note*, Thane Zeeh explores how the United States Supreme Court's decision in *Seven County Infrastructure Coalition v. Eagle County* has equipped lower courts with an environmental deregulatory tool. He argues that this "judicial sleight of hand" allows the judiciary to strategically shield agency actions from rigorous review, effectively reducing NEPA's Environmental Impact Statements and Environmental Assessments to a mere procedural formality.

This collection of articles has intentional breadth and was hand selected by thoughtful students who are unafraid to ask questions, challenge assumptions and regulatory frameworks, and propose what, to some, might be unsettling solutions. As

environmental pressures intensify, the role of legal scholarship in the field is more essential than ever before. This journal is a forum for that essential work.

May this issue provoke thoughtful debate, inform meaningful action, and contribute to the evolving framework of energy and environmental law and policy.

ARTICLES

GROWING A GREENER FUTURE: THE DEVELOPMENT OF A LEGAL FRAMEWORK FOR SOLAR ENERGY IN PENNSYLVANIA

Mia Shipley[1]

I. INTRODUCTION

Pennsylvania's path to clean, renewable energy began with an expansive history of "dirty energy."[2] The energy industry predominantly consists of fossil fuels comprised of coal, oil, and natural gas.[3] Pennsylvania has long been a producer of coal and natural gas, which are both particularly "dirty" in their extraction and use.[4] Recently, however, Pennsylvania has shifted its perspective to value the use of renewable energy as a critical resource in protecting the environment and creating a reliable energy source.[5]

Pennsylvania's energy policies have historically been deeply entwined with the United States' industrial needs.[6] From as early as the American Industrial Revolution and up through both World Wars, Pennsylvania's coal industry powered

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[1] J.D. Candidate, May 2027, Thomas R. Kline School of Law of Duquesne University. B.A. in English and History, Washington & Jefferson College.
[2] *Dirty Energy: It's Time to Break Free From a Dirty Energy Past*, PENNFUTURE, https://www.pennfuture.org/dirty-energy (Last visited Sept. 19, 2025).
[3] *Even as renewables increase, fossil fuels continue to dominate U.S. energy mix*, U.S. ENERGY INFO. ADMIN. (July 3, 2017), https://www.eia.gov/todayinenergy/detail.php?id=31892.
[4] *Coal explained: Coal and the environment*, U.S. ENERGY INFO. ADMIN. (Apr. 17, 2024), https://www.eia.gov/energyexplained/coal/coal-and-the-environment.php. Coal is typically extracted through strip mining and blasting, which changes the environment's landscape and can release methane gas into the atmosphere. *Id.*: Natural gas is often extracted through fracking, which produces an exceptionally hazardous fluid that can be leaked into the ground. *Natural gas explained: Natural gas and the environment*, U.S. ENERGY INFO. ADMIN. (Apr. 16, 2024), https://www.eia.gov/energyexplained/natural-gas/natural-gas-and-the-environment.php. Natural gas is also primarily methane, a greenhouse gas. *Id.*
[5] *What is Renewable Energy*?, COMMONWEALTH OF PA. DEP'T OF ENV'T PROT., https://www.pa.gov/agencies/dep/residents/saving-energy/renewables, (Last visited Sept. 20, 2025).
[6] *Emergence of the modern state*, BRITANNICA, https://www.britannica.com/place/Pennsylvania-state/Emergence-of-the-modern-state, (Sept. 19, 2025).

the manufacturing of iron, steel, arms, and machinery across the country.[7] Beginning in the 1970s, Pennsylvania's production of coal slowed; the United States began sourcing its coal from other states and countries with competitive industries.[8] Even with this decline, Pennsylvania continues to be a substantial supplier of energy to other states.[9]

Renewable energy did not command national attention until the 1970s when the United States was impacted by an oil embargo posed by members of the Organization of Petroleum Exporting Countries ("OPEC").[10] The OPEC embargo caused inflation to spike and oil imports to stagnate, leaving the U.S. with the realization that it needed to change its approach to energy.[11] In response, The Public Utility Regulatory Policies Act of 1978 ("PURPA") was enacted with the intent to encourage renewable resource use and electric conservation.[12] PURPA imposed mandatory renewable purchase obligations for power from combined heat and power facilities and small output facilities.[13] Since its enactment PURPA has been amended

[7] *Id*.
[8] CHRISTINA SIMEONE, ET AL., *Reimagining Pennsylvania's Coal Communities*, KLEINMAN CENTER FOR ENERGY POLICY , (May 23, 2018), https://kleinmanenergy.upenn.edu/research/publications/reimagining-pennsylvanias-coal-communities-stakeholder-perspectives-and-strategies-for-economic-revitalization/.
[9] *Pennsylvania State Energy Profile*, U.S. ENERGY INFO. ADMIN. (Jan. 16, 2025), https://www.eia.gov/state/print.php?sid=PA#:~:text=Pennsylvania%20Quick%20Facts,Last%20Updated:%20January%2016%2C%202025. Pennsylvania is the nation's second-largest natural gas producer, third-largest coal-producing state, and the second-largest net supplier of energy to other states. *Id.*
[10] *The Public Utility Regulatory Policies Act of 1978*, AMERICAN PUBLIC POWER ASSOCIATION, https://www.publicpower.org/policy/public-utility-regulatory-policies-act-1978, (Last visited: Nov. 17, 2025); *Oil Embargo, 1973–1974*, U.S. OFFICE OF THE HISTORIAN, https://history.state.gov/milestones/1969-1976/oil-embargo, (Last visited: Nov. 11, 2025).
[11] *Id*. The OPEC Embargo made such an impact on the United States economy in part because the Embargo made it apparent that the U.S. was majorly dependent on foreign oil and unequipped to support itself in an energy crisis. *Oil Embargo, 1973–1974*, *supra* note 10. To make matters worse, the price of oil per barrel quadrupled as a result of the Embargo around the time the U.S. dollar saw devaluation, leaving the U.S. economy in significant distress. *Id.*
[12] *The Public Utility Regulatory Policies Act of 1978*, *supra* note 10.
[13] *Id.*

and expanded, but its objective to create a more sustainable energy landscape continues today.[14]

Of the types of renewable energy, or energy naturally produced and continuously replenished, PURPA offered significant support to solar developers.[15] Solar energy is divided into two subgroups: photovoltaics and concentrating solar-thermal power ("CSP").[16] Photovoltaics is the better known of the two, recognizable by the large, black panels. These panels work by absorbing the energy produced by sunlight into smaller cells within the panel.[17] The energy then "creates electrical charges that move in response to an internal electrical field in the cell, causing electricity to flow."[18] In this essay, solar farming and any reference to solar energy will mean photovoltaic systems. Any reference to solar farming or solar paneling should not be understood to mean CSP.

Part II of this article outlines the current regulatory framework that solar energy operates under by analyzing relevant federal and state energy policies, including a comparison of local government regulations. Part III examines how Pennsylvania's policies and regulations can evolve to promote sustainable and well-

[14] *Id.*
[15] *What is Renewable Energy?*, PENNSTATE, Mar. 9, 2023, https://extension.psu.edu/what-is-renewable-energy, (Defining renewable energy); *PURPA 101*, SOLAR ENERGY INDUSTRIES ASS'N, Oct. 18, 2017, https://seia.org/research-resources/purpa-101/#:~:text=In%201978%2C%20Congress%20passed%20the,the%20PDF%20of%20this%20Factsheet.
[16] *Solar Energy*, U.S. DEP'T OF ENERGY, https://www.energy.gov/topics/solar-energy, (Last visited: Nov. 17, 2025).
[17] *How Does Solar Work?,* U.S. DEP'T OF ENERGY, https://www.energy.gov/eere/solar/how-does-solar-work, (Last visited: Nov. 17, 2025).
[18] *Id.*

regulated solar energy, advancements in relevant practices, and growing industry standards.

II. BACKGROUND

The Environmental Protection Agency ("EPA") recognizes that renewable energy regulations are a patchwork of federal, state, and local policies which together impact project development.[19] There is no comprehensive federal or Pennsylvania law; in actuality, the regulation of solar energy falls primarily within the purview of municipalities. An analysis of each level of government provides a more complete understanding of how solar energy is regulated.

i. The Federal Approach

a. Federal Regulations

At the federal level, solar panel regulations are a combination of general environmental and energy laws that are supplemented by specific incentives. The four laws most applicable to energy production are the Clean Air Act, the Clean Water Act, the Resource Conservation and Recovery Act, and the Endangered Species Act, all of which are overseen by the EPA.[20] Solar panels emit no greenhouse gas or other air pollutants and thus the Clean Air Act is not relevant to this analysis.[21]

[19] *Policies and Regulations*, U.S. ENV'T PROT. AGENCY, Sept. 30 2025, https://www.epa.gov/green-power-markets/policies-and-regulations.
[20] *Laws & Regulations*, U.S. ENV'T PROT. AGENCY, Aug. 13, 2025, https://www.epa.gov/laws-regulations.
[21] *Solar explained; Solar energy and the environment*, U.S. ENERGY INFO. ADMIN., Jan 19, 2024, https://www.eia.gov/energyexplained/solar/solar-energy-and-the-environment.php.

The Clean Water Act ("CWA") creates a foundation for regulating the discharge of pollutants into water sources and management of water quality.[22] The CWA also addresses the issue of stormwater pollution, which occurs when rain and snowmelt flow over impervious surfaces, like large solar panels, and collect pollutants such as chemicals, oils, dirt, or garbage, which then negatively impact aquatic ecosystems.[23] To proactively avoid stormwater pollution, the CWA requires solar farm constructors to obtain construction stormwater permits establishing a plan to design, install, and maintain proper stormwater controls; conduct regular site inspection by qualified personnel; and accurately report and address stormwater issues at the site.[24] Although solar panels do not excrete pollutants, their implementation and maintenance can affect the channels by which stormwater reaches the ground, potentially leading to erosion and excess sediment in waterways.[25] In places with plentiful rain and snow, like Pennsylvania, placement of solar panels in areas with a well-established ecosystem and healthy ground vegetation is critical to prevent erosion and protect environmental attributes that solar panels may endanger.[26]

[22] *Summary of the Clean Water Act*, U.S. ENV'T PROT. AGENCY, May 22, 2025, https://www.epa.gov/laws-regulations/summary-clean-water-act.
[23] *Id.; NPDES Stormwater Program*, U.S. ENV'T PROT. AGENCY, May 14, 2025, https://www.epa.gov/npdes/npdes-stormwater-program.
[24] *EPA Announces Settlements to Resolve Clean Water Act Violations at Four Solar Farm Construction Sites in Alabama, Idaho and Illinois*, U.S. ENV'T PROT. AGENCY, Nov. 14, 2022, https://www.epa.gov/newsreleases/epa-announces-settlements-resolve-clean-water-act-violations-four-solar-farm#:~:text=Increased%20sediment%20in%20waterways%20can,settlements%20only%20include%20civil%20penalties.
[25] LAUREN MCPHILLIPS and ROUHANGIZ (NASIM) YAVARI, *Maximizing hydrological and environmental benefits of solar farms*, PENNSTATE INSTITUTE OF ENERGY AND THE ENVIRONMENT, Feb. 15, 2023, https://iee.psu.edu/news/blog/maximizing-hydrological-and-environmental-benefits-solar-farms.
[26] *Id.*

The Resource Conservation and Recovery Act ("RCRA") is the primary authority that controls hazardous waste from "cradle to grave," including generation, transportation, treatment, storage, and disposal.[27] The EPA built a network of laws under RCRA to enhance hazardous solid waste programs, providing a framework for safe and effective material disposal.[28] Hazardous waste is defined by the EPA as "waste with properties that make it dangerous or capable of having a harmful effect on human health or the environment."[29] Over 95% of solar panels sold today are silicon solar; meaning the solar cells within the panels are made from crystal silicon containing both valuable and hazardous metals.[30] Hazardous metals, if present in high enough quantities, could classify the panels as hazardous waste.[31] As of now, RCRA has not concretely established a disposal plan for solar panels.[32]

The Endangered Species Act ("ESA") provides protection for fish, wildlife, vegetation, and ecosystems that are threatened or endangered.[33] The species that stand to be impacted by solar panels are as follows: migrating avians which nest or forage around solar sites; hooved mammals in geographic range; burrowing mammals and reptiles; aquatic species that are highly dependent on water quality; and

[27] *Resource Conservation and Recovery Act (RCRA) Overview*, U.S. ENV'T PROT. AGENCY, Sep. 5, 2025, https://www.epa.gov/rcra/resource-conservation-and-recovery-act-rcra-overview#:~:text=RCRA%20gives%20EPA%20the%20authority,source%20reduction%20and%20beneficial%20reuse.
[28] *Id.*
[29] *Learn the Basics of Hazardous Waste*, U.S. ENV'T PROT. AGENCY, Mar. 4, 2025, https://www.epa.gov/hw/learn-basics-hazardous-waste.
[30] *End-of-Life Solar Panels: Regulations and Management*, U.S. ENV'T PROT. AGENCY, Aug. 13, 2025, https://www.epa.gov/hw/end-life-solar-panels-regulations-and-management.
[31] *Id.*
[32] *Id.* In October 2023, the EPA announced it was developing a proposal to add end-of-life solar panels to the universal waste regulations. *Id.*
[33] *Summary of the Endangered Species Act*, U.S. ENV'T PROT. AGENCY, Jul. 25, 2025, https://www.epa.gov/laws-regulations/summary-endangered-species-act.

pollinators that interact with the vegetation at a solar site.[34] These species are particularly likely to be affected if solar development takes place in deserts, grasslands, forests, or wetlands.[35] Habitat loss, fragmentation, and degradation, as well as interaction with the panels themselves may be the most impactful ways solar implementation can affect surrounding wildlife.[36] These solar-wildlife interactions must be considered before the implementation of solar panels at any level, but particularly on a large scale.[37]

b. Federal Incentives

Federal incentives are a substantial influence on deciding to implement solar farming and renewable energy. Tax incentives in particular are especially alluring because they provide a financial incentive for investing in renewables.[38] In 2022, Congress passed the Inflation Reduction Act ("IRA"), which changed a range of tax laws to, among other things, invest in renewable energy production.[39] From the IRA came the Residential Clean Energy Credit ("RCE Credit"), which provides tax deduction credits for up to 30% of the costs of new, qualified renewable energy equipment installed in a home between 2022 and 2032.[40] The U.S. Department of the

[34] *Solar Impacts on Wildlife and Ecosystems*, U.S. DEPT. OF ENERGY, Nov. 2021, https://www.energy.gov/sites/default/files/2021-11/Solar%20Impacts%20on%20Wildlife%20and%20Ecosystems%20Request%20for%20Information%20Summary.pdf.
[35] *Id.*
[36] *Id.*
[37] *Id.*
[38] *Renewable energy explained; Incentives*, US ENERGY INFO. ADMIN., Dec. 30, 2022, https://www.eia.gov/energyexplained/renewable-sources/incentives.php.
[39] *SUMMARY: THE INFLATION REDUCTION ACT OF 2022*, SENATE DEMOCRATS, https://www.democrats.senate.gov/imo/media/doc/inflation_reduction_act_one_page_summary.pdf, (Last Visited, Oct. 8, 2025).
[40] *Residential Clean Energy Credit*, IRS, Jul. 3, 2025, https://www.irs.gov/credits-deductions/residential-clean-energy-credit#:~:text=Related%20resources-,How%20it%20works,Who%20qualifies. Other renewable credits

Treasury released data in 2024 that showed more than 3.4 million American families benefitted from $8.4 billion in tax credits, including RCE Credits, as a result of updating their residences to become clean energy consumers.[41] However, the recent promulgation of the One Big Beautiful Bill Act made significant rollbacks to tax credits, particularly environment and energy credits.[42] At the close of 2025, RCE Credits and other tax credit programs for individuals were phased out.[43]

Grant and loan programs are another incentive for private citizens. These programs encourage renewable energy use by making solar more accessible.[44] In particular, the Rural Energy for America Program (REAP) seeks to provide loan financing and grant funding to agricultural producers and small businesses in rural areas.[45] REAP recipients can use funding for implementation of renewable energy systems or making energy efficiency improvements.[46] Loan guarantees provided by REAP cover up to 75% of total eligible project costs, and grants account for up to

exist for non-corporate taxpayers, including the Clean Electricity Investment Credit, which also has been affected by the One Big Beautiful Bill Act to repeal solar. *Clean Energy Investment Credit,* IRS, May 29, 2025, https://www.irs.gov/credits-deductions/clean-electricity-investment-credit; ALEX MURESIANU, *How the One Big Beautiful Bill Changes Green Energy Tax Credits*, TAX FOUNDATION, Jul. 31, 2025, https://taxfoundation.org/blog/big-beautiful-bill-green-energy-tax-credit-changes/.

[41] *U.S. Department of the Treasury Releases New Data on American Consumer Energy Savings Under Inflation Reduction Act*, U.S. DEP'T OF THE TREAS., Aug. 7, 2024. https://home.treasury.gov/news/press-releases/jy2521#:~:text=In%202023%2C%203.4%20million%20American,to%20their%20homes%20during%202023.

[42] LAURIE ABRAMOWITZ, DAVID A. SAUSEN, and LAUREN OLAYA, *From IRA to OBBBA: A New Era for Clean Energy Tax Credits*, ARNOLD & PORTER, Jul. 22, 2025, https://www.arnoldporter.com/en/perspectives/advisories/2025/07/from-ira-to-obbba-a-new-era-for-clean-energy-tax-credits#:~:text=Terminated%20Tax%20Credits,construction%20after%20June%2030%2C%202026. Amongst other purposes, the One Big Beautiful Bill Act (OBBBA) significantly altered the nature of clean energy tax credits established under the IRA. *Id.* The OBBBA introduced "accelerated repeal schedules" for, *inter alia*, the RCE Credit. *Id.*

[43] *Id.*

[44] *Renewable energy explained; Incentives*, *supra* note 38.

[45] *Rural Energy for America Program Renewable Energy Systems & Energy Efficiency Improvement Guaranteed Loans & Grants*, U.S. DEP'T OF AG., https://www.rd.usda.gov/programs-services/energy-programs/rural-energy-america-program-renewable-energy-systems-energy-efficiency-improvement-guaranteed-loans, (Last visited Oct. 3, 2025).

[46] *Id.*

50%.[47] REAP funding can make a drastic and long lasting impact on farmers and small business owners, as seen in the case of Somerset County, PA farmer, Rich Perkoski.[48] Perkoski used his REAP grant to install solar panels on his farm, which brought his energy bill down from $2,500 per month to a mere $74 – an average saving of nearly $29,000 per year for the farm.[49] As Perkoski noted, such a difference in operation costs allows farmers to reinvest in their businesses by purchasing more livestock, crops, and equipment.[50]

ii. Pennsylvania's Approach

Like the federal government, Pennsylvania lacks comprehensive solar regulation laws; rather, Pennsylvania law covers renewable energy in an advisory sense with the bulk of regulatory action taking place at the local level.[51] The Environmental Rights Amendment of the Pennsylvania Constitution lays an overarching foundation for existing law by establishing that "[t]he people have a right to clean air, pure water and to the preservation of the natural, scenic, historic and esthetic values of the environment[]" which "the Commonwealth shall conserve and maintain […] for the benefit of all the people."[52]

a. Promulgated Legislation

[47] *Id.*
[48] DANIEL BLOTTENBERGER, *'We're making energy': Somerset farmer sees success with solar*, U.S. DEP'T OF AG., Oct. 15, 2024, https://www.rd.usda.gov/newsroom/success-stories/were-making-energy-somerset-farmer-sees-success-solar.
[49] *Id.*
[50] *Id.*
[51] *Pennsylvania Solar Ordinances*, PENNSTATE CENTER FOR ENERGY LAW AND POLICY, https://celp.psu.edu/pa-solar-ordinances/, (Last visited Oct. 15, 2025).
[52] PA. CONST. § 27, https://www.legis.state.pa.us/WU01/LI/LI/CT/HTM/00/00.001.027.000..HTM.

Of the advisory acts, laws, and regulations, the Alternative Energy Portfolio Standards Act ("AEPS Act") of 2004 is a main driver of the Commonwealth's alternative energy regulation. The AEPS Act requires electric distribution companies and electric generation suppliers to include a specific, increasing percentage of renewable energy within the total electricity sold to Pennsylvanians.[53] Electric distribution companies and electric generation suppliers comply with this requirement through the use of alternative energy credits ("AECs"), which are produced by approved alternative energy sources, such as solar.[54] AECs are traded and sold separately from the power itself, meaning individuals and businesses are able to invest in renewable energy without overhauling their existing strategy.[55] The owner of a qualifying energy source is required to submit an application to the Pennsylvania Utility Commission to be approved as an energy facilitator, denoting their status as energy sellers to electric distribution companies and electric generation suppliers.[56] Under the AEPS Act the total percentage of solar energy sold by electric distribution companies or electric generation suppliers must include a certain increasing percentage every year from 2006 (0.0013%) to 2020 (0.5000%), remaining consistent at 0.5000% each year thereafter.[57] The AEPS Act effectively creates a market demand for renewable energy.

[53] *About the AEPS Act*, PA. PUBLIC UTILITY COMM. - PA. ALTERNATIVE ENERGY CREDIT PROGRAM, https://pennaeps.com/, (Last visited Oct. 16, 2025). This practice is known as a carve-out. *Policies and Regulations*, *supra* note 19.
[54] *Id.*; *Alternative Energy and Economic Development in Pennsylvania*, PA. PUBLIC UTILITY COMM., https://www.puc.pa.gov/general/consumer_ed/pdf/AEPS_Fact_Sheet.pdf, (Last visited Oct. 6, 2025).
[55] *Alternative Energy and Economic Development in Pennsylvania, supra* note 54.
[56] *Id.*
[57] ALTERNATIVE ENERGY PORTFOLIO STANDARDS ACT, P.L. 1672, No. 213, § 3 (b)(1).

The AEPS Act also provides an incentive that allows residential solar systems up to fifty kilowatts to sell their excess generation back into the electrical grid for the full retail rate, known as net metering.[58] The AEPS Act defines net metering as:

> [t]he means of measuring the difference between the electricity supplied by an electric utility and the electricity generated by a customer-generator when [the renewable energy generating system is intended primarily] any portion of the electricity generated by the alternative energy generating system is used to offset part or all of the customer-generator's requirements for electricity. Virtual meter aggregation on properties owned or leased and operated by a customer-generator and located within two miles of the boundaries of the customer-generator's property and within a single electric distribution company's service territory shall be eligible for net metering.[59]

Before RCE Credits were phased out, net metering did not have an effect on the Credits, meaning there were no limits on co-use of credits and net-metering.[60] The AEPS Act thus sets forth minimum requirements for renewable energy sales as well as the incentive of net metering.

While the AEPS Act outlines how energy interacts with the market, Act 129 provides for energy efficiency. Act 129 of 2008 requires Pennsylvania's electric distribution companies to prioritize efficiency over greater use by setting targets for

[58] *Resources for Residents and Homeowners Assessing Potential Solar Energy Use*, PA. DEP'T OF ENV'T PROT., https://www.pa.gov/agencies/dep/residents/solar-energy-resource-hub/residents#:~:text=Net%20Metering:%20In%20Pennsylvania%2C%20residential,at%20the%20full%20retail%20rate., (Last visited Oct. 6, 2025).
[59] ALTERNATIVE ENERGY PORTFOLIO STANDARDS ACT, P.L. 114, NO. 35 (AMENDED). Consumer-generator is defined as a non-utility owner or operator of a net metered distributed generation system with a capacity not greater than 50kW if installed at a residence, or not larger than 3,000kW at other customer locations (except for customers whose systems are 3mW to 5mW who make their systems available to operate with electric utility during emergencies or to maintain critical infrastructure. *Id.* They must follow the technical rules promulgated by the Institute of Electrical and Electronic Engineers and the PUC. *Id.*
[60] *Residential Clean Energy Credit, supra* note 40.

each company based on a review of efficiency potential.[61] Currently, Pennsylvania is in Phase IV of the program and will continue to be so until June 2026, by then achieving nearly a 3.1% cumulative reduction in annual electricity use.[62] As part of its energy efficiency and conservation measures Act 129 includes solar panels in its considered strategies.[63] Act 129 brings solar energy to the forefront of efficient and renewable energy efforts.

Finally, Pennsylvania's Department of Environmental Protection ("DEP") regulates stormwater management through the National Pollutant Discharge Elimination System ("NPDES").[64] Solar farms that disturb more than one acre of land are guided under NPDES, erosion and sediment control ("E&S"), and post-construction stormwater management ("PCSM").[65] The required procedures for NPDES, E&S, and PCSM vary greatly based upon the scale of the solar project, however there are certain common themes across all projects. The earth disturbance associated with solar farms is typically construction related activities such as excavation, timber harvesting, and sorting of earth materials.[66] The project scale may necessitate grading, or clearing the land, to account for the disturbance.[67] Best practice for E&S circumstances is also highly dependent on the scale of the operation,

[61] *Act 129*, KEYSTONE ENERGY ALLIANCE, https://keealliance.org/act-129/, (Last visited Oct. 6, 2025).
[62] *Id.*
[63] PUBLIC UTILITY CODE (66 PA.C.S.) - OMNIBUS AMENDMENTS ACT OF OCT. 15, 2008, P.L. 1592, No. 129, Section 2, § 2806.1 (1)(m)(2).
[64] *Chapter 102 Permitting for Solar Panel Farms Frequently Asked Questions (FAQ),* 1, PA. DEP'T OF ENV'T PROT., BUREAU OF CLEAN WATER, (revised Apr. 30, 2021), https://files.dep.state.pa.us/Water/BPNPSM/StormwaterManagement/ConstructionStormwater/Solar_Panel_Farms_FAQ.pdf. NPDES permitting occurs when a person or entity must obtain a permit for their construction to ensure they are abiding by stormwater regulations. *Id.*
[65] *Id.*
[66] *Id.* at 1-2, quoting 25 PA. CODE § 102.1.
[67] *Id.*

however, projects should aim to minimize disturbance, avoid soil compaction, maximize protection of existing natural drainage features, and use any other precautions to avoid excess runoff.[68] As to PCSM, all solar farms are required to consider stormwater runoff.[69] In particular, the following general factors, among many others, are essential to excess runoff prevention: (1) minimized disturbance and maximum vegetation preservation; (2) post-construction land should have a minimum uniform 90% perennial vegetation cover capable of withstanding E&S, with supplemental considerations; (3) arrangement of panels to support PCSM; (4) assessment of panels, earth disturbance, and impervious surface area by a licensed professional; (5) steep slopes should be evaluated by a licensed professional and, if higher than 10% grade, feature sheet flow and drip edges; and, (6) adjust vertical clearance to be as low as possible without impacting vegetation.[70] The Pennsylvania DEP provides these guidelines to mitigate the impact of stormwater runoff on the surrounding land.

b. Proposed Legislation

In recent years, legislation has been introduced to provide a single framework for local governments to operate under so long as they adhere to minimum standards. Pennsylvania Senate Bill 349 aims to provide for the decommissioning of solar energy facilities, an unprecedented effort in the Senate.[71] SB 349 first states that solar

[68] *Id.*
[69] *Id.*
[70] *Id.* at 2-6.
[71] BRENDAN A. O'DONNELL, *Pennsylvania Solar Energy Facility Decommissioning Bill Moves Closer to Passage*, HOUSTON HARBAUGH, PC, May 21, 2025, https://hh-law.com/blogs/renewable-energy-zoning-land-use/pennsylvania-solar-energy-facility-decommissioning-bill-moves-closer-to-passage/.

energy facility agreements must have a provision the facility operator is responsible for the decommissioning of the facility, which must be completed within eighteen months of when production concludes.[72] Most of SB 349 is reserved for the financial assurance of the entire estimated cost of decommissioning to assure that it occurs even if the facility owner does not complete the process within eighteen months.[73] Finally, SB 349 would supersede local regulations on decommissioning, regardless of a township's decommissioning practice.[74] As of the publication of this article, SB 349 has reached the House and has been reported as committed from Environmental and Natural Resource Protection.[75]

Other proposals have been introduced to create new laws outlining and regulating novel renewable ideas, including community solar. Community solar is a solar project or program where the benefits are reaped by multiple customers, for which they receive an electric bill credit, and are often a viable option for those who cannot or will not install their own systems.[76] House Bill 504 proposes to "allow[] shared community energy projects where subscribers can access solar or biofuel energy and receive a credit for that on their electric bills[]" comments the Bill's sponsor, State Representative Peter Schweyer.[77] Rep. Schweyer ensures that only

[72] *Id.*
[73] *Id.*
[74] *Id.*
[75] *Senate Bill 349*, PA. GENERAL ASSEMBLY, https://www.palegis.us/legislation/bills/2025/sb349, (Last visited Oct. 17, 2025).
[76] *Community Solar Basics; What is Community Solar*, U.S. DEP'T OF ENERGY, https://www.energy.gov/eere/solar/community-solar-basics, (Last visited Oct 6, 2025).
[77] REP. PETER G. SCHWEYER, *Schweyer bill for shared community energy clears PA House*, PA HOUSE DEMOCRATS NORTHEAST DELEGATION, May 7, 2025, https://www.pahouse.com/NorthEastDelegation/InTheNews/NewsRelease/?id=138514. HB 504 is a part of a larger network of bills, including Senate Bill 504, to "create jobs, lower costs for consumers, speed up permitting, and […] build more energy generation in Pennsylvania[.]" *Id.*

participants who opt-in to the program will be affected by it.[78] HB 504 would be the first to address community renewable energy programs, and potentially make it more accessible for those who will not implement solar on their own property. As of the publication of this article, HB 504 has passed the Pennsylvania House and has been referred to the Consumer Protection and Professional Licensure Committee in the Senate.[79]

iii. Local Regulation

Local governments in Pennsylvania implement the vast majority of regulations for solar installation.[80] They not only regulate where and how solar projects may be built, but can solicit solar for their own use at municipal facilities.[81] These installations are typically governed by zoning ordinances.[82] Zoning is local legislative action that divides land into sections, which are each regulated differently based on their intended use in compliance with the municipal zoning ordinance.[83] In essence, zoning determines how a piece of land may be used, which is essential to solar development because many solar projects in Pennsylvania are and will be developed in non-urban areas where unoccupied tracts of land are ripe for economic opportunity.[84] To gain a better understanding of how solar farming traverses the legal

[78] *Id.*
[79] *House Bill 504*, PA. GENERAL ASSEMBLY, https://www.palegis.us/legislation/bills/2025/hb504, (Last visited Oct. 17, 2025).
[80] *Solar Energy; Local Government*, PA. DEP'T OF ENV'T PROT., https://www.pa.gov/agencies/dep/residents/solar-energy-resource-hub/local-government, (Last visited Oct. 16, 2025).
[81] *Id.*
[82] *Id.*
[83] *Zoning*, CORNELL LAW SCHOOL LEGAL INFO. INST., https://www.law.cornell.edu/wex/zoning, (Last visited Oct. 16, 2025).
[84] *Solar Energy; Local Government, supra* note 80.

landscape, it is essential to conduct a study of the local ordinances in counties familiar with solar farming.

Thus far in this article the term "solar farming" has been used to refer to the process of installing, operating, and maintaining solar panels on a spectrum from as small scale as the paneling of family farms to as large as hundreds of corporate owned acres. At the municipal level, however, the size distinction is essential to the municipal regulatory process.[85] Solar energy can be "distributed," meaning solar panels are placed on or around a structure that it feeds energy to; distributed solar is typically small-scale and defined by local governments as "accessory use."[86] On the other hand, medium and large projects that are not intentionally designed to power an on-site structure but instead funnel energy into the grid are referred to as, among many other names, grid-scale solar.[87]

A complete analysis of the breadth of local ordinances related to solar paneling is beyond the scope of this article. Rather, the contrast of approaches may be better evaluated by selecting two municipalities that take different stances on land use, aesthetic, and environmental and agricultural protections but are effective in their own right.

a. Franklin Township, Luzerne County

[85] *Pennsylvania Solar Ordinances*, *supra* note 51.
[86] *Id.*
[87] *Id.*

At the outset of Franklin Township's zoning ordinance are definitions for relevant terms, including accessory use.[88] However, Franklin Township does not recognize grid-scale solar specifically, instead using the term commercial solar power generation ("commercial solar") and defining it as "[a] facility where one (1) or more solar collectors and/or other accessory structures and buildings … are located and are used for the generation of electricity which is sold on the open market."[89] Rather than make the distinction between scale, Franklin Township zones solar power based on its relationship to the electrical market.

Accessory solar collectors are permitted in all zoning districts so long as they comply with other zoning standards, including not selling energy on the market, but commercial solar is only permitted as special exception use in the Agriculture Zoning District and the Industrial Zoning District.[90] By placing comparatively firm restrictions on commercial solar, Franklin Township regulates how commercial solar uses the land, interacts with public opinion, and preserves the environment.

Franklin Township requires an entity seeking solar implementation to comply with all applicable land use zoning regulations as outlined in the zoning ordinance.[91]

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[88] FRANKLIN TOWNSHIP, PA., ZONING ORDINANCE, Enacted Dec. 4, 1995, http://www.ftwp.com/pdfs/Zoning%20Ordinance%20single%20doc.pdf. Franklin Township defines accessory use solar as follows: "A freestanding or fixed device, or combination of devices, structures, or part of a device or structure that transforms direct solar energy into thermal, chemical, or electrical energy that contributes significantly to a structure's energy supply and which is sized and intended to be used to generate electricity for the principal structure to which it is accessory." *Id.* at ART. III §303, p. III-21.

[89] *Id.* at p. III-21.

[90] *Id.* at p. IV-4, IV-12; Franklin Township defines a special exception as "[a] use allowed, with permission granted by the Zoning Hearing Board, to occupy and use land and/or a building for specific purposes in accord with this Ordinance." *Id.* at ART. III §303, p. III-21. Meaning the land may be approved for use besides that which it is zoned for. BRENDAN A. O'DONNELL, *What is a Special Exception?*, HOUSTON HARBAUGH, Oct. 20, 2023, https://hh-law.com/blogs/renewable-energy-zoning-land-use/what-is-a-special-exception/. Builders seeking solar implementation may request a variance, but for the sake of clarity variances will not be assessed in this section.

[91] FRANKLIN TOWNSHIP, *supra* note 88, at ART. VIII §857.

Franklin Township's ordinance consists, in relevant part, of three limitations on land use: associated use, second principal use, and parcel size and setbacks.[92] The associated use provision states that all other uses necessary for solar facility functioning that are greater than one thousand square feet are prohibited, barring being otherwise permitted in the relevant zoning district.[93] The ordinance continues by providing standards for second principal use, or where a solar power facility is permitted on a property with an unrelated existing use.[94] Second principle use facilities are subject to the following land development standards: (1) following all size, setback and height rules, and the property remainder must meet the existing use standards; (2) automobile access to the equipment building along the driveways of the existing use; and (3) the applicant must present documentation from the property owner granting legal interest for the proposed solar facility land, and that facility automobile access.[95] Finally, the ordinance develops regulations for if the parcel is distinct parcels or leased.[96] If the parcel where the facility is located is a separate and distinct parcel or if it is leased, the minimum lot size applies, and ubiquitously must be of an appropriate size to satisfy setbacks.[97] Franklin Township's ordinance employs associated use, second principal use, and parcel size to expansively govern the majority of manners a solar facility may be implemented.

[92] *Id.* at ART. VIII §857.2 (A) (B), §857.2 (B).
[93] *Id.* at ART. VIII §857.2 (B). Such other uses may be office buildings or maintenance depots. *Id.*
[94] *Id.* at ART. VIII §857.2 (C).
[95] *Id.* at ART. VIII §857.2 (C)(1-3).
[96] *Id.* at ART. VIII §857.3 (B)
[97] *Id.* Setbacks are the minimum distance the land use must be from the road or other landmark. *Id.* at ART. III p. III-20. The ordinance also provides for a mandatory site plan, proof of proper licensing, and minimum standards for access. *Id.* at ART. VIII §857.3 (R), (E), (J), (F).

As for the aesthetics and public opinion considerations, Franklin Township's ordinance places considerable importance on the maintenance of the facility's appearance and public availability. In addition to the ordinance's general requirements, commercial solar facilities are responsible for making the facility as visually unobstructive as possible. The first consideration in the ordinance is the height of the solar panels, which may not exceed the principle structure height limitations for the zoning district which they are in.[98] Given the nature of solar panels, the ordinance also considers potential risks of glare.[99] The solar facility must provide in its application details about glare from the facility, including when and what direction glare may appear, and how glare is expected to be a nuisance to surrounding property.[100] Though not always mandatory, landscaping in the form of vegetation, walls, or decorative features around the facility may be required to serve as a visual buffer.[101] Even then, if it serves the public's interest a fence may be required to protect residents.[102] Should members of the public find themselves concerned or interested in the operations at a commercial solar facility, they may contact the solar facility's mandatory maintained phone number and identify a responsible person to address their concerns.[103] Members of the public are permitted to contact the solar facility with inquiries and complaints during the lifespan of the project, however long that may be.[104] It is the responsibility of the solar facility to

[98] *Id.* at ART. VIII §857.3 (A).
[99] *Id.* at ART. VIII §857.3 (H).
[100] *Id.*
[101] *Id.* at ART. VIII §857.3 (D).
[102] *Id.* at ART. VIII §857.3 (C).
[103] *Id.* at ART. VIII §857.4.
[104] *Id.*

make reasonable efforts to respond.[105] These aesthetic and community concern regulations ensure that the commercial solar facility is not impeding on the life and welfare of those who live in close proximity to the facility. A community-based stance protects the value of the surrounding area while allowing solar facilities to operate nearby.

When it comes to environmental and agricultural protections, Franklin Township's ordinance affords importance to the environmental impact of facility and panel decommissioning but does not have specific provisions as to how solar panels on agricultural land may interact with farming practices. At the onset of the solar facilities permit application, the owner or operator must provide Franklin Township a financial security bond of no less than $50,000 to ensure decommissioning even if the facility is unable to shoulder the financial burden at the end of its lifespan.[106] Once the solar facility or its individual components have reached their useful end, decommissioning must be complete within twelve months of such determination.[107] If the process is still incomplete by the twelve month mark, an additional 180 days are allotted to the landowner to complete the process.[108] Finally, all disturbed earth shall be graded and re-seeded, barring a request in writing from the landowner that the land remains as it is.[109] Franklin Township's decommissioning processes ensure that the facility and panel environmental impacts are low, if anything, following the

[105] *Id.*
[106] *Id.* at ART. VIII §857.5 (E).
[107] *Id.* at ART. VIII §857.5 (A),(G). It must also be noted that if decommissioning is not completed the township will intervene in all means necessary. *Id.* at ART. VIII §857.5 (H).
[108] *Id.*
[109] *Id.* at ART. VIII §857.5 (C).

end of its useful life. Even the financial security bond serves as a protection mechanism should the decommissioning process be troublesome. Further, the restoration of the land through grading and re-seeding can contribute to the protection of agricultural land if the solar facility is in that zone.

Franklin Township in Luzerne County approaches solar paneling through the lens of commercial, vendible energy. Although accessory and personal use farming are subject to the general provisions of solar farming, they are not nearly under the level of scrutiny as their commercial counterpart.

b. Dover Township, York County

Dover Township's zoning ordinance similarly begins with a glossary of relevant terms.[110] However, where Franklin Township regulates based on the facility's relationship to the electrical market, Dover Township considers the primary use of the land. A principal solar energy system ("PSES") is an area of land with the primary use of solar collection to capture solar energy and convert it to electrical energy, primarily for off-site use.[111] A PSES consists of one or more ground or roof-mounted solar collection devices, related equipment, or accessory structures.[112] These PSES are permitted in Agricultural Districts, Commercial Districts, and Industrial Districts exclusively by special exception.[113] Use is considered a special exception when the zoning board approves an application to use land in a district for a purpose

[110] DOVER TOWNSHIP, PA., ZONING ORDINANCE NO. 2024-01, at Part 2, Enacted May 13, 2024, https://www.dovertownship.org/wp-content/uploads/2024/05/2024-01-ZO-Adoption-5.13.24.pdf.
[111] *Id.* at Part 2, §27-202, 24 (defining PSES).
[112] *Id.*
[113] *Id.* at Part 3, *Dover Township Use Chart*.

other than its designated use.[114] Dover Township does not, however, explicitly consider second principal use solar in its zoning ordinance.

Dover Township's land use regulations impact PSES through the nature of principle usage and setbacks.[115] This portion of the ordinance begins with the principal use statement that "[o]n any lot or portion thereof on which a PSES is located, two (2) principal uses may be permitted, one (1) principal use being the PSES and the other being a principal use reserved unto the owner of the lot."[116] The location of the PSES must be on a lot or lots comprising no less than twenty five contiguous acres including multiple contiguous parcels, so long as these individual parcels are at least five acres.[117] Like Franklin Township, Dover Township also outlines setback requirements, particularly in regard to perimeter fencing, panels and equipment.[118] The ordinance necessitates PSES fencing be set back twenty-five feet from all property or public street lines.[119] Likewise, panels must be thirty-five feet from all property lines, and fifty feet from all public street lines.[120] In the case of both fencing and paneling, no setbacks are required between contiguous parcels included within the PSES.[121] As a catchall provision, the ordinance further provides a general requirement that, in all cases, there must be a "minimum distance of seventy-five

[114] *Id.* at Part 2, §27-202, 31. Dover Township defines a special exception as "permission or approval granted by the zoning board, to use land in a district for a purpose other than that which is generally permitted outright." *Id.* For the purpose of this article, it is assumed that any solar development in an agricultural, commercial, or industrial district has met the standards for special exception – which will not be reviewed here.
[115] *Id.* at Part 6, §27-660 (1), (2)(C).
[116] *Id.* at Part 6, §27-660 (1).
[117] *Id.* at Part 6, §27-660 (2)(B).
[118] *Id.* at Part 6, §27-660 (2)(C)(1-3).
[119] *Id.* at Part 6, §27-660 (2)(C)(1).
[120] *Id.* at Part 6, §27-660 (2)(C)(2).
[121] *Id.* at Part 6, §27-660 (2)(C)(1-2).

(75') feet between adjacent non-participating property lines and any component of the PSES including fences, buildings, panels, and other equipment."[122]

Considering aesthetics and public opinion, Dover Township regulates the visual qualities of PSES through height, screening, and glare.[123] A maximum cap is placed on the solar panels and their racking systems, which may not exceed seventy-five feet.[124] In order to shield surrounding land owners from the panel systems, PSES must be hidden from view with a Type III screening as prescribed in the Subdivision and Land Development Ordinance (SALDO) from adjacent parcels unless the affected landowner waives this right.[125] Further adding to the protection of adjacent landowners, PSESs in residential area must be completely screened prior to any structure being built.[126] Should the screening mechanism involve trees in any case, they must be of such a species specified by SALDO or be of the type to provide opaque screening within five years of planting.[127] Finally, the design requirements of the ordinance further states that the solar panels be coated with anti-reflective material, and, to the extent possible, be faced away from adjacent properties and roadways to avoid reflection on residents, motorists, and aviators.[128] In its recent ordinance update, Dover Township included a provision that requires the owner and operator of a PSES to maintain a phone number for public inquiries and complaints.[129] It also

[122] *Id.* at Part 6, §27-660 (2)(C)(3).
[123] *Id.* at Part 6, §27-660 (2)(D), (F), (I).
[124] *Id.* at Part 6, §27-660 (2)(D).
[125] *Id.* at Part 6, §27-660 (2)(F)(2-3).
[126] *Id.* at Part 6, §27-660 (2)(F)(4).
[127] *Id.* at Part 6, §27-660 (2)(F)(1).
[128] *Id.* at Part 6, §27-660 (2)(I)(2)(b).
[129] *Id.* at Part 6, §27-660 (2)(I)(5)(J).

provides that the PSES owner or operator must respond to the inquiries and complaints within forty-eight hours of being notified of such.[130]

Finally, Dover Township places considerable weight on the agricultural and environmental impact of PSES through its regulation of impervious coverage, location, and decommissioning. Impervious coverage means generally the surface area of a parcel that is covered by manmade structures and therefore may not be penetrated by stormwater or snowmelt.[131] In Dover Township, the total land area of a PSES may have up to 25% of permanent impervious coverage, which should be calculated as a percent of the total PSES acreage.[132] The land under the PSES that is covered by grass or vegetation may be considered pervious, but the foundation systems, mechanical equipment, and gravel or road access are excluded.[133] Continuing with its consideration of runoff, Dover Township requires PSES structures to be designed, constructed, and maintained in accordance with the Township Stormwater Management Ordinance.[134] Regardless of the qualities of the PSES, sites may not be located in floodways, drainage corridors, wetlands, riparian buffers around wetlands, legal easements, setback areas, woodland areas, or slopes in excess of 15%.[135] The ordinance goes on further to place limitations on what kind of soil solar related equipment may be placed on. PSES related equipment may not be placed on prime agricultural soil; or only be located on 10% of the PSES area

[130] *Id.*
[131] BETH YOUNT, *Impervious Surfaces and Stormwater Impacts*, Aug. 16, 2024, PENNSTATE EXTENSION, https://extension.psu.edu/impervious-surfaces-and-stormwater-impacts.
[132] DOVER TOWNSHIP, PA., ZONING ORDINANCE NO. 2024-01, *supra* note 110 at Part 6, §27-660 (2)(E).
[133] *Id.* at Part 6, §27-660 (2)(E)(1-2).
[134] *Id.* at Part 6, §27-660 (2)(H).
[135] *Id.* at Part 6, §27-660 (2)(I)(5)(C)(1-3), (2)(I)(5)(F)(1-8).

containing prime soil; or be limited to 10% of the development area unless said area will be devoted to agrivoltaics, in which case 5% of the prime soils may be included in development areas.[136] Lastly, an applicant shall install the PSES in a manner as to not require tree removal, absent necessary circumstances, in which case they must explain why the trees must be removed and present a plan on how they will be replaced.[137]

The relevant PSES section of Dover Township's ordinance concludes with an outlined process of decommissioning and removal.[138] The PSES owner in particular is the party required to notify Dover Township or cessation or abandonment of the project.[139] Prior to the construction permit issuance, the owner of the PSES must provide financial security in the amount of 110% of the estimated decommissioning cost minus the salvageable value of the property's additions.[140] The security amount is adjusted every five years by an engineer, for which the PSES owner must pay.[141] Finally, the ordinance provides that removal of PSES facilities be entirely completed before the release of any financial security, including proper disposal of unsalvageable or unsellable materials; obtaining of any necessary permits prior to decommissioning; and, the grading and reseeding of any disturbed earth; and the

[136] *Id.* at Part 6, §27-660 (2)(I)(5)(C)(3).
[137] *Id.* at Part 6, §27-660 (2)(I)(5)(G).
[138] *Id.* at Part 6, §27-660 (2)(I)(5)(K).
[139] *Id.* at Part 6, §27-660 (2)(I)(5)(K)(1).
[140] *Id.* at Part 6, §27-660 (2)(I)(5)(K)(2).
[141] *Id.*

complete decommission within twelve months of cessation or abandonment, subject to Dover Township's intervention.[142]

Dover Township's ordinance contains different provisions regarding land usage than Franklin Township's. The most glaring difference is the outlook each township takes, with Franklin zoning through the lens of the electrical market and Dover the land's purpose. Dover Township does not address associated use paneling in the ordinance, nor does it consider second principle use facilities beyond the reservation of the second principle use for the landowner, like Franklin Township. However, Dover Township's regulations pertaining to setbacks are tailored to PSES, unlike the general setback instructions that regulate solar energy as well as many other zoning areas. Although Dover and Franklin Townships approach land use regulations differently, they both achieve the purpose of controlling where and how solar energy may be implemented by special use within their respective zoning districts.

Franklin Township's regulations on aesthetics, including height, glare, and fencing, are nearly identical to that of Dover Township. However, Dover Township places greater responsibility on the landowner or operator to respond to public comments. The implementation of a required timeframe provides the governing body with a cause of action should the PSES owner or operator evade their obligations to

[142] *Id.* at Part 6, §27-660 (2)(I)(5)(K)(3)(a-d).

the public. Where Dover Township is like Franklin Township in its regulations on appearance, it goes beyond in compelling PSES to interact with the public.

Whereas Franklin Township and Dover Township have similarities in the protection of the environment and agricultural land, including financial security for decommissioning and the restoration of disturbed earth, it is evident that Dover Township employs stricter provisions on these concerns. Stormwater and snowmelt runoff do not permeate Franklin Township's ordinance but are a pillar of the PSES portion of Dover Township's ordinance. As for where the solar facilities may be located, Dover Township provides an extensive list of off-limits land and even considers the novel use of agrivoltaics in site selection. Finally, the decommissioning process is rather similar, barring the substantial difference in securities bonds.

The comparison of Franklin and Dover Townships exhibits drastic variation between local governments. The townships present significant differences in land use, public opinion and aesthetics, and agricultural and environmental protections, but neither is more appropriate than the other. Where the federal and Pennsylvania governments provide the regulatory framework, like the CWA, it is the responsibility of the municipalities to govern the implementation, maintenance, and decommission of solar panels on all scales. For some townships, regulation of major corporations seeking to implement hundreds of acres of grid-scale solar panels is a very real consideration, but for others their ordinances may be tailored to accommodate accessory use, small-scale solar farming.

c. Litigating Solar-Related Municipal and Zoning Disputes

When a landowner wishes to implement solar panels inconsistent with the zoning regulation's prescribed methods, they may file a request for a variance from the ordinance.[143] Most municipalities in Pennsylvania are fitted with a zoning hearing board whose responsibility is to render decisions regarding land use and variance actions.[144] However, if a variance request to the zoning hearing board is unsuccessful or there is no alternative remedy following the appeal process, litigation may be the next step.[145]

G. Morris Solar, LLC aptly puts into perspective how solar energy ordinances appear in court and are ultimately resolved. In April 2022, G. Morris Solar, LLC ("G. Morris") applied to develop a solar project on a parcel of land that is predominantly zoned as conservation land, but a small portion is located in a single-family residential district.[146] Under Borough ordinance, grid-scale solar projects are permitted in the conservation district by conditional use, and the entire parcel is deemed conservation land if that zone comprises at least 80% of the parcel.[147] Following a public hearing the Borough Council denied G. Morris' application citing, *inter alia*, failure to show that 80% of the parcel is conservation land, unharmonious relationship with residential land use, and impairment of neighboring property value

[143] BRENDAN A. O'DONNELL, *What is a Variance?*, HOUSTON HARBAUGH, P.C., Mar. 7, 2024, https://hh-law.com/blogs/renewable-energy-zoning-land-use/what-is-a-variance/. A variance is "a form of relief that allows a property owner to use the land in a different way than what is strictly required by the zoning ordinance." *Id.*
[144] *Zoning Hearing Board Procedures; Navigating the Zoning Hearing Process*, PA. GOVERNOR'S CENTER FOR LOCAL GOV'T SERVICES, https://dced.pa.gov/download/tip-sheet-zoning-hearing-board-procedures/?wpdmdl=56224&refresh=6148cc145895d1632160788#:~:text=The%20Zoning%20Hearing%20Board%20(ZHB,&%20ECONOMIC%20DEVELOPMENT.
[145] *How to Challenge Zoning Decisions in Pennsylvania: A Step-by-Step Guide*, DAVIS BUCCO & MAKARA, https://davisbucco.com/how-to-challenge-zoning-decisions-in-pennsylvania/.
[146] *G. Morris Solar, LLC v. Borough Council of Borough of Gratz*, 337 A.3d 988 (Pa. Commw. Ct. 2025), *reargument denied* (May 8, 2025)
[147] *Id.*

through aesthetic impact.[148] The Borough Council's decision did not contain findings of fact, determinations of witness credibility, or conclusions of law.[149] G. Morris appealed to the court.[150] When the action was fully briefed and ripe for disposition, the trial court reversed the Borough Council's decision as an abuse of discretion and error of law, finding that G. Morris satisfied the objective criteria for conditional use.[151]

On appeal, the Borough Council raised a number of issues for review, arguing in relevant part (1) the trial court erred or abused its discretion by finding a grid-scale solar project is harmonious with residential use, (2) there lacks substantial evidence that the solar project will not negatively impair adjacent property value, including value based in aesthetics, (3) the record lacks substantial evidence that 80% of the parcel is in the area zoned for conservation.[152]

In evaluating the first issue, the court considered the nature of a conditional use provision, which entitles an applicant to conditional use unless the governing body finds that the use does not satisfy the ordinance's specific and objective criteria.[153] Thus, the burden is shifted to the Borough Council to show with a high degree of probability that the proposed use of the parcel will have a direct and adverse

[148] *Id*. During this dispute the Borough adopted a zoning amendment that modified the regulation of grid-scale solar energy systems, which had the potential to hinder G. Morris's project. In a separate case, the court ruled this amendment to be *void ab initio* for failing to adhere to the procedural requirements for adoptions. *See Borough Council of the Borough of Gratz v. G. Morris Solar, LLC* (Pa. Cmwlth., No. 1049 C.D. 2022, filed October 13, 2023), *appeal denied*, 318 A.3d 96 (Pa. 2024).
[149] *Id.*
[150] *Id.*
[151] *Id.*
[152] *Id.*
[153] *Id.*, quoting *In re Drumore Crossings, L.P.,* 984 A.2d 589, 595 (Pa. Cmwlth. 2009).

effect on the public welfare that is not typically expected.[154] Restated, G. Morris was entitled to the assumption that the solar plan was compatible, and the court held that the Borough Council failed to meet its burden.

The court considered the final two issues using similar reasoning. Regarding whether the project would negatively affect adjacent property value, the court concluded that this assertion lacked substantial evidentiary support.[155] The court pointed to the fact that the Borough Council relied primarily on a resident's complaint, but neglected to accept the testimony of an appraiser who surveyed the land and cited multiple supporting studies.[156] The court rejected the Borough Council's dismissal of credible expert witness testimony, determining instead that the appraiser's analysis constituted substantial evidence to support the finding that G. Morris' project would not impair neighboring property values.[157]

In regard to whether the conservation zone of the parcel constituted 80% of the total parcel, the court likewise found no substantial evidence to support the claim that the trial court erred in finding that 80% of the land was zoned for conservation.[158] In reaching this conclusion, the court relied on the testimony of a project manager, the zoning map, and the lack of evidence suggesting the contrary.[159]

[154] *Id.*, quoting *Aldridge v. Jackson Township*, 983 A.2d 247, 253 (Pa. Cmwlth. 2009).
[155] *Id.*
[156] *Id.*
[157] *Id.*
[158] *Id.*
[159] *Id.*

G. Morris Solar, LLC reveals a common collision between solar energy and zoning ordinances that may be unresolvable at the local level. As solar energy continues to develop, there is likely to be an increase in this kind of litigation.

III. ANALYSIS

i. Improvement of State Level Solar Regulations

As solar energy grows, establishment of a regulatory system suited to promote expanding implementation is essential to the industry's future. Because the federal and state governments largely take a step back from solar regulation, the argument may be made that higher government is primed to take a leading role in the regulation of solar panels. On the other hand, because solar paneling is most impactful at the local level, removing this power from municipal governments may create tension with the state. Therefore, balancing these factors leads to the conclusion that solar energy is most effectively regulated by the local government, but Pennsylvania should take a more active approach to standardize crucial points of regulation.

Specifically, the decommissioning process must become standardized to provide a powerful base protection for townships. The current status of decommissioning is that each township is responsible for regulating the decommissioning of panels, besides adherence to RCRA. Ideally, the facility developer will fund the decommissioning process in full to the standards of the township either through their own funds or funds posted in a financial security bond. However, issues may arise when a developer cannot, for various foreseeable reasons, effectively

decommission the panels. The passage of Senate Bill 349 is critical to ensuring proper and consistent decommissioning practices. SB 349 not only sets out the requirement of full estimated cost in financial security bonds and delegation of responsibility to the developer, but also a timeline for project completion. This is beneficial for both the township, who can rely on the financial security bonds, and the implementor. In the case of grid-scale, corporate developers, consistency may promote better practices on a scale greater than townships. Requiring comprehensive financial security bonds, an acceptance of responsibility, and a time limit for completion would provide a base safeguard for townships so as to limit cases of a sudden weight of financial and resource burdens, especially in the context of grid-scale paneling.

With the rolling back of federal tax incentives like RCE credits and the cut in funding to the REAP program, it appears the time has come for Pennsylvania to produce its own incentive program. Credits and programs are critical to garner interest in renewable energy systems. State level tax credits need not be different from federal credits to be effective. In fact, familiar benefits and processes may be positive for residents as a way of making the application process easier and providing residents with a predictable amount of credits. RCE credits could provide states with a model baseline credit system that is malleable based on needs and resources. In Pennsylvania, this could mean increasing credit amounts for residents who opt to locate panels on the roof of a structure rather than green spaces. State run credits also provide the state with more freedom as to the repurpose of industrial sites. Because credits are so alluring to potential solar implementors, Pennsylvania may

use them to incentivize proper regulation, such as by creating a credit for developers who exceed environmental requirements or regularly have the site inspected by qualified professionals. RCE credits have had a clear impact on the implementation of solar energy across the country, and their expiration could be supplemented by state tax credits.

ii. Utilizing Agrivoltaics

As solar energy becomes more common, so does the concern about best use of land. Solar energy proves to be a profitable venture for local farmers and landowners, and the same is to be said about grid-scale solar facilities. It is well recognized, however, that solar panel cells have low efficiency and obtaining a reasonable amount of solar energy requires more panels than one might imagine.[160] Thus, producing enough solar energy to sustain a community may require tens to hundreds of acres.[161] In recent years, the Pennsylvania Department of Agriculture has expressed growing concern that prime agricultural land is being used for solar farming and not traditional uses of farmland.[162] These issues may be settled by the newly popularized process of agrivoltaics.

[160] *Solar PV Energy Factsheet*, CENTER FOR SUSTAINABLE SYSTEMS, UNIVERSITY OF MICHIGAN, https://css.umich.edu/publications/factsheets/energy/solar-pv-energy-factsheet, (Last visited Nov. 6, 2025). Most available solar panels have efficacy rating of around 20%, with some developing models rate around 50%. *Id.*

[161] *Frequently Asked Questions (FAQs); How much electricity does an American home use?,* ENERGY INFO. ADMIN., Jan. 8, 2024, https://www.eia.gov/tools/faqs/faq.php?id=97&t=3. The average U.S. residential electric-utility customer purchases about 10.791 megawatts of energy per year. *Id.* It is estimated that the production of one megawatt requires approximately ten acres of land. JESSI WYATT, MAGGIE KRISTIAN, *The True Land Footprint of Solar Energy*, Sep. 14, 2021, https://betterenergy.org/blog/the-true-land-footprint-of-solar-energy/#:~:text=Estimating%20the%20land%20footprint%20of,used%20for%20solar%20electric%20generation.

[162] Although there is no statewide ban on siting solar on farmland, the Pennsylvania Department of Agriculture has published materials for the consideration of potential developers that aim to inform about the potential risks associated with this practice, including loss of crop production. *Farmland Considerations for siting Grid-Scale Solar*, PA. DEPT. OF AG., Dec. 22, 2022, https://www.puc.pa.gov/media/2728/farmland_considerations_for_siting_grid-scale_solar_panels.pdf.

Agrivoltaics is a land use method that co-locates solar and agriculture, typically by implementing shade tolerant crops, pollinator habitats, or grazing animals under the panels.[163] As of November 2024, the National Renewable Energy Laboratory has identified nearly six hundred agrivoltaic sites within the United States, almost double the amount identified in 2023.[164] Utilizing agrivoltaics is particularly appealing for farmers and small-scale landowners because it allows for two sources of income from a single parcel. For example, a farmer may produce enough energy to power her farm and extra to sell to electric distribution companies and electric generation suppliers; all the while producing leafy greens and root vegetables or livestock.

Co-location not only benefits the farmer, but the larger community as well. In 2019, Pennsylvania State University ("Penn State") entered into a twenty-five-year solar power purchase agreement to implement over 150,000 solar panels on roughly 500 acres.[165] Although the operation contributes substantially to Penn State's energy requirements, it also acts as a "living laboratory" for Penn State students and other environmental scholars to conduct hands-on research.[166]

[163] *Agrivoltaics: Solar and Agriculture Co-Location*, U.S. DEPT OF ENERGY, https://www.energy.gov/eere/solar/agrivoltaics-solar-and-agriculture-co-location, (Last visited Nov. 4, 2025).
[164] *Id.* As of March 2023 there were 314 agrivoltaic projects in the United States. *Id.*; SARA FALL, *Lighting the Way for Agrivoltaics: How NREL Empowers Communities To Capture the Benefits of Solar Energy, Agriculture, and Ecosystems*, NAT'L RENEWABLE ENERGY LABORATORY, Nov. 21, 2024, https://www.nrel.gov/news/feature/2024/lighting-the-way-for-agrivoltaics.
[165] *Solar Projects at Penn State*, PA. STATE UNIVERSITY, https://sustainability.psu.edu/campus-efforts/operations/energy/solar-projects/, (Last visited Nov. 5, 2025).
[166] *Solar farm, living laboratory*, LIGHTSOURCEBP, Aug. 6, 2022, https://lightsourcebp.com/us/news/solar-farm-living-laboratory-lightsource-bps-nittany-solar-projects-in-pennsylvania/.

Agrivoltaics is a growing industry that has yet to be fully studied, but it provides a purposeful alternative to using viable land for a single purpose.

iii. Lessening the Permitting Burden on Municipalities

In Pennsylvania, non-commercial residents seeking to implement solar panels must have the proper permits required by their municipality, which may only be approved by that same municipality. With municipalities being the chief governor of solar implementation, locations with high solar demand may become backlogged with permits, leading to less renewable energy and more procedural hurdles for potential investors. An alternative to this system is the use of authorized local third-party professionals to review and approve permits, thus lessening the burden on municipalities. This may take the form of resident energy companies and providers who have the tools and skills to perform such permitting.

In 2025, Texas passed Bill 1202 authorizing third-party professionals to review and inspect, amongst other documents, permits for electric generating infrastructure that operate at or under 600 volts, regardless of grid connectivity.[167] It must be noted, however, that Texas greatly benefits from its fossil-fuel production, and some speculate that these initiatives can potentially foster an ulterior purpose of altering the traditional control and oversight afforded to communities through local zoning.[168]

[167] S.B. 1202, 89th Legislature, Tx. 2023, https://legiscan.com/TX/text/SB1202/id/3245770/Texas-2025-SB1202-Enrolled.html.
[168] MOHAMMED ABDALLA, *SB1202 & SB1252: Faster Solar & Battery Permitting in Texas in 2025, But What's the Catch?*, Aug. 18, 2025, GOOD FAITH ENERGY, https://goodfaithenergy.com/sb1202-sb1252-faster-solar-battery-permitting-in-texas-in-2025-but-whats-the-catch/#:~:text=While%20SB1202%20introduces%20major%20improvements,No%20Deadline%20for%20Review%20Completion.

Pennsylvania may be well-positioned to benefit from the adoption of third-party permitting. Across the state, approval timelines for building and energy installation can greatly vary depending on the municipality and local resources. The fluctuating timelines for solar projects may produce uncertainty in residents as to the viability or value of solar installation. Implementing a third-party system like that in Texas would streamline the approval process by distributing responsibility to qualified external reviewers who can handle these low-risk permits more efficiently, thus allowing municipalities to conserve their resources for more pressing and complex grid-scale ventures. Faster review timelines further mean residents and businesses gain easier access to clean energy options while moving the state closer to its solar carve out goals. The issues posed in Texas concerning potential undermining of local power may be alleviated in Pennsylvania by implementing rigorous, conditional, and individualized approval programs by municipalities. This would allow municipalities to retain control over the permitting process but still benefit from the distributed work. Third party permitting has the potential to drive continued growth in the renewable industry while benefiting private citizens.

IV. CONCLUSION

Solar energy has infiltrated the major considerations of energy in general, and it is likely that areas with significant open land, like Pennsylvania, will increasingly encounter the presence of solar panels. Ultimately, the development of a legal framework in Pennsylvania at the federal and state levels has been largely similar to an advisory agency, acting only to establish certain tools such as carve-outs and

minimum standards like clean water. The bulk of regulatory action occurs at the local level and can vary widely between townships, as seen with Townships of Dover and Franklin. The regulatory power for solar energy must remain in the hands of the municipalities, but that is not to say the state should not take on a larger role. By filling the gaps left by recent federal changes, Pennsylvania has the opportunity to continue growing solar energy within itself while promoting a standardized process for essential tasks. The same may be said about land usage and the benefits of evolving the practice of solar energy to create sustainable solutions to land use. Finally, the expansion of permitting processes to allow for third party involvement may further promote responsible yet efficient growth of small and large scale solar ventures.

THREAT TO ENDANGERED SPECIES HABITATS: AN ANALYSIS OF THE PROPOSED RULE AND COMMENTS TO RESCINDING THE DEFINITION OF HARM UNDER THE ENDANGERED SPECIES ACT

Delaney Szekely[1]

The American public has long held an interest in the fate of threatened and endangered species.[2] Although legislative efforts spanned decades to arrive at the protections afforded to such species today, the largely bipartisan support resulted in the enactment of the Endangered Species Act (ESA) in 1973.[3]

On April 17, 2025, the Fish and Wildlife Service (FWS) and the National Marine Fisheries Service (NMFS), the agencies tasked with administering the ESA, proposed a rule to alter the regulatory definition of harm, as affirmed in 1995 by the United States Supreme Court in *Babbitt v. Sweet Home Chapter of Communities for a Great Oregon*.[4] The current regulatory definition of harm, which the proposed rule seeks to remove, broadly includes habitat modification– the modification of lands that house wildlife such that "essential behavioral patterns, including breeding, feeding or sheltering" are disrupted.[5] In its proposed rulemaking, the FWS emphasized that the Court's decision in *Sweet Home* affirmed the agencies' interpretation based on *Chevron* deference, which was recently overturned

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[2] RUSSELL MCLENDON, Most Americans support the Endangered Species Act— but that might not matter, Mother Nature Network, https://www.biologicaldiversity.org/news/media-archive/a2018/ESA_MNN_7.29.18.pdf, (July 29, 2018).
[3] *Id.*
[4] Rescinding the Definition of "Harm" Under the Endangered Species Act, 90 Fed. Reg. 16102, 16103 (proposed Apr. 17, 2025); Babbitt v. Sweet Home Chapter of Cmty. for a Greater Or., 515 U.S. 687 (1995).
[5] 50 C.F.R. § 17.3 (West 2024).

in *Bright Enterprises v. Raimondo*.[6] FWS now asserts that in light of *Chevron*'s overturning, the definition of harm must align with the statute's authorizations.[7]

This article details the history of the legislative efforts to protect United States wildlife and plant species, ultimately resulting in the protections afforded under the ESA. With that background, the article will then consider the current rescission efforts of the FWS to limit the regulatory definition of harm under the ESA. Then, the article will evaluate the arguments made by supporters and opponents of the proposed rule. Lastly, the article will consider the fate of the proposed rule.

I. LEGISLATIVE HISTORY RESULTING IN THE ENDANGERED SPECIES ACT (ESA)

A. Early Efforts to Protect U.S. Wildlife

Congress's first attempt to protect species facing extinction was the Lacey Act.[8] Passed in 1900, the act attempted to protect United States wildlife in numerous ways.[9] Most notably, it sought to disrupt the market for commercial hunting and the shipment of illegally captured animals between states.[10] To achieve this purpose, "[t]he Act. . .permits the Department Of The Interior to seize the offending items or animals, and to export or destroy any such prohibited eggs, fish or wildlife at the expense of the importer," and, "The Lacey Act also makes it unlawful to import into

[6] Rescinding the Definition of "Harm" Under the Endangered Species Act, 90 Fed. Reg. 16102, 16103 (proposed Apr. 17, 2025), Chevron, U.S.A., Inc. v. Nat. Res. Def. Council, Inc., 467 U.S. 837, 843-44 (1984), overruled by Loper Bright Enter. v. Raimondo, 603 U.S. 369, 412 (2024).
[7] Rescinding the Definition of "Harm" Under the Endangered Species Act, 90 Fed. Reg. 16102, 16103 (proposed Apr. 17, 2025).
[8] BRIAN CZECH & PAUL R. KRAUSMAN, THE ENDANGERED SPECIES ACT: HISTORY, CONSERVATION BIOLOGY AND PUBLIC POLICY 32 (2001) (ebook).
[9] The United States Department of Agriculture Animal and Plant Health Inspection Service, THE LACEY ACT: FEDERAL REGULATION AND PROTECTION OF WILDLIFE AND PLANTS 77 (Gilbert E. Morgan & Deavon Hill eds., 2012) (ebook) (established the framework to challenge illegal trafficking of animals and identified destructive "exotic species.")
[10] *Id.*

the United States or any of its territories any wildlife, including fish, mollusks and crustacea, and their eggs."[11] However, the implemented law primarily assisted the enforcement of existing wildlife laws.[12] The law applied broadly to all plants, animals, and fish obtained in any manner that violated existing state or tribal law.[13] The Lacey Act also had significant implications to federal law, as well as foreign law.[14]

Alternative avenues for wildlife conservation emerged during Theodore Roosevelt's presidency.[15] In an effort to provide sanctuaries for local flora and fauna, Roosevelt designated Pelican Island, Florida as federal land dedicated to conservation.[16] However, that was just the beginning; throughout his presidency Roosevelt established 52 wildlife sanctuaries.[17]

Further legislative efforts followed when the United States entered a treaty with Canada to protect migratory birds.[18] The treaty was ratified as The Migratory Bird Treaty Act of 1918.[19] Similar treaties were entered into and ratified between the United States and other nations.[20] Congress established the Migratory Bird Conservation Act of 1929.[21] The act created the Migratory Bird Conservation Commission, which was responsible for identifying land that migratory birds

[11] HENRY D. MCCOY II, AMERICAN AND INTERNATIONAL AQUACULTURE LAW: A COMPREHENSIVE LEGAL TREATISE AND HANDBOOK COVERING AQUACULTURE LAW, BUSINESS AND FINANCE OF FISHES, SHELLFISH AND AQUATIC PLANTS 222-24 (2000) (ebook).
[12] *Id.* at 222.
[13] *Id.* at 225.
[14] *Id.*
[15] CZECH & KRAUSMAN, *infra* note 17.
[16] *Id.*
[17] *Id.*
[18] *Id.* at 33.
[19] *Id.*
[20] *Id.;* See 16 U.S.C.A. § 703 (West) (codifying treaties between the United States and Mexico, Japan, Russia protecting migratory birds).
[21] SHANNON C. PETERSEN, ACTING FOR ENDANGERED SPECIES: THE STATUTORY ARK 11 (2002).

frequented, so that the Department of the Interior could purchase the land to benefit the birds.[22]

Around this same time, in 1934, the Fish and Wildlife Coordination Act was passed.[23] The act aimed to protect fish in national waterways by prompting those building dams to identify the fish to be impacted by construction through collaboration with the Bureau of Fisheries.[24] Moreover, the act insisted upon the protection of ecosystems by denoting them as federal lands.[25] Additional acts were proposed throughout the 1930s.[26] These efforts came to fruition with the passage of the Bald Eagle Protection Act in 1940.[27]

While Congress made significant strides in the first half of the 20th century, World War II greatly impacted its momentum.[28] Regardless, many of the aforementioned statutes established a strong basis upon which later legislation was able to emerge.[29]

B. The Endangered Species Acts of 1966 and 1969

The burgeoning social interest in ecology inspired a more proactive approach to the conservation of animal and plant species.[30] In 1964, the Committee on Rare and Endangered Wildlife Species published a list of 63 endangered species.[31] This list

[22] CZECH & KRAUSMAN, *supra* note 7, at 33.
[23] PETERSEN, *supra* note 20, at 13.
[24] *Id.*
[25] *Id.*
[26] *Id.* at 15.
[27] *Id.* at 16.
[28] *Id.*
[29] *Id.* at 20.
[30] *Id.* at 21.
[31] CZECH & KRAUSMAN, *supra* note 7, at 37.

was the first official one of its kind to denote species threatened by the likelihood of extinction.[32]

Such extensive threats to United States wildlife spurred Congress to pass the Endangered Species Preservation Act in 1966.[33] Under this act, the Secretary of the Interior was tasked with creating and maintaining a comprehensive guide of animals and fish deemed endangered.[34] Then, based on this identification, the law attempted to protect national wildlife in two ways. First, it expressly provided that federal agencies were to protect endangered animals' habitats to a "'practicable'" extent.[35] Second, the act prohibited the removal of endangered wildlife from the predetermined national sanctuaries.[36] Beyond these efforts, the act also created the National Wildlife Refuge System to oversee the existing refuges and expand their safe haven to all endangered species.[37] Endangered species could not be taken from these preserves, however these prohibitions were limited to the national preserves.[38]

Evidently, the law did not provide the protections necessary for species facing extinction, so Congress attempted further protections in the 1969 Endangered Species Conservation Act.[39] The 1969 act extended the aforementioned protections to invertebrates.[40] Additionally, the act explicitly limited the importation of any species

[32] *Id.*
[33] *Id.*
[34] JOHN R. BURCH JR., ENDANGERED SPECIES PRESERVATION ACT OF 1966 AND ENDANGERED SPECIES CONSERVATION ACT OF 1969, in THE GREAT SOCIETY AND THE WARD ON POVERTY: AN ECONOMIC LEGACY IN ESSAYS AND DOCUMENTS 80 (2017) (ebook).
[35] CZECH & KRAUSMAN, *supra* note 7, at 37-38.
[36] *Id.* at 38.
[37] PETERSEN, *supra* note 20, at 23.
[38] BURCH, *supra* note 33.
[39] PETERSEN, *supra* note 20, at 25.
[40] CZECH & KRAUSMAN, *supra* note 7, at 38.

determined to be endangered solely for the purposes of education, science, or zoology.[41]

Moreover, the act required the Secretary of the Interior to host an international convention.[42] Congress sought to include the international community because the 1969 Act directly implicated international extinction issues, in addition to domestic issues.[43] The Secretary accomplished this duty through the Convention on International Trade in Endangered Species of Wild Fauna and Flora.[44] Upon the convention's completion, two major actions emerged.[45] The first was an agreement banning the international trade of recognized endangered species.[46] Second, it created an organizational system establishing a ranking among the endangered species with those determined to be most threatened acknowledged sooner than those in less dire situations.[47]

C. The ESA and Its Iterations

Despite the efforts of the 1966 and 1969 statutes, it became evident that these laws were insufficient to combat the threats to endangered species.[48] A significant shortcoming of the previous acts was the failure to provide protection for plants found within endangered species habitats.[49] Not only was the protection of plants important

[41] BURCH, *supra* note 33, at 80-81.
[42] CZECH & KRAUSMAN, *supra* note 7, at 38.
[43] *Id.*
[44] *Id.*
[45] *Id.*
[46] *Id.*
[47] *Id.*
[48] PETERSEN, *supra* note 20, at 27.
[49] BURCH, *supra* note 33, at 81.

to preserving the flora of the nation, but many endangered species relied on the vanishing plants for survival.[50] Ultimately, the ESA was enacted by President Nixon in 1973 because of the nation's universal interest in endangered species protection.[51]

The ESA expressly provides that its purpose was to preserve threatened and endangered species through appropriate conservation.[52] The act differentiates endangered species from threatened species based on the likelihood of their extinction.[53] Where a species is significantly in danger of extinction, it is endangered.[54] Conversely, a threatened species is simply a species likely to become endangered.[55] Learning from the errors of the past, Congress broadly defined the creatures it intended for the ESA to protect.[56] In addition, Congress provided an extensive definition of what it means to take an endangered species.[57] Under the ESA, to "take" includes "harass[ing], *harm[ing]*, pursu[ing], hunt[ing], shoot[ing], wound[ing], kill[ing], trap[ping], captur[ing], or collect[ing], or. . .attempt[ing] to engage in any such conduct."[58] Persons found violating the ESA's provisions may be subject to civil or criminal penalties.[59]

The ESA continued to charge the Secretary of the Interior with identifying at risk species as either threatened or endangered from "scientific and commercial

[50] *Id.*
[51] PETERSEN, *supra* note 20, at 30.
[52] The Endangered Species Act of 1973, Pub. L. No. 93-205, 87 Stat. 884, 885 (1973).
[53] M. LYNNE CORN, EUGENE H. BUCK & KRISTINA ALEXANDER, Cong. Rsch. Serv., The Endangered Species Act: A Primer, 4 (2008).
[54] *Id.*
[55] *Id.*
[56] The Endangered Species Act of 1973, Pub. L. No. 93-205, 87 Stat. 884, 885 (1973).
[57] *Id.* at 886.
[58] *Id.* (*emphasis added*).
[59] *Id.* at 897-98.

data."[60] The Secretary has the ability to promote or demote the status of a species, or remove it from the list entirely, all of which is subject to the scientific and commercial data requirement.[61] These determinations are to be published in the Federal Register.[62] Beyond the efforts of identifying threatened and endangered species, the ESA also charged the Secretary of the Interior with identifying "critical habitats."[63] Critical habitats are deemed to be locations where endangered or threatened species are found, or locations where species could thrive based on the ecological features.[64] Finally, the Secretary may also obtain land for species conservation.[65]

Given the global nature of the problem, the ESA required international participation.[66] Within the United States, the act empowers the President to help countries that the Secretary of the Interior finds in need of assistance in conserving wildlife.[67] It also insisted upon the United States continued interest and promotion of foreign programs that endeavored to conserve threatened or endangered species, or banned the importation of international species to the United States.[68]

The ESA provided a comprehensive list of prohibited acts to effectively protect endangered and threatened species.[69] Such bans extended to animals taken domestically, as well as creatures taken from the "high seas."[70] Threatened or

[60] M. LYNNE CORN ET AL., THE ENDANGERED SPECIES ACT: A PRIMER 6 (2008).
[61] *Id.* at 6.
[62] The Endangered Species Act of 1973, Pub. L. No. 93-205, 87 Stat. 884, 887 (1973).
[63] M. LYNNE CORN ET AL., THE ENDANGERED SPECIES ACT: A PRIMER 6 (2008).
[64] *Id.*
[65] *Id.* at 7.
[66] The Endangered Species Act of 1973, Pub. L. No. 93-205, 87 Stat. 884, 892-93 (1973).
[67] *Id.* at 892.
[68] *Id.* at 892-93.
[69] *Id.* at 893-94.
[70] *Id.*

endangered species could not be imported or exported, nor can a party sell, or even offer to sell, without violating the ESA.[71] While the ESA provided numerous protections for endangered and threatened wildlife and fish species, it had fewer limitations for endangered and threatened plant species.[72]

Although the initially enacted ESA provided significantly more protections for species, it has been amended multiple times.[73] Despite the changes to the ESA, the consistency of the statute's purpose is unwavering; conservation for threatened and endangered species to be achieved through necessary action.[74] Moreover, to this day, the ESA continues to recognize that harm is simply one definition of taking.[75]

II. THE REGULATORY DEFINITION OF HARM AND THE ESA

A. Babbitt v. Sweet Home Chapter of Communities for a Great Oregon

In 1996, the United States Supreme Court addressed the definition of harm under the ESA in the landmark *Sweet Home* decision.[76] At issue in the case was whether the Secretary of the Interior overextended the authority granted by the ESA defining harm in a 1975 regulation.[77]

The Court utilized three methods of statutory interpretation to determine whether the regulatory definition of harm was reasonable.[78] It considered the plain meaning of the word *harm*, the legislator's intent in passing the ESA, and the theory

[71] *Id.*
[72] *Id.* at 894.
[73] M. LYNNE CORN ET AL., THE ENDANGERED SPECIES ACT: A PRIMER 4 (2008).
[74] 16 U.S.C.A. § 1531 (West).
[75] 16 U.S.C.A. § 1532 (West).
[76] Babbitt v. Sweet Home Chapter of Cmty. for a Greater Or., 515 U.S. 687, 690 (1995).
[77] *Id.*
[78] *Id.* at 697.

that Congress intends for amendments to have legislative effect.[79] Moreover, the Court emphasized that where an agency's interpretation of the statute is reasonable, the Court must display a minimum level of deference.[80]

The Court ultimately held that, for three reasons, the regulatory definition of harm was reasonable.[81] First, it explained that the dictionary definition of harm encompasses injurious conduct, so under a plain language analysis, harm would include significant modifications to an endangered or threatened species' natural habitat that could ultimately injure or kill the species.[82] Second, it emphasized that the ESA's statutory purpose supports a finding that harm encompasses habitat destruction.[83] Specifically, Congress intended the statute to have a wide breadth to ensure adequate protections for endangered and threatened species to avoid extinctions.[84] Third, the Court reasoned that because of the 1982 amendment, Congress knew the amendment would encompass habitat destruction when granting the Secretary the authority to issue permits for incidental takings.[85] Given the nature of an incidental taking, one could not incorporate such an action into a permit application.[86] By granting incidental permits, Congress acknowledged the likelihood of an incidental taking in addition to an intentional taking.[87] The Court recognized that when Congress enacts an amendment it is "'to have real and substantial

[79] *Id.* at 697-701.
[80] *Id.* at 703-04.
[81] *Id.* at 695.
[82] *Id.* at 697.
[83] *Id.* at 698.
[84] *Id.* at 699.
[85] *Id.* at 700.
[86] *Id.* at 700-01
[87] *Id.* at 700.

effect.'"[88] For those three reasons, the Court found that the regulatory definition of harm, including habitat destruction, was reasonable.[89] Furthermore, the Court generally cited *Chevron U.S.A. Inc. v. Natural Resources Defense Council, Inc.* to emphasize that where the Secretary's definition of harm was reasonable, agency deference applies.[90]

Therefore, the Court upheld the definition established by the Secretary.[91]

B. FWS and NMFS Proposed Rule Narrowing the Regulatory Definition of Harm

On April 17, 2025, FWS and NMFS published in the *Federal Register* a proposed rulemaking, entitled "Rescinding the Definition of "Harm" Under the Endangered Species Act."[92] The agencies propose this new rule on the basis that the current regulatory definition of "harm" contradicts the definition of "take" within the statute. The proposed rule seeks to rectify this inconsistency to better comply with the ESA.[93]

In its proposal to limit the definition of harm, the agencies first quote the statutory definition of take, which, as set forth above, is "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such

[88] *Id.* at 701.
[89] *Id.* at 708.
[90] Babbitt v. Sweet Home Chapter of Cmty. for a Great Or., 515 U.S. 687, 708 (1995); Chevron, U.S.A., Inc. v. Nat. Res. Def. Council, Inc., 467 U.S. 837, 843-44 (1984) (holding that agency's reasonable interpretations of applicable statutes are due deference on account of the agency's expertise and familiarity with its statute), overruled by Loper Bright Enter. v. Raimondo, 603 U.S. 369, 412 (2024).
[91] Sweet Home Chapter of Cmty. for a Great Or., 515 U.S at 708.
[92] Rescinding the Definition of "Harm" Under the Endangered Species Act, 90 Fed. Reg. 16102 (proposed Apr. 17, 2025); 54 U.S.C.A § 100101(b)(1)(C) (West 2014).
[93] Rescinding the Definition of "Harm" Under the Endangered Species Act, 90 Fed. Reg. 16102, 16103 (proposed Apr. 17, 2025).

conduct."[94] Then, citing Justice Scalia's dissent in *Sweet Home*, the agencies determined:

> under the *noscitur a sociis* canon, the definition of "harm," like the other nine verbs in the definition, should be construed to require an "affirmative act[ ] . . . directed immediately and intentionally against a particular animal—not [an] act[ ] or omission[ ] that indirectly and accidentally cause[s] injury to a population of animals."[95]

Relying on this canon, along with "over a thousand years of history," the agencies determined that the inclusion of habitat destruction extends the meaning of harm beyond the statutory limits, which solely refer to killing or injuring wildlife.[96]

Additionally, the agencies expressed concerns about the current regulatory definition of harm under the new *Loper Bright* standard.[97] The FWS and NMFS state that the Court's recent decision in *Loper Bright* requires regulations promulgated by agencies to be authorized by the statute.[98] Here, they argue that the existing regulation does not coincide with the statute's definition of take. Thus, the regulatory definition of harm must be rescinded.[99]

Finally, despite rejecting the basis of *Sweet Home* due to the Court's utilization of the recently overturned *Chevron* doctrine, FWS and NMFS rely on a different portion of *Sweet Home* to bolster their proposed rule.[100] The agencies explain that the

[94] Rescinding the Definition of "Harm" Under the Endangered Species Act, 90 Fed. Reg. 16102 (proposed Apr. 17, 2025).
[95] Rescinding the Definition of "Harm" Under the Endangered Species Act, 90 Fed. Reg. 16103 (proposed Apr. 17, 2025).
[96] *Id.*
[97] *Id.*
[98] *Id.*
[99] *Id.*
[100] *Id.*

Court in *Sweet Home* expressly recognized that its regulatory definition of harm is simply one permissible interpretation of the ESA, not the sole interpretation.[101]

The proposed rule was open for notice and comment until May 19, 2025.[102] Upon the closing of the comment period, the agencies received 242,899 public comments pertaining to the proposed rule.[103] Ultimately, the FWS and NMFS state that should the proposed rule be accepted upon finalization it will be considered "an Executive Order 14192 deregulatory action."[104] The classification indicates compliance with the executive's request to "alleviate unnecessary regulatory burdens."[105]

III. COMMENT ANALYSIS

Given that endangered species protection has historically been viewed as a bipartisan issue, it is not surprising that although the agencies limited the comment submission period to slightly more than a month, substantial comments were received.[106] Commenters had the ability to publish under their name or anonymously. Published comments were received from many individuals, in addition to comments made by organizations.[107] Most comments opposed the proposed rule, though some

[101] *Id.*
[102] *Id.* at 16102.
[103] Rescinding the Definition of "Harm" Under the Endangered Species Act, 90 Fed. Reg. 16104 (proposed Apr. 17, 2025).
[104] Rescinding the Definition of "Harm" Under the Endangered Species Act, 90 Fed. Reg. 16104 (proposed Apr. 17, 2025); 54 U.S.C.SA § 100101(b)(1)(C) (West 2014).
[105] Exec. Order No. 14,192, 90 F.R. 9065 (2025).
[106] Russell McLendon, *supra* note 1.
[107] Kidd Biological, Inc., Comment to Rescinding the Definition of "Harm" Under the Endangered Species Act, REGULATIONS.GOV (May 19, 2025), https://www.regulations.gov/comment/FWS-HQ-ES-2025-0034-150930; Gwen Chamberlain, Comment to Rescinding the Definition of "Harm" Under the Endangered Species Act, REGULATIONS.GOV (May 12, 2025), https://www.regulations.gov/comment/FWS-HQ-ES-2025-0034-100099; Bill Murrin, Comment to Rescinding the Definition of "Harm" Under the Endangered Species Act, REGULATIONS.GOV (May 7, 2025), https://www.regulations.gov/comment/FWS-HQ-ES-2025-0034-43570.

were received in support as well.[108] The following is a summary of the most cited reasons either opposing or favoring the proposed rulemaking.

A. Arguments Supporting the Proposed Rule

The most common argument supporting the proposed rule was the restrictions placed on the agencies. Those who champion the proposed regulation emphasize that while they support wildlife, it seems as though agencies' actions have extended past the statutory authority granted by the ESA.[109] Some commenters went as far as to suggest that by promulgating such lofty rules, these agencies have abused their discretion.[110] By promulgating a rule that rescinds the definition of harm, those in favor believe that the animals that are truly critical can be assisted, while species less critical to the ecosystems are not subject to extensive regulation.[111] Moreover, these commenters raise concerns about how the current wide-reaching definition of harm provides unnecessary protections that interfere with necessary projects on regulated lands.[112]

[108] Bill Murrin, Comment to Rescinding the Definition of "Harm" Under the Endangered Species Act, REGULATIONS.GOV (May 7, 2025), https://www.regulations.gov/comment/FWS-HQ-ES-2025-0034-43570; Shirley Dodson, Comment to Rescinding the Definition of "Harm" Under the Endangered Species Act, REGULATIONS.GOV (Apr. 17, 2025), https://www.regulations.gov/comment/FWS-HQ-ES-2025-0034-0455.
[109] Anonymous, Comment to Rescinding the Definition of "Harm" Under the Endangered Species Act, REGULATIONS.GOV (May 19, 2025), https://www.regulations.gov/comment/FWS-HQ-ES-2025-0034-149629; Bill Murrin, Comment to Rescinding the Definition of "Harm" Under the Endangered Species Act, REGULATIONS.GOV (May 7, 2025), https://www.regulations.gov/comment/FWS-HQ-ES-2025-0034-43570; Hudy Vredenburg, Comment to Rescinding the Definition of "Harm" Under the Endangered Species Act, REGULATIONS.GOV (Apr. 21, 2025), https://www.regulations.gov/comment/FWS-HQ-ES-2025-0034-7224.
[110] Bill Murrin, Comment to Rescinding the Definition of "Harm" Under the Endangered Species Act, REGULATIONS.GOV (May 7, 2025), https://www.regulations.gov/comment/FWS-HQ-ES-2025-0034-43570.
[111] Hudy Vredenburg, Comment to Rescinding the Definition of "Harm" Under the Endangered Species Act, REGULATIONS.GOV (Apr. 21, 2025)
[112] Gwen Chamberlain, Comment to Rescinding the Definition of "Harm" Under the Endangered Species Act, REGULATIONS.GOV (May 12, 2025), https://www.regulations.gov/comment/FWS-HQ-ES-2025-0034-100099.

Second, proponents argue that confusing regulation promotes bureaucratic inefficiency.[113] In conjunction with the argument that habitat destruction extends harm beyond the statutory definition, such discrepancies may cause confusion within the agencies themselves.[114] Confusion within the agencies would result in undue delays to any party attempting to conform to regulations.[115] Additionally, providing a more comprehensive definition of harm causes delay because harm is not always applicable.[116] Therefore, when an agency would consider if an action caused harm, it may not apply at all, even with the addition of habitat destruction.[117]

Additionally, commenters in support of the proposed regulation argue that it will benefit the American economy.[118] Presumably, by removing the restrictions on habitat modification that could harm endangered species, these lands could be available for resource extraction.[119] Rescinding restrictions on lands potentially rich in minerals and other resources could generate revenue and create jobs. As such, some commenters argue that the economic benefits made possible by this proposed rule warrant its acceptance as is.

Finally, proponents favor this rescission, as it lessens restrictions on property owners.[120] Given the restrictions the current regulatory definition of harm

[113] Jared Meyers, Comment to Rescinding the Definition of "Harm" Under the Endangered Species Act, REGULATIONS.GOV (May 9, 2025), https://www.regulations.gov/comment/FWS-HQ-ES-2025-0034-84307.
[114] *Id.*
[115] *Id.*
[116] *Id.*
[117] *Id.*
[118] Anonymous, Comment to Rescinding the Definition of "Harm" Under the Endangered Species Act, REGULATIONS.GOV (Apr. 25, 2025), https://www.regulations.gov/comment/FWS-HQ-ES-2025-0034-24557.
[119] *Id.*
[120] Anonymous, Comment to Rescinding the Definition of "Harm" Under the Endangered Species Act, REGULATIONS.GOV (May 19, 2025), https://www.regulations.gov/comment/FWS-HQ-ES-2025-0034-149629.

encompasses relating to habitat destruction, commenters celebrate that the agencies are granting more authority to private property owners.[121] By acknowledging that habitat destruction is encompassed in the definition of harm, landowners are subjected to the applicable provisions of the ESA for violation. Thus, property owners are unduly restricted as to what they can do on their own property.[122] Such challenges to the exclusive right of property ownership are lessened under this proposed rule.[123]

All in all, despite the infrequent appearance of proponents for the proposed regulation in the public comment period, those that did comment tend to follow the traditional views of those who favor deregulation generally.

B. Arguments Opposing the Proposed Rule

Conversely, the volume of opponents to the proposed regulation was staggering. Through the thousands of comments received, opponents established a multitude of reasoned arguments that invalidating the current regulatory definition of harm as unwise as it relates to the purpose of the ESA and the future of endangered species in the United States.

First, a number of opponents indicated that this proposed rule not only contradicts the mission of both FWS and NMFS, but also the purpose of the ESA.[124] Indeed, the mission of FWS is "to conserve, protect, and enhance fish, wildlife, plants,

[121] *Id.*
[122] *Id.*
[123] *Id.* (stating also that the proposed rule benefited private property owners because they would not have endure costly litigation to receive adequate compensation from the government for interference with private property).
[124] Anonymous, Comment to Rescinding the Definition of "Harm" Under the Endangered Species Act, REGULATIONS.GOV (Apr. 17, 2025), https://www.regulations.gov/comment/FWS-HQ-ES-2025-0034-0541.

and their habitats for the continuing benefit of the American people."[125] Similarly, the mission of NMFS encompasses "the stewardship of the nation's ocean resources and their habitat."[126] Commenters expressed concern at such a stark departure from these missions as the agencies endeavor to rescind the definition of harm, which currently provides protections against significant habitat modification.[127] Especially given that these agencies are charged with habitat conservation and protection, it is evident that habitat protection coincides with the agencies' duties.[128] Therefore, rescinding the definition of harm is diametrically opposed to those missions, as well as the ESA's purpose. Similarly, many commenters in opposition to the proposed rule turned to the statutory language and purpose of the ESA.[129] The ban on taking an animal in the statutorily defined manner was to effectuate the statute's purpose of the conservation of endangered and threatened species.[130] When acknowledging the inconsistencies between the proposed rule and statutory purpose, opponents stated that it is scientifically proven that habitat destruction is a leading cause of extinction.[131]

[125] U.S. Fish and Wildlife Services, Mission and Vision, fws.gov, https://www.fws.gov/about/mission-and-vision (last visited Nov. 7, 2025).
[126] NOAA Fisheries, About Us, fisheries.noaa.gov, https://www.fisheries.noaa.gov/about-us (last visited Nov. 7, 2025).
[127] Shirley Dodson, Comment to Rescinding the Definition of "Harm" Under the Endangered Species Act, REGULATIONS.GOV (Apr. 17, 2025), https://www.regulations.gov/comment/FWS-HQ-ES-2025-0034-0455.
[128] *Id.*
[129] Kidd Biological, Inc., Comment to Rescinding the Definition of "Harm" Under the Endangered Species Act, REGULATIONS.GOV (May 19, 2025), https://www.regulations.gov/comment/FWS-HQ-ES-2025-0034-150930.
[130] Karrigan Bork, Comment to Rescinding the Definition of "Harm" Under the Endangered Species Act, REGULATIONS.GOV (May 21, 2025), https://www.regulations.gov/comment/FWS-HQ-ES-2025-0034-231902.
[131] Shirley Dodson, Comment to Rescinding the Definition of "Harm" Under the Endangered Species Act, REGULATIONS.GOV (Apr. 17, 2025), https://www.regulations.gov/comment/FWS-HQ-ES-2025-0034-0455.

Second, an overwhelming number of opponents to the proposed rule emphasized the significant harm that habitat loss causes to endangered species.[132] Many of these commenters likened the taking of a habitat to the taking of a person's home and access to food.[133] While it might not cause direct harm immediately, over time the harm that befalls a creature with no home or access to food is significant.[134] In drawing the comparison between the two, commenters sought to enlighten the agencies that the existing regulatory definition of harm, including habitat modification was necessary to safeguard animals.[135] Commenters argued that taking away protections is indeed a taking under the ESA.[136] By stripping the endangered species of their known habitat, predators can more readily seek out endangered species and their young.[137]

Third, commenters opposing the proposed rule based their comments on the plain meaning of the word harm.[138] Citing the standard dictionary definition of harm,

[132] Kelsey Yule, Comment to Rescinding the Definition of "Harm" Under the Endangered Species Act, REGULATIONS.GOV (May 20, 2025), https://www.regulations.gov/comment/FWS-HQ-ES-2025-0034-209657; Gayle Marrs-Smith, Comment to Rescinding the Definition of "Harm" Under the Endangered Species Act, REGULATIONS.GOV (Apr. 17, 2025), https://www.regulations.gov/comment/FWS-HQ-ES-2025-0034-0316; Anonymous, Comment to Rescinding the Definition of "Harm" Under the Endangered Species Act, REGULATIONS.GOV (Apr. 17, 2025), https://www.regulations.gov/comment/FWS-HQ-ES-2025-0034-0069.

[133] Benjamin Cevasco, Comment to Rescinding the Definition of "Harm" Under the Endangered Species Act, REGULATIONS.GOV (Apr. 17, 2025), https://www.regulations.gov/comment/FWS-HQ-ES-2025-0034-0661; Jeffrey Wolfthal, Comment to Rescinding the Definition of "Harm" Under the Endangered Species Act, REGULATIONS.GOV (Apr. 17, 2025), https://www.regulations.gov/comment/FWS-HQ-ES-2025-0034-0708; Lawrence Afrin, Comment to Rescinding the Definition of "Harm" Under the Endangered Species Act, REGULATIONS.GOV (Apr. 17, 2025), https://www.regulations.gov/comment/FWS-HQ-ES-2025-0034-0467.

[134] Gayle Marrs-Smith, Comment to Rescinding the Definition of "Harm" Under the Endangered Species Act, REGULATIONS.GOV (Apr. 17, 2025), https://www.regulations.gov/comment/FWS-HQ-ES-2025-0034-0316.

[135] Ramona Hernandez, Comment to Rescinding the Definition of "Harm" Under the Endangered Species Act, REGULATIONS.GOV (Apr. 17, 2025), https://www.regulations.gov/comment/FWS-HQ-ES-2025-0034-0610.

[136] Gayle Marrs-Smith, Comment to Rescinding the Definition of "Harm" Under the Endangered Species Act, REGULATIONS.GOV (Apr. 17, 2025), https://www.regulations.gov/comment/FWS-HQ-ES-2025-0034-0316.

[137] Kelsey Yule, Comment to Rescinding the Definition of "Harm" Under the Endangered Species Act, REGULATIONS.GOV (May 20, 2025), https://www.regulations.gov/comment/FWS-HQ-ES-2025-0034-209657.

[138] Anonymous, Comment to Rescinding the Definition of "Harm" Under the Endangered Species Act, REGULATIONS.GOV (Apr. 17, 2025), https://www.regulations.gov/comment/FWS-HQ-ES-2025-0034-0456.

commenters emphasized it is evident that removing protections from endangered species habitats would result in harm.[139] One commenter traced the history of the term harm throughout time and across languages. Harm regularly encompassed, hurt, grief, and sorrow.[140] By providing this comprehensive definition of harm throughout the ages, as well as modern comprehension of the word harm, commenters argue that loss to a creature's habitat causes immense distress and pain, which harms endangered species.[141] These commenters emphasize that there is more to living than simply staying alive.[142] Therefore, the current regulatory definition does not extend beyond a common definition of harm.

Fourth, opponents also argued that the proposed rule would not only cause harm to endangered species, but it would also cause harm to all of mankind.[143] Americans derive great pride from their national landscapes, and prominent species within those landscapes help shape those iconic spaces. By infringing upon the endangered species habitats and removing protections that ensure the longevity of American species, the landscape loses significant value.[144] Furthermore, preserving these spaces for people can generate economic benefit in the form of ecotourism given

[139] Anonymous, Comment to Rescinding the Definition of "Harm" Under the Endangered Species Act, REGULATIONS.GOV (May 16, 2025), https://www.regulations.gov/comment/FWS-HQ-ES-2025-0034-124917.
[140] Anonymous, Comment to Rescinding the Definition of "Harm" Under the Endangered Species Act, REGULATIONS.GOV (Apr. 17, 2025), https://www.regulations.gov/comment/FWS-HQ-ES-2025-0034-0456.
[141] *Id.*
[142] Lawrence Afrin, Comment to Rescinding the Definition of "Harm" Under the Endangered Species Act, REGULATIONS.GOV (Apr. 17, 2025), https://www.regulations.gov/comment/FWS-HQ-ES-2025-0034-0467.
[143] Dylan Reed, Comment to Rescinding the Definition of "Harm" Under the Endangered Species Act, REGULATIONS.GOV (Apr. 17, 2025), https://www.regulations.gov/comment/FWS-HQ-ES-2025-0034-0619; Gina Robinson, Comment to Rescinding the Definition of "Harm" Under the Endangered Species Act, REGULATIONS.GOV (Apr. 17, 2025), https://www.regulations.gov/comment/FWS-HQ-ES-2025-0034-0071; Jared Shorten, Comment to Rescinding the Definition of "Harm" Under the Endangered Species Act, REGULATIONS.GOV (Apr. 17, 2025), https://www.regulations.gov/comment/FWS-HQ-ES-2025-0034-0536.
[144] Gina Robinson, Comment to Rescinding the Definition of "Harm" Under the Endangered Species Act, REGULATIONS.GOV (Apr. 17, 2025), https://www.regulations.gov/comment/FWS-HQ-ES-2025-0034-0071.

the desire to explore such iconic landmarks.[145] Moreover, if these creatures lose their habitats, everyone suffers because they cannot experience these creatures among the natural wonders of their habitats.[146] Not only can people observe endangered species in their natural habitats, but humans derive benefits from the great outdoors too.[147] One commenter acknowledged the physical and mental health benefits provided to people when natural lands are preserved.[148] Current populations and future generations alike rely upon the protections established now. Such protections ensure that future generations can enjoy the majesty of the American landscape and all it has to offer, creatures included.[149]

In conclusion, the authors of public comments present a range of arguments in the vehement disapproval of the proposed rule. The thousands of comments that emerged in such a short window offered numerous reasons opponents feared the rescission of the regulatory definition of harm because of the harm inflicted upon animals, as well as humankind.

[145] Anonymous, Comment to Rescinding the Definition of "Harm" Under the Endangered Species Act, REGULATIONS.GOV (Apr. 21, 2025), https://www.regulations.gov/comment/FWS-HQ-ES-2025-0034-7069.
[146] Dylan Reed, Comment to Rescinding the Definition of "Harm" Under the Endangered Species Act, REGULATIONS.GOV (Apr. 17, 2025), https://www.regulations.gov/comment/FWS-HQ-ES-2025-0034-0619.
[147] Shirley Dodson, Comment to Rescinding the Definition of "Harm" Under the Endangered Species Act, REGULATIONS.GOV (Apr. 17, 2025), https://www.regulations.gov/comment/FWS-HQ-ES-2025-0034-0455.
[148] Jared Shorten, Comment to Rescinding the Definition of "Harm" Under the Endangered Species Act, REGULATIONS.GOV (Apr. 17, 2025), https://www.regulations.gov/comment/FWS-HQ-ES-2025-0034-0536.
[149] Gina Robinson, Comment to Rescinding the Definition of "Harm" Under the Endangered Species Act, REGULATIONS.GOV (Apr. 17, 2025), https://www.regulations.gov/comment/FWS-HQ-ES-2025-0034-0071.

IV. THE FATE OF "RESCINDING THE DEFINITION OF "HARM" UNDER THE ENDANGERED SPECIES ACT"

The proposed regulation provoked over 200,000 responses from the public.[150] Other regulations by either agency have not received such traction. In comparison, a more recent rule promulgated by FWS about endangered and threatened species received a total of four commenters during the comment submission window.[151] Although the tally of comments in favor and opposed is not decisive as to how an agency will rule, the sheer number of commenters should encourage the agencies to seriously consider whether it will promulgate this rule as is. Indeed, at the close of a public comment period, agencies "must respond to 'relevant' and significant public comments."[152]

When issuing its response to these comments, the agency will likely grapple with the comments challenging the proposed rule on the basis that it violates the statutory purpose of the ESA.[153] Many commenters noted that habitat modification is a leading cause of extinction.[154] Therefore, the current regulatory definition of

[150] Rescinding the Definition of "Harm" Under the Endangered Species Act, 90 Fed. Reg. 16104 (proposed Apr. 17, 2025).
[151] Endangered and Threatened Wildlife and Plants; Regulations for Eleven Species Treated as Listed Due to Similarity of Appearance, 90 Fed. Reg. 46371 (proposed Sept. 26, 2025); See also Fishery Management Plans of St. Croix and St. Thomas and St. John; Queen Triggerfish Management Measures Endangered and Threatened Wildlife and Plants, 90 Fed. Reg. 47713 (proposed Oct. 2, 2025) (NMFS proposed rule about threatened species collecting three comments); Threatened Species Status With Section 4(d) Rule for Southern Hognose Snake, 90 Fed, Reg. 42151 (proposed Aug. 29, 2025) (FWS proposed rule about an endangered species which garnered 213 public comments).
[152] James T. O'Reilly, §8:1: Impact of comments making alternative proposals in Administrative Rulemaking (2023).
[153] Karrigan Bork, Comment to Rescinding the Definition of "Harm" Under the Endangered Species Act, REGULATIONS.GOV (May 21, 2025), https://www.regulations.gov/comment/FWS-HQ-ES-2025-0034-23190; Kimberly Nesbitt, Comment to Rescinding the Definition of "Harm" Under the Endangered Species Act, REGULATIONS.GOV (May 21, 2025), https://www.regulations.gov/comment/FWS-HQ-ES-2025-0034-225194; Kidd Biological, Inc., Comment to Rescinding the Definition of "Harm" Under the Endangered Species Act, REGULATIONS.GOV (May 19, 2025), https://www.regulations.gov/comment/FWS-HQ-ES-2025-0034-150930.
[154] Kelsey Yule, Comment to Rescinding the Definition of "Harm" Under the Endangered Species Act, REGULATIONS.GOV (May 20, 2025), https://www.regulations.gov/comment/FWS-HQ-ES-2025-0034-209657; Gayle Marrs-Smith, Comment to Rescinding the Definition of "Harm" Under the Endangered Species Act, REGULATIONS.GOV (Apr. 17, 2025),

harm, which includes significant habitat modification, would achieve the purpose of the ESA by affording threatened and endangered species protections by extension from their environments.

Despite significant public outcry opposing the rule, and the agencies' obligation to consider comments raised during the public comment period, the agency faces political pressure to promulgate the rule.[155] During President Trump's first term in office, he sought to deregulate agency action.[156] Upon his reelection, he renewed his mission to deregulate.[157] On January 31, 2025, Trump issued an Executive Order encouraging deregulation in an effort to reduce financial burdens created by regulation.[158] Given the executive branch's significant efforts to invalidate regulatory actions, the agencies promulgating this rule may be inclined to carry through with its promulgation in an effort to comply with the new administration. Moreover, in the publication in the Federal Register, the agencies expressly provide that the rule would be considered a deregulation as identified in the executive order.[159] Thus, in the efforts to comply with the executive order promoting deregulation, the agencies may promulgate the rule.

https://www.regulations.gov/comment/FWS-HQ-ES-2025-0034-0316; Anonymous, Comment to Rescinding the Definition of "Harm" Under the Endangered Species Act, REGULATIONS.GOV (Apr. 17, 2025), https://www.regulations.gov/comment/FWS-HQ-ES-2025-0034-0069.

[155] Aidan T. Kane, Eli Schrag, and Sanjay Patnaik, What will deregulation look like under the second Trump administration?, Brookings.edu, (Feb. 24, 2025), https://www.brookings.edu/articles/what-will-deregulation-look-like-under-the-second-trump-administration/.

[156] Nicholas W. Zeppos and Philip A. Wallach, Tracking deregulation in the Trump era, brookings.edu (Dec. 5, 2017), https://www.brookings.edu/articles/tracking-deregulation-in-the-trump-era/.

[157] Brookings, Tracking regulatory changes in the second Trump administration, brookings.edu (Oct. 22, 2025), https://www.brookings.edu/articles/tracking-regulatory-changes-in-the-second-trump-administration/.

[158] Exec. Order No. 14,192, 90 F.R. 9065 (2025).

[159] Rescinding the Definition of "Harm" Under the Endangered Species Act, 90 Fed. Reg. 16104 (proposed Apr. 17, 2025); 54 U.S.C.SA § 100101(b)(1)(C) (West 2014).

On balance, to appease both the outraged commenters and current administration, the agencies may seek a compromise in the proposed rule.[160] Rather than strike this definition completely, the agencies can propose a new rule to expand upon what specifically constitutes significant habitat destruction. Thus, it is likely that Rescinding the Definition of "Harm" Under the Endangered Species Act will not be promulgated as it was published in the Federal Register on April 17, 2025, but an alternative rule could be proposed for notice and comment to safeguard species, while complying with the executive branch's request to deregulate. Should this be the case, the public comment and response period will begin anew.

[160] Gretchen Gehrke and Alejandro Paz, What Happens to a Public Comment After It Is Submitted, Environmental Data and Governance Initiative, (last visited Jan. 27, 2026), https://envirodatagov.org/what-happens-to-a-public-comment-after-it-is-submitted/.

THE FUTURE IS NUCLEAR: WHY THE GROWTH OF AI DATA CENTERS NEEDS NUCLEAR ENERGY

Andrew Forsythe[1]

I. INTRODUCTION

The adoption and development of Artificial Intelligence ("AI") programs have taken the world by storm, as their productivity and capabilities have evolved at an exponential pace.[2] In response, the data center infrastructure has adapted its facilities to reflect a more AI-ready and responsive framework.[3] The widespread advancement and implementation of AI programs and AI data centers have prompted CEOs of major tech companies and firms to push enormous investments and vast amounts of resources into the development and construction of AI data centers.[4]

To ensure that AI data centers run properly and are being used to their maximum potential, they need to consume a significant amount of energy.[5] Today, most of these AI data centers mainly derive their energy from fossil fuels, which are used primarily for generating electricity.[6] However, the massive amount of energy that is essential to the operational ability of an AI data center also creates

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[2] Alexandra Jonker & Alice Gomstyn, *What is an AI data center?,* IBM (Feb. 21, 2025), https://www.ibm.com/think/topics/ai-data-center.
[3] *Id.*
[4] Emil Sayegh, *The Billion-Dollar AI Gamble: Data Centers As The New High-Stakes Game*, FORBES (Sep. 30, 2024), https://www.forbes.com/sites/emilsayegh/2024/09/30/the-billion-dollar-ai-gamble-data-centers-as-the-new-high-stakes-game/.
[5] Connor Green, *Leaving the Faucet Running: The Legal Battle against Gen AI's Water Consumption*, SUFFOLK UNIV. L. SCH. (May 21, 2025), https://sites.suffolk.edu/jhtl/2025/05/21/leaving-the-faucet-running-the-legal-battle-against-gen-ais-water-consumption/.
[6] Renèe Cho, *AI's Growing Carbon Footprint*, COLUM. CLIMATE SCH. (June 9, 2023), https://news.climate.columbia.edu/2023/06/09/ais-growing-carbon-footprint/.

a risk of overheating.[7] To mitigate this risk and safeguard their investments, tech giants are using cooling towers and air or liquid cooling systems to diminish heat.[8] Data centers also use large amounts of water to cool their processor chips through a closed-loop network.[9] In using a closed-loop network, chilled air is injected into targeted areas, such as the individual server racks housed in data centers, rather than using the chilled air to cool an entire room.[10] The network is "closed" in the sense that the chilled air is restricted to a smaller and more targeted area.[11] Therefore, with the steady and constant demand of an increasing number of AI data centers, the demand for water to cool these facilities is rapidly increasing.[12]

As tech companies and firms attempt to maximize profit by constructing a multitude of AI data centers, they are aiming to acquire areas throughout the United States with low land costs, tax incentives, and access to renewable energy.[13] There are currently more than 5,000 AI-optimized data centers in the United States alone, and certain states possessing the desirable qualities stated above have been targeted more than others.[14] However, although these areas seem to provide an optimal space for data center construction, they are often already faced

[7] Chris Schlag, et al., *Water use in US data centers: Legal and regulatory risks*, NIXON PEABODY (Sep. 5, 2025), https://www.nixonpeabody.com/insights/articles/2025/09/05/water-use-in-us-data-centers-legal-and-regulatory-risks.
[8] Green, *supra* note 5.
[9] Miguel Yañez-Barnuevo, *Data Centers and Water Consumption*, ENV'T AND ENERGY STUDY INST. (June 25, 2025), https://www.eesi.org/articles/view/data-centers-and-water-consumption.
[10] Christopher Tozzi, *What is Closed-Loop Cooling, and When Should Data Centers Use It?*, DATA CENTER KNOWLEDGE (Oct. 21, 2024), https://www.datacenterknowledge.com/cooling/what-is-closed-loop-cooling-and-when-should-data-centers-use-it-.
[11] *Id.*
[12] Green, *supra* note 5.
[13] Schlag, et al., *supra* note 7.
[14] Corin Cesaric, *AI Data Centers are Coming for your Land, Water and Power*, CNET (Sep. 24, 2025), https://www.cnet.com/tech/services-and-software/features/ai-data-centers-are-coming-for-your-land-water-and-power/.

with issues of water scarcity and highly competitive demands for the limited natural resources that fuel AI data centers.[15]

In addition, despite the exponential growth of AI data centers and concern over freshwater scarcity, these regions possess little to no enforceable legislation or regulations to confront AI data centers' environmental impacts or water consumption.[16]

Many tech firms and companies are looking to reduce their data centers' ecological footprint by decreasing carbon emissions and water usage; however, using solar and wind as the sole source of energy at this stage is insufficient due to its expensive nature and unreliability to generate mass amounts of energy for a large facility.[17] Nuclear power, on the other hand, is a source of energy that has a proven track record of being reliable. Nuclear energy produces zero carbon emissions and has the ability to constantly generate enough electricity to keep data centers running for extended periods of time.[18] The proven consistency of nuclear energy to continuously power large infrastructures for an extended period of time has caught the attention of those looking to capitalize on the AI data center construction market.[19] Tech firms and companies have grown confident in the potential investment of small modular reactors ("SMRs") because of their flexibility and reduced demand for water as a coolant as compared to their traditional energy

[15] Schlag, et al., *supra* note 7.
[16] Lakshmee Sharma, *AI Data Centers Threaten Global Water Security*, LAWFARE (Dec. 19, 2024), https://www.lawfaremedia.org/article/ai-data-centers-threaten-global-water-security.
[17] Matthew Barotz, *An Atomic Solution to AI's Energy Needs,* KLEINMAN CTR FOR ENERGY POL'Y (May 19,2025), https://kleinmanenergy.upenn.edu/commentary/blog/an-atomic-solution-to-ais-energy-needs/.
[18] *Id.*
[19] *Id.*

counterparts.[20] Despite the potential advantages of using SMRs powered by nuclear energy to run AI data centers, there remains some skepticism due to the catastrophes nuclear energy has caused in decades past.[21]

Section II of this article will explain the history, operation, and evolution of AI data centers. Section III discusses some of the negative impacts that AI data centers create, including heavy freshwater use for cooling, high electricity costs, and the absence of enforceable legislation. Sections IV-VI will argue and conclude that it is more advantageous, environmentally stable, and environmentally conscious to power AI data centers using nuclear energy, and that the trend is already beginning. This article will highlight the continued need for states to issue regulations governing the environmental impact of data centers and will argue for why AI data centers should primarily power their facilities using nuclear energy to create a more sustainable environment that will be reflected throughout the continued evolution of AI.

II. **HISTORY**

The explosion and steady development of AI over recent years can be attributed to its promising drive to boost innovation and productivity in every sector of the worldwide economy.[22] Investors, CEOs, and tech giants have attempted to capitalize on the development of AI by fusing AI technology with

[20] *Id.*
[21] *See* Barotz, *supra* note 17. In March 2011, nearly half a million residents of Japan had to evacuate after an earthquake caused the Fukushima Dai-ichi nuclear power plant to leak radiation. *A Brief History of Nuclear Accidents Worldwide*, UNION OF CONCERNED SCIENTISTS (Oct. 1, 2013), https://www.ucs.org/resources/brief-history-nuclear-accidents-worldwide. In April 1986 220,000 people had to vacate their homes in Chernobyl, Ukraine after an explosion nearly completely destroyed a nuclear reactor. *Id.*
[22] Brad Smith, *The golden opportunity for American AI*, MICROSOFT (Jan. 3, 2025), https://blogs.microsoft.com/on-the-issues/2025/01/03/the-golden-opportunity-for-american-ai/.

traditional databases to create a more expansive set of value-added services to their portfolios.[23] By combining AI services with traditional databases, tech giants hope to optimize computing resources and allow for almost instantaneous presentations and analyses of complex data.[24] A successful fusion of databases and optimization of resources will allow humans to devote more time and energy to activities that require higher-order thinking or strategic planning.[25]

A. What is an AI Data Center

AI data centers require an infrastructure of hardware and software, often called an AI stack, to deliver the applications AI-models are designed for.[26] Companies and tech giants have currently built over 5,000 data centers, constructed for the sole purpose of housing AI databases, with new ones being built every day.[27] AI data centers are designed to have advanced computing, network, and storage infrastructures, as well as energy and cooling capabilities to address any functions that the AI database is designed to perform. [28] AI data centers are built to withstand enormous quantities of data, while operating and dispensing this information to the user with the lowest possible lag or delay.[29] However, achieving and sustaining this high-caliber performance is a tall task and requires

[23] Ashok Reddy, *What is an AI Database? The Future of Data-Driven Decisions*, FORBES (July 9, 2024), https://www.forbes.com/councils/forbestechcouncil/2024/07/09/what-is-an-ai-database-the-future-of-data-driven-decisions/.
[24] *Id.*
[25] *Id.*
[26] Jonker & Gomstyn, *supra* note 2.
[27] Nancy W. Stauffer, *The Multi-Faceted Challenge of Powering AI*, MITEI (Jan. 7, 2025), https://energy.mit.edu/news/the-multi-faceted-challenge-of-powering-ai/.
[28] Jonker & Gomstyn, *supra* note 2.
[29] Sayegh, *supra* note 4.

AI data centers to consist of high-performing AI servers, specialized networking systems, and advanced cooling systems.[30]

B. Differences between a Traditional Data Center and AI-Optimized Data Centers

Whether designed for traditional use or AI workloads, data centers have always been constructed to serve three main purposes: (1) provide a safe space for computing equipment; (2) establish a facility for the constant flow of electrons to the equipment; and (3) reject and disperse heat from this equipment.[31] Although both traditional and AI-ready data centers share these three common purposes, there are various differences that set the two apart.[32] One major difference between the two is the capabilities and services that the infrastructure within the data center are expected to perform.[33] Traditional data centers have infrastructure that can provide services for everyday IT operations, but AI databases are designed to generate mass amounts of complex data that require infrastructure that is beyond the capability of infrastructures in traditional data centers.[34] Simply put, AI databases and applications require an entirely new type of data center that is specifically designed to meet the demands of AI.[35]

Although AI-optimized data centers and traditional data centers possess similarities in their physical qualities, the main difference between the two lies in

[30] Taryn Plumb*, Inside the AI-Optimized Data Center: Why next-gen Infrastructure is Nonnegotiable*, NETWORKWORLD (Sep. 4, 2025), https://www.networkworld.com/article/4050973/inside-the-ai-optimized-data-center-why-next-gen-infrastructure-is-non-negotiable.html#:~:text=Because%20AI%20is%20the%20next,shape%20the%20future%20of%20computing.
[31] *A look inside the 'AI Data Center'*, EDGECORE (Aug. 16, 2024), https://edgecore.com/a-look-inside-the-ai-data-center/.
[32] *Id.*
[33] *Id.*
[34] Plumb*, supra* note 30.
[35] *Id.*

their differing *capabilities*.[36] Both data centers contain infrastructure and hardware, including servers, storage systems, and networking equipment, that are used to compute data.[37] Moreover, both of these data centers share the same general concerns of security, reliability, and energy sustainability.[38] However, AI databases substantially increase the scale and density of equipment, infrastructure, and hardware that these data centers deploy.[39] Moreover, although all data centers consume large amounts of energy, an AI-ready data center's hunger for energy surpasses that of traditional data centers.[40]

If the hardware contained inside a traditional data center attempted to support a complex AI-workload, it would be quickly overwhelmed.[41] This is because AI requests require a more intense data analysis than typical internet searches, which in turn requires the hardware in the data center to generate a greater amount of energy.[42] As AI continues to expand to meet the everchanging criteria and demands of the information technology sector and society, it requires next-generation infrastructure and hardware.[43] Traditional data centers simply cannot provide the necessary services needed to keep pace with the quickly evolving demands of modern AI technology and databases.[44]

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[36] *Id.*
[37] Jonker & Gomstyn, *supra* note 2.
[38] *Id.*
[39] *Id.*
[40] Bhargs Srivathsan, et al., *AI Power: Expanding data center capacity to meet growing demand*, MCKINSEY & CO. (Oct. 29, 2024), https://www.mckinsey.com/industries/technology-media-and-telecommunications/our-insights/ai-power-expanding-data-center-capacity-to-meet-growing-demand.
[41] Jonker & Gomstyn, *supra* note 2.
[42] Mike Jacobs, *Power Hungry: Why Data Centers Are Developing Their Own Energy Sources to Fuel AI*, UNION OF CONCERNED SCIENTISTS (July 10, 2025), https://blog.ucs.org/mike-jacobs/power-hungry-why-data-centers-are-developing-their-own-energy-sources-to-fuel-ai/#:~:text=Data%20centers%2C%20and%20other%20vital,to%20on%2Dsite%20power%20supply.
[43] Plumb, *supra* note 30.
[44] Plumb, *supra* note 30.

C. Powering AI Data Centers

AI-ready data centers require vast amounts of electricity to function, and it is therefore vital that they be located near power sources.[45] Utility companies generate electrical power through multiple energy sources including natural gases, coal, and a combination of renewable energy, such as solar and wind.[46] As the demand for power continues to surge simultaneously with the demand for increased AI workload, the use of renewable energy to generate electrical power is not nearly enough to keep pace.[47] In turn, utility operators have mainly turned their attention to relying on natural gases to supply this power.[48]

Natural gas comprises over 40% of the electricity source for data centers in the United States; it is the largest source.[49] The driving reasons behind natural gases' abundant use to generate electrical energy is its fast and relatively cheap availability.[50] In the United States alone, utility operators can rely on an abundance of natural gas reserves in underground reservoirs and offshore deposits.[51] As the demand for AI data centers grows, companies are looking for the fastest and cheapest ways to power these facilities and natural gases are viewed as the best option.[52] By using natural gases to generate electricity, a data center

[45] Maheep Mandloi, *The Energy Sources Powering the AI Revolution*, MIZUHO (Sep. 20, 2024), https://www.mizuhogroup.com/americas/insights/2024/09/the-energy-sources-powering-the-ai-revolution.html#:~:text=As%20a%20result%2C%20solar%2C%20wind,the%20first%20half%20of%202024.
[46] *Id.*
[47] *Id.*
[48] *Id.*
[49] *Energy Supply for AI*, IEA, https://www.iea.org/reports/energy-and-ai/energy-supply-for-ai (last visited Nov. 20, 2025).
[50] Evan Gorelick, *Why Don't Data Centers Use More Green Energy?*, NEW YORK TIMES (Sep. 27, 2025), https://www.nytimes.com/2025/09/27/business/dealbook/why-dont-data-centers-use-more-green energy.html#:~:text=If%20data%20centers%20continue%20expanding,which%20has%20its%20own%20drawbacks.&text=Trump's%20policies%20are%20only%20making,seeing%20an%20opportunity%20to%20invest.
[51] *Id.*
[52] *Id.*

can become fully powered in one to two years.[53] The only other power source that can slightly compete with the inexpensive and ready availability that natural gases provide, is solar power.[54] However, solar energy cannot generate enough electricity to produce the large amount of power that AI-ready data centers need to function.[55]

To generate electricity for these data centers using natural gases, one method is to install natural gas turbines directly within data center sites.[56] These natural gas turbines spin rotating blades by pushing hot combustion gas through the turbine as it expands.[57] In turn, as these blades rotate and spin, they draw more pressurized air into the combustion section and spin a generator which produces electricity.[58] The steam and pressurized air used to spin these blades is then cooled by cooling water, which flows through condensers on each side of the steam turbines, before returning to the boiler.[59] This is the part of the process in which a cooling tower supports and plays a vital role.[60]

D. Growing Demand for AI Data Centers and Supporting Power Systems

Although the idea and development of AI has been in circulation since around the 1950's, the 'AI explosion' and specialized data center demand that is looming over the information technology space and economic sphere today seemed

[53] *Id.*
[54] *Id.*
[55] *Id.*
[56] *How Gas Turbine Power Plants Work*, U.S. DEPART. OF ENERGY (Last visited on Nov. 20, 2025), https://www.energy.gov/fecm/how-gas-turbine-power-plants-work#:~:text=As%20hot%20combustion%20gas%20expands,a%20generator%20to%20produce%20electricity.
[57] *Id.*
[58] *Id.*
[59] *Everything you ever wanted to know about cooling towers*, DRAX (May 17, 2017), https://www.drax.com/power-generation/everything-you-ever-wanted-to-know-about-cooling-towers/#:~:text=As%20the%20name%20suggests%2C%20a,naturally%20drawn%20through%20the%20tower.
[60] *Id.*

to happen overnight.[61] Before the launch of the infamous 'ChatGPT' in November 2022, data centers allocated each server rack about ten to twelve kilowatts ("kW") of electricity to run its computing programs.[62] However, since the recent 'AI explosion', AI-optimized data centers are equipped to supply machines five to ten times that density, with forty to one hundred-ten kW of electrical power per rack.[63] The average power density that data centers can support has steadily increased over recent years, and by 2030, the power demand for AI-ready data centers is expected to grow by 160%.[64]

As AI continues to grow, the rising need for data centers and facilities has been highlighted as a real issue.[65] Ten years ago, before the current increased demand for AI workloads, a thirty-megawatt ("MW") data center was considered large in size and computing power.[66] However, due to the increased demand for AI workloads, today a two-hundred-MW data center is considered to be average in its ability to compute power.[67]

E. Current Companies using AI Data Centers

As AI-ready databases and infrastructures continue to grow, CEOs of some of the biggest data center operators, investors, and tech firms have met with industry leaders to ensure that the United States leads the world in AI

[61] *A look inside the 'AI Data Center'*, *supra* note 31.
[62] *Id.*
[63] *Id.*
[64] William de Hoop Scheffer, *Renewable Energy for AI Data Centers: A Complete Guide*, HANWHA DATA CTRS. (Aug. 13, 2025), https://www.hanwhadatacenters.com/blog/renewable-energy-for-ai-data-centers-a-complete-guide/.
[65] Srivathsan, et al., *supra* note 40.
[66] *Id.*
[67] *See* Srivathsan, et al., *supra* note 40. Today, the newest large-scale data centers that support AI capabilities can use more than one-hundred MW hours a month, five times more than traditional data centers could support before the AI boom. Felicity Barringer, *Thirsty for Power and Water, AI-Crunching Data Centers Sprout Across the West*, STANFORD UNIV. (Apr. 8, 2025), https://andthewest.stanford.edu.

development.[68] Companies such as Amazon, Apple, Google, Meta, Microsoft, BlackRock, and OpenAI are all at the forefront of AI-ready data center development and are spending large amounts of money to keep ahead of the competition.[69] According to BloombergNEF, as of September 2025, Amazon Web Services, Google, Meta, and Microsoft have spent nearly $100 billion on AI infrastructure in their most recent quarters and control 42% of the United States data center capacity.[70] Furthermore, companies and investors are not looking to construct AI-ready data centers exclusively in the United States, but rather they have a worldwide expansion at the forefront of their minds.[71]

Moreover, some American states are incentivizing companies to construct AI-ready data centers because of the economic benefits the data center will bring to the surrounding areas.[72] For example, in Oregon, companies such as Meta, Apple, Twitter, and Google have received hundreds of millions of dollars in tax breaks in exchange for developing and constructing their data centers in the State.[73] Furthermore, in July 2025, at an Energy Summit in Pittsburgh, Pennsylvania, developers announced an upward investment of $90 billion for AI development in Pennsylvania.[74] Google, who was among these developers, individually contributed $25 billion to the $90 billion investment.[75] The following

[68] Sayegh, *supra* note 4.
[69] Cesaric, *supra* note 14.
[70] *Id.*
[71] Srivathsan, et al., *supra* note 40. In 2023 Blackstone and Digital Realty entered into a $7 billion deal to build data centers in Frankfurt and Paris. *Id.* A United States manufacturer, Super Micro Computer, is investing in data centers in Asia, while HCL Technologies is collaborating with Schnedier Electric to develop data centers in the Asia Pacific region. *Id.*
[72] Barringer, *supra* note 67.
[73] *See* Barringer, *supra* note 67 (explaining that Amazon avoided $83,877,339 in taxes in exchange for constructing a data center in Morrow County, Oregon).
[74] Cesaric, *supra* note 14.
[75] *Id.*

subsections discuss the investments that a few leaders in the AI industry have made to ensure that they stay ahead of the competition in the construction of AI-ready data centers.

i. Microsoft

During the 2025 fiscal year, Microsoft itself has invested nearly $80 billion on building and developing AI infrastructure.[76] Microsoft announced this investment in January 2025, and Vice Chair and President, Brad Smith, stated that over half of this investment will be focused on the construction of infrastructures in the United States.[77]

ii. Google

Google has a deep and longstanding commitment to investing in the future growth of its company, especially in the area of technical infrastructure.[78] In August 2025, Google announced that it will be investing $9 billion in Virginia through 2026 to support an AI-ready data center in New Chesterfield county.[79] This investment will not only help provide a brighter future for Google, but it will

[76] *See e.g.*, Cesaric, *supra* note 14; Smith, *supra* note 22.
[77] Jordan Novet, *Microsoft Expects to Spend $80 Billion on AI-Enabled Data Centers in Fiscal 2025*, CNBC (Jan. 4, 2025), https://www.cnbc.com/2025/01/03/microsoft-expects-to-spend-80-billion-on-ai-data-centers-in-fy-2025.html.
[78] *Funding Supports new Cloud and Artificial Intelligence (AI) Infrastructure*, Including new Chesterfield County Data Center, GRPVA (Aug. 27, 2025), https://www.grpva.com/news/google-announces-new-9b-investment-in-virginia/?utm_source=adwords&utm_campaign=Industry-Targeted+Campaign&utm_medium=ppc&utm_term=&hsa_ver=3&hsa_src=g&hsa_net=adwords&hsa_mt=&hsa_grp=170804041196&hsa_kw=&hsa_tgt=dsa-19959388920&hsa_acc=6439411779&hsa_cam=2057512294&hsa_ad=722226990880&gad_source=1&gad_campaignid=2057512294&gbraid=0AAAADkzPClW_zgWWmjUSJH-mIgCiPDF9&gclid=CjwKCAjw0sfHBhB6EiwAQtv5qTu0zHhL63L0vpGMvSCOhoOSbnOSQKUXP10TnzW__zL66CkuakJS0RoCuOYQAvD_BwE.
[79] *Id.*

also help provide Americans a more readily accessible opportunity to experience the innovation of AI.[80]

iii. Amazon Web Services ("AWS")

AWS is a cloud program offered by Amazon.com Inc, and has emerged as one of the primary profit drivers for Amazon.[81] AWS consists of many different computing products and services, and was implemented for the purpose of providing servers, networking, and remote computing to companies looking for large amounts of storage.[82] To further expand its current services, AWS has become committed to continue developing its AI infrastructure and resources.[83] One step that AWS took to meet this goal was announcing an investment of over $30 billion to build out data centers and develop AI innovation in Pennsylvania and North Carolina.[84] This investment demonstrates that Amazon is committed to building its cloud and AI infrastructure to meet the increasing appetite of AI workload.[85]

iv. Meta

Lastly, Meta, the parent company of the popular social media platforms Facebook and Instagram, continues to be a leader in the AI infrastructure field through one of its newest investments in northeast Louisiana.[86] In December 2024,

[80] *Id.*
[81] Vanessa Page, *What is Amazon Web Services, and why is it so Successful?*, INVESTOPEDIA (June 13, 2024), https://www.investopedia.com/articles/investing/011316/what-amazon-web-services-and-why-it-so-successful.asp.
[82] *Id.*
[83] Matt Vincent, *Amazon Doubles Down on Ai Infrastructure with $30B in New U.S. Data Center Investments*, DATA CTR. FRONTIER (June 10, 2025), https://www.datacenterfrontier.com/hyperscale/article/55295967/amazon-doubles-down-on-ai-infrastructure-with-30b-in-new-us-data-center-investments.
[84] *Id.*
[85] *Id.*
[86] *Meta Selects Northeast Louisiana as Site of $10 Billion Artificial Intelligence Optimized Data Center; Governor Jeff Landry Calls Investment 'A New Chapter' for State*, LA. ECONOMIC DEVELOPMENT (Dec. 4, 2024),

Meta announced it will build a $10 billion AI data center in northeast Louisiana.[87] This facility will stand as one of Meta's largest data centers in the world.[88] To power this data center, Meta has pledged to generate electricity with 100% clean and renewable energy and has committed to contributing $1 million per year to "The Power Care" low-income ratepayer support program.[89]

As AI continues to revolutionize the data center industry, tech companies and firms will continue to invest into the development and construction of AI-ready data centers.[90] Analytics predict the AI data center industry will be a $200 billion market by 2028.[91] As shown by the investments deployed by some of the largest technology companies stated above, this seems like a realistic prediction.[92]

III. THE PROBLEM WITH AI DATA CENTERS

A. Cooling Towers and Water Consumption

Heat is the ultimate enemy to AI data centers and poses many complications by reducing the efficiency of the data center or even in extreme cases rendering them inoperable.[93] To combat and reduce the risk that excessive heat may cause, AI data centers have employed various cooling systems, including one that uses evaporative cooling and requires a significant amount of water.[94] Water is essential

https://www.opportunitylouisiana.gov/news/meta-selects-northeast-louisiana-as-site-of-10-billion-artificial-intelligence-optimized-data-center-governor-jeff-landry-calls-investment-a-new-chapter-for-state. [hereinafter *Northeast Louisiana*].
[87] *Id.*
[88] *Id.*
[89] *See Northeast Louisiana*, *supra* note 86. Entergy created "The Power to Care Program" to help provide emergency utility bill assistance to older adults and people with disabilities.
[90] Scheffer, *supra* note 64.
[91] John Temple, *How Are Companies Building AI-Ready Data Centers? The Infrastructure Race Reshaping Digital Computing*, HAWNWHA DATA CNTRS. (July 30, 2025), https://www.hanwhadatacenters.com/blog/how-are-companies-building-ai-ready-data-centers-the-infrastructure-race-reshaping-digital-computing/.
[92] Scheffer, *supra* note 64.
[93] Barringer, *supra* note 67.
[94] *Id.*

in the cooling systems of data centers to ensure that the servers can run without interference for 24 hours a day, 7 days a week.[95] The amount of services that an AI data center can produce is largely dictated by how well the data center can cool its servers and infrastructure.[96] Additionally, AI data centers use water for their humidification systems and facility maintenance.[97] In addition to the on-site use of water data centers consume substantial water off-site, which typically occurs at power plants that generate electricity for the data centers.[98]

In a water cooling method, water is used in chilled water systems of cooling towers to absorb and remove heat from the data center.[99] A chilled water system works by circulating water through cooling coils that absorb the heat from the air inside the data center.[100] The chilled water system then pushes the heat into the outside environment through a cooling tower.[101] Although this cooling system is an effective method to cool data centers, it requires significant water usage, which is especially a concern in areas facing water scarcity, where it seems AI data centers are gravitating towards.[102]

AI data centers primarily obtain the water needed for its cooling systems from municipal or regional water utility companies.[103] This water is typically potable water or freshwater, which is suitable for drinking.[104] Potable water and

[95] Mary Zhang, *Data Center Water Usage: A Comprehensive Guide*, DGTL INFRA (Jan. 17, 2024), https://dgtlinfra.com/data-center-water-usage/.
[96] Barringer, *supra* note 67.
[97] Zhang, *supra* note 95.
[98] *Id.*
[99] *Id.*
[100] *Id.*
[101] *Id.*
[102] *Id.*
[103] *Id.*
[104] *Id.*

other freshwater is used and preferred over alternatives such as salt water because these water sources typically do not cause microbial build-up through exposure to nutrients, sunlight, or air that other water sources may be susceptible to.[105] A microbial build-up could result in a massive disruption of the data center's ability to operate.[106] Moreover, potable water is easily accessible and reliable, making it the premium choice for cooling systems of large AI data centers.[107] Because of these benefits, 95% of water used for AI data center cooling systems is potable water while alternative water sources are used minimally, contributing less than 5% of the total water usage.[108]

Companies attempt to conserve water and maximize its use in a cooling system to the fullest extent possible by, reusing water and circulating it through their cooling systems multiple times.[109] However, this process of recycling the same water through the cooling system is not unlimited.[110] Replacement of this water becomes necessary when the water's conductivity reaches excessively high levels.[111] Once the water is no longer usable in the data center's cooling system it becomes 'spent' and can only be repurposed for other uses such as irrigation.[112] Moreover, the recycling of water does not recoup a majority of the water that is

[105] Abby Lopez, *AI, Data Centers, and Potable Water*, ACCOUNTABILITY (Sep. 2, 2025), https://www.accountabilityconsole.com/newsletter/articles/ai-data-centers-and-potable-water/#:~:text=Additionally%2C%20potable%20water%20is%20used,use%20on%20these%20data%20centers.
[106] *Id.*
[107] *Id.*
[108] Zhang, *supra* note 95 (finding that the alternative water sources that are used include on-site groundwater, surface water, seawater, and rainwater).
[109] *Id.*
[110] *Id.*
[111] *Id.*
[112] *Id.*

used during the cooling process.[113] This point was made by Mashieka Allgood, an AI ethicist, who states that during the cool processing of a data center, a significant amount of water is evaporated, and even if all the water doesn't evaporate, you still have to treat it, which renders it unrecyclable.[114]

As the number of AI data centers continue to expand and use a growing amount of energy, so does the amount of water that is needed to cool the facilities servers and processing chips.[115] With AI data centers expanding at an extraordinary pace and their growing thirst for water, freshwater supplies are put at a great risk.[116]

B. Concerns about Water Consumption Are Well Documented

A report published by the Energy Department highlights the growing demand for water by AI data centers.[117] The report notes that in 2014, U.S. data centers used 21.1 billion liters or 5.6 billion gallons of water to cool down the servers and infrastructure within the data center.[118] However, by 2023, 84 percent of the water was used to run large scale data centers designed for AI workload, and the total water use tripled to 66 billion liters or 17.4 billion gallons.[119]

In the southwest of the United States, AI data centers are generating mass concern over the amount of water they are consuming in areas already facing water

[113] Barringer, *supra* note 67.
[114] *Id.*
[115] *See* Yañez-Barnuevo, *supra* note 9. The new computer chips designed to produce AI workloads, like Nvidia's Blackwell chip, use more electricity and therefore need more cooling than the AI chips developed in past years. Barringer, *supra* note 67.
[116] Yañez-Barnuevo, *supra* note 9.
[117] *See* Barringer, *supra* note 67; Arman Shehabi, et al., 2024 United States Data Center Energy Usage Report, LAWERENCE BERKELEY NAT'L LAB'Y (Dec. 20, 2024), https://escholarship.org/uc/item/32d6m0d1.
[118] *Id.*
[119] *Id.*

scarcity.[120] A recently published APM Research Lab report stated that Meta's AI data center in Goodyear, just west of Phoenix, Arizona, uses about 56 million gallons of potable water per year, which is the equivalent of two percent of the town's residential use.[121] AI data centers like Meta's are continuing to gravitate towards the southwestern region of the U.S., and their environmental impacts, specifically water, continue to concern local residents and officials.[122]

C. Increasingly High Electricity Costs

The electricity demands of AI data centers are another one of various detrimental environmental and social impacts caused by these facilities.[123] The power needed to train the generative AI models deployed with AI data centers, demand a staggering amount of electricity, which in turn leads to increased carbon dioxide emissions, pressures on the electric grid, and an increased cost on local residents.[124] According to the Organization for Economic Co-operation and Development, in 2022, the electricity consumption of AI data centers ranked as the 11th largest electricity consumer in the world.[125] Furthermore, by 2026, the electricity consumption of AI data centers is expected to move up to fifth on this global list.[126] As AI data centers continue to grow in the United States, the

[120] Barringer, *supra* note 67.
[121] *See* Barringer, *supra* note 67; Maya Chari, *Are Data Centers Deleting the Southwest's Water and Energy Resources?*, APM RSCH. LAB (Feb. 27, 2025), https://www.apmresearchlab.org/10x/data-centers-resource#:~:text=An%20analysis%20Microsoft%20shared%20with,1.9%25%20of%20the%20town's%20population.
[122] Barringer, *supra* note 67.
[123] Adam Zewe, *Explain: Generative AI's environmental impact*, MIT (Jan. 17, 2025), https://news.mit.edu/2025/explained-generative-ai-environmental-impact-0117.
[124] *Id.*
[125] *Id.*
[126] Zewe, *supra* note 123 (stating that by 2026, it is expected that AI data centers' electrical consumption will approach 1,050 terawatt-hours).

increased electricity demand is simultaneously going to follow.[127] In 2023, AI data centers consumed more than 4% of the United States' electricity, and government analysts suggest and predict that this percentage will rise to 12% in as little as three years.[128]

As the electricity consumption of demand and consumption continues to increase, local residents have seen a dramatic increase in their electricity rate.[129] Recent reports expect that local residents and small businesses will bear this cost as a result of the expensive upgrades needed to improve the electric grids surrounding AI data centers, training of AI-models, and powering the infrastructure of AI data centers.[130] The increase in residential electricity rates has already been seen in states that are heavily populated with AI data centers.[131] In Ohio, for example, according to data from an independent monitor of the electric grid, the electricity bill of a typical household increased at least 15 dollars a month due to the effect of AI data centers.[132] Moreover, according to a study conducted by Carnegie Mellon University and North Carolina State University, electricity bills are on track to rise on an average of 8% nationwide by 2030.[133] In areas like Virgina, where the AI data center population is especially high, there is an expected increase to as much as 25%.[134] States across the country are starting to

[127] Ivan Penn & Karen Weise, *Big Tech's A.I. Data Centers Are Driving Up Electricity Bills for Everyone*, NEW YORK TIMES (Aug. 14, 2025), https://www.nytimes.com/2025/08/14/business/energy-environment/ai-data-centers-electricity-costs.html.
[128] *Id.*
[129] *Id.*
[130] *Id.*
[131] *Id.*
[132] *Id.*
[133] *Id.*
[134] *Id.*

see and feel the increased costs associated with AI data centers and residents are beginning to complain.

D. Air Pollutants

As AI data centers continue to grow, so do the number of pollutants being pushed out into the environment.[135] AI models that consume and depend on fossil-fuel-based electricity emit significant amounts of carbon dioxide and pollutants which contribute to the growing issue of greenhouse gas emissions.[136] Additionally, in areas where AI data centers generate a majority of their energy through the use of fossil fuels, the number of pollutants emitted has been found to be extraordinarily high.[137] The pollutants created from fossil fuel combustion cause air and water pollution, respiratory issues, and acid rain.[138] Additionally, the actual process of extracting fossil fuels, which is needed for electricity generation, can disrupt ecosystems, contribute to climate change, and cause environmental degradation.[139] These air pollutants are not solely negatively impacting the environment, but have been linked to cause consequential damages to humans.[140] The pollutants emitted from coal and natural gas plants, such as fine particular

[135] *Why AI uses so much energy – and what we can do about it*, PENN. ST. INST. OF ENERGY AND THE ENV'T. (Sep. 8, 2025), https://iee.psu.edu/news/blog/why-ai-uses-so-much-energy-and-what-we-can-do-about-it#:~:text=The%20environmental%20impact%20of%20AI,harm%20and%20worsen%20climate%20change.
[136] *Id.*
[137] Bree Shirvell, *Can We Mitigate Ai's Environmental impacts?*, YALE SCH. OF THE ENV'T. (Oct. 10, 2024), https://environment.yale.edu/news/article/can-we-mitigate-ais-environmental-impacts#:~:text=Yao:%20Powering%20computing%20systems%20for,and%20contribute%20to%20environmental%20degradation.
[138] *Id.*
[139] *Id.*
[140] Jeff Young, *AI's Air Pollution Problem: Data Center Energy Use Adds to Deadly Emissions*, NEWSWEEK (Dec. 12, 2024), https://www.newsweek.com/ais-air-pollution-problem-data-center-energy-use-adds-deadly-emissions-2000092.

matter and nitrogen oxides, contribute to respiratory and cardiovascular diseases.[141]

E. Lack of Comprehensive Legislation: Proposed and Enacted State Legislation in Place to Monitor the Impacts of AI Data Centers

Currently, the United States does not have any comprehensive legislation or regulations in place to monitor and hold AI data centers accountable for their environmental impacts.[142] However, regions in the United States like the Southwest that have faced water scarcity and have attempted to put regulations and legislation in place to keep these data centers accountable.[143] Specifically, the following states are looking to implement water use disclosure reporting requirements with site permitting applications.[144] These states are among some of the areas that face water scarcity and are pushing for regulations and legislation to be put in place.

i. California

California is one of the states considering implementing a measure that would address the increasing water demands of AI data centers.[145] The state's goal is to regulate AI data centers in manner that encourages stricter water conservation measures.[146] One proposed bill that would help implement the goals stated above is SB-58 Sales and Use Tax Law: exemptions: certified data center

[141] *Id.*
[142] Mya Garcia, *Ai Uses How Much Water? Navigating Regulation of Ai Data Centers' Water Footprint Post-Watershed Loper Bright Decision*, 57 TEX. TECH L. REV. 517, 530 (2025).
[143] Schlag, et al., *supra* note 7.
[144] *Id.*
[145] *Id.*
[146] *Id.*

facilities ("S.B. 58").[147] This bill would grant AI data centers a tax credit if they adopt sustainable practices.[148] This bill specifically emphasizes that among other requirements, an AI data center is eligible for tax exemptions if it employs water-efficient cooling systems for the duration of the qualification period.[149] Outside of employing more water-efficient systems, S.B. 58 also focuses on incentivizing data centers to utilize carbon-free energy and avoiding diesel fuel sources.[150] Outside of proposed legislation and bills, governmental agencies in California have explored issuing potential bans on the use of potable water for non-essential tasks within the AI data center.[151] S.B. 58 and governmental agencies are pushing for a bigger emphasis on water conservation in order to combat drought conditions.[152]

ii. Arizona

Officials in Arizona are addressing water allocation for AI data centers amid the state's ongoing drought conditions.[153] Arizona has attempted to persuade AI data centers to use alternative water sources, other than potable water, and to contribute to the state's local conservation programs.[154] One bill that has been introduced in Arizona to attempt to implement these measures is HB 2893; data centers: qualification period; distribution ("H.B. 2893").[155] H.B. 2893 states that computer data centers are eligible for tax relief if they comply with numerous

[147] *Id.*
[148] S.B. 58, 2025-2026 Leg., Reg. Sess. (Cal 2025).
[149] *Id.*
[150] *Id.*
[151] Schlag, et al., *supra* note 7. The State Water Resources Control Board and the California Public Utilities Commission want to converse potable water for non-essential activities such as landscape irrigation and cooling.
[152] *Id.*
[153] *Id.*
[154] *Id.*
[155] *Id.*

requirements such as improving water use efficiency, water reliability, and creating sustainable reductions in water use.[156] If H.B. 2893 is passed, it would provide tax relief and incentives to AI data centers that complied with water conservation efforts and agricultural irrigation efficiency.[157]

iii. Colorado

Colorado is also among the states looking to incentive AI data centers to prioritize water conversation through tax relief.[158] One act that has been introduced in the state of Colorado that embodies this idea is "The Colorado Data Center Development and Grid Modernization Act" ("S.B. 25-280").[159] However, if enacted S.B. 25-280 would provide more than simple tax relief; it would also provide utility rate incentives and reputational enhancements associated with the environmental stewardship components of the bill's certification.[160] In order to obtain the relief provided by S.B. 25-280, the bill requires that data centers obtain certification under the bill first.[161] To obtain certification the bill requires data centers, amongst other things, to develop water stewardship strategies, energy efficiency solutions, and source a minimum of 50% of their energy from renewable or clean sources.[162] Specifically, S.B. 25-280 focuses on the idea of water conservation by implementing a water stewardship strategy and management plan that would serve as a standard for all AI data centers in the area to meet in

[156] H.B. 2893, 57th Leg., 1st Reg. Sess. (Ariz. 2025).
[157] Schlag, et al., *supra* note 7.
[158] *Id.*
[159] *Id.*
[160] *Id.*
[161] *Data Center Development and Grid Modernization Act*, S.B. 25-280, 2025 Leg. Sess. (Colo. 2025).
[162] *Id.*

order to obtain certification.[163] S.B. 25-280 requires annual compliance reporting to ensure that AI data centers are continuously monitoring their ecological footprint and water consumption.[164]

iv. Minnesota

Minnesota is one of the few states that has enacted legislation that pertains to incentivizing data centers to monitor their water consumption by providing taxation benefits.[165] The Minnesota Legislature recently passed a Session Law titled, HF 16, which is an act that is focused on modifying the various environmental and energy regulations that are currently in place.[166] HF 16 is focused on creating new requirements for data centers located in Minnesota that are expected to use 100 million gallons or more of water per year.[167] Within these requirements, HF 16 allows the Minnesota Department of Natural Resources ("MDNR") to require data centers to evaluate water conservation measures and ensure protection to public health before qualifying for tax exemptions.[168] Moreover, HF 16 allows for proposed AI data centers in the area to seek advice from the MDNR about viable water sources before they implement any liquid cooling systems of their own.[169]

v. Texas

[163] *Id.*
[164] *Id.*
[165] Schlag, et al., *supra* note 7.
[166] Act June 30, 2025, ch. 12, 2025 Minn. Laws 16.
[167] *Id.*
[168] *Id.*
[169] *Id.*

The rapid expansion and development of AI data centers in Texas has caused the state to implement legislation to tackle the growing issue of water usage and consumption.[170] The Houston Advanced Research Center conducted a study on the water consumption of AI data centers in the state which raised the concerns of Texas Officials.[171] The study showed that data centers can consume up to 793 gallons of water per megawatt-hour.[172] The study further concluded that this massive water consumption would result in an estimated 49 billion gallons of water use by the end of 2025.[173] Further, the study predicted that by 2030 data centers will count for about 6.6% of Texas's total water use, or approximately 399 billion gallons per year.[174] To address this problem Texas passed Senate Bill 7 and House Joint Resolution 7.[175] Both Senate Bill 7 and House Joint Resolution 7 focus on allocating billions of dollars to create a standard of water conservation and a system of water infrastructure.[176]

vi. Virginia

Since the emergence of AI data centers in the state of Virginia, state officials have been looking for ways to offset the massive amounts of water consumption and environmental impact that AI data centers impose.[177] One solution that Virginia has pushed to implement is for data centers to be required to disclose their

[170] Schlag, et al., *supra* note 7.
[171] *Id.*
[172] *Id.*
[173] *Id.*
[174] *Id.*
[175] *Id.*
[176] *See* Tex. S.B. 7, 89th Leg., Reg. Sess. (2025) (enacted); H.J.R. 7, 89th Leg., Reg. Sess. (Tex. 2025) (enacted).
[177] Schlag, et al., *supra* note 7.

projected water usage with their permitting applications.[178] Virginia has moved in a positive direction towards this solution through the passage of S.B. 1449.[179] This bill, passed by Virginia's legislature requires companies that plan on building AI data centers in the state to obtain additional approval from local officials.[180] This may result in investigation into the effects on the water, land, and agriculture that the proposed data center may create.[181] Although this bill was not passed statewide, it is still a move in the right direction to ensure that AI data center's water consumption does not continue to grow exponentially.[182]

As AI data centers continue to explode around the world and within the United States, if the water consumption, negative environmental impacts, and lack of legislation is not addressed, there could be disastrous repercussions and consequences on the environment.[183]

IV. ANALYSIS

As the AI data center construction and infrastructure continues to grow worldwide, the concern over the negative environmental impacts grows as well. To address these concerns and temper the negative consequences of AI data center's environmental footprint, the industry as a whole should turn its focus to powering AI data centers using nuclear energy. Nuclear energy has one of the smallest carbon footprints of all energy sources, which in turn helps it sit as one of the

[178] *Id.*
[179] *Id.*
[180] S.B. 1449, 2025 Sess. (Va. 2025).
[181] *Id.*
[182] Schlag, et al., *supra* note 7.
[183] Green, *supra* note 5.

largest low-carbon electricity generators in the world.[184] By providing a steady low-carbon power, nuclear energy can temper and reduce the reliance on other energy and emission sources, such as fossil fuels. By using nuclear energy to supply its energy needs as opposed to natural gases, AI data centers can emit less carbon emissions, decrease electricity costs, and minimize pollution, which in turn will significantly decrease its ecological footprint and enable more environmentally sustainable practices.[185] Despite these clear benefits, nuclear energy currently provides a mere 15% of all of the AI data centers energy needs.[186]

i. Lower Carbon Emissions

When generating electricity, fossil-fuel power plants produce mass amounts of air pollution that is comprised of carbon dioxide that is emitted during the operating process.[187] In contrast, nuclear energy is a clean energy source that produces virtually no greenhouse gas emissions during operation.[188] Further, while emitting zero carbon emissions, nuclear energy can provide a consistent, 365 day a year, source of electricity that is vital to the successful operation of an AI data center.[189]

ii. Lower Water Consumption

[184] *Nuclear energy is making a massive contribution to combating climate change*, WORLD NUCLEAR ASS'N (Oct. 26, 2021), https://world-nuclear.org/climate-change-and-nuclear-energy/sustainable-development-goals-and-nuclear/sdg13-climate-action?. The use of nuclear energy avoids over two billion tons of carbon dioxide emissions every year. This is the same as removing 210 million vehicles from the world.
[185] *Id.*
[186] *Energy Supply for AI*, *supra* note 49 .(reasoning that these statistics vary by region, and currently the highest contribution of coal-fired electricity is found in China).
[187] *Nuclear explained*, EIA (Nov. 7, 2022), https://www.eia.gov/energyexplained/nuclear/nuclear-power-and-the-environment.php?.
[188] Kate Hardin et al., *Nuclear energy's role in powering data center growth*, DELOITTE (Apr. 9, 2025), https://www.deloitte.com/us/en/insights/industry/power-and-utilities/nuclear-energy-powering-data-centers.html.
[189] Barotz, *supra* note 17.

Second, by powering AI data centers with nuclear energy, AI data centers will consume less water and provide fewer detriments to areas suffering from water scarcity. Like AI data centers powered by fossil fuels, data centers that are powered by nuclear energy require large amounts of water to cool down the servers and infrastructure in order to maintain an operable temperature. However, as noted above, AI data centers powered by fossil fuels also use large amounts of off-site cooling. A report published by Lawerence Berkeley National Lab found that about 75% of a data center's total water use comes from the process of off-site electricity generation.[190] Therefore, if an AI data center is powered by nuclear energy, the reliance on the water-intensive fossil plants is reduced. Thus, the AI data center will indirectly consume less water.

iii. More Stable Market Conditions and Supply

Another downfall of using fossil fuels to power an AI data center is that the market price for fossil fuels is extremely volatile and there is growing global concern about the increasingly limited supply of this resource.[191] Unlike the volatile market of fossil fuels, the cost of nuclear energy is extremely stable. While the price of uranium may fluctuate, the variation is very small and amounts to a minuscule percentage amount.[192]

iv. Lower Utility Costs to Residents

[190] Shehabi, et al., *supra* note 117.
[191] *Advantages and Challenges of Nuclear-Powered Data Centers*, U.S. DEPARTMENT OF ENERGY (Apr. 8, 2025), https://www.energy.gov/ne/articles/advantages-and-challenges-nuclear-powered-data-centers#:~:text=Nuclear%20operates%20at%20full%20capacity,as%2010%20years%20without%20refueling.
[192] *Id.*

As set forth above, citizens and consumers are raising concerns about shouldering the excess cost associated with a data center's need for electricity by having to pay hundreds of dollars annually on top of their typical electric bill. AI data centers that rely on nuclear can address this problem. If data centers rely on nuclear-generated electricity, they will not be as dependent on the local electrical grid connections, which in turn will help local power companies save on generation, transmission, and distribution costs. These cost savings will translate into lower electricity bills for consumers and local residents.

v. Potential Barriers to Nuclear Energy

Of course, it would be remiss to ignore that no form of energy, including nuclear energy, is without drawbacks. First, nuclear energy is often associated with past nuclear disasters and the process of storing or eliminating the nuclear waste dispensed throughout the process. As such, nuclear energy comes with social concerns from citizens and communities. Nuclear energy production faces immense reputational issues, as well as public fear and concern.[193] Second, due to the inherently dangerous nature of nuclear energy, there are various federal and state regulations that create immense obstacles that nuclear energy must overcome before it can be identified as a primary source of energy for AI data centers.[194]

[193] James Ashmore, *A New, Clear Demand: Necessary Changes to the Inflation Reduction Act to Prevent the Current Fallout in the Nuclear Industry*, 56 TEX. TECH L. REV. 481, 491 (2024).
[194] *Id.*

vi. The Current Movement Towards Nuclear Energy

Tech companies, investors, and the United States as a whole, have already started to shift towards a future where AI data centers are powered primarily with nuclear energy. In March 2025, The United States Department of Energy re-issued $900 million of funding to minimize the risk of deploying SMRs.[195] These SMRs present a more flexible option for energy intensive operations, like AI data centers, to power their facilities without the extra hassle of having to implement large nuclear reactors.[196] Moreover, in October, the United States Government, Brookfield, and Cameco came together to announce a partnership that would propel the future role of nuclear energy in AI.[197] The partnership includes at least $80 billion to construct new Westinghouse nuclear power reactors for the purpose of accelerating AI growth in the United States.[198] Once the Westinghouse nuclear power reactors are constructed, they will generate power for data centers in America that will extend the growth of AI.[199] Furthermore, tech giants such as Google, Microsoft, Amazon, and Meta are exploring investing into nuclear energy to meet the rising energy demand of their data centers and AI models.[200]

[195] Amy Roma, et al., *The US Regulatory Landscape At The Intersection Of Nuclear Energy And Data Centers*, AFIRE (Aug. 5, 2025), https://www.afire.org/summit/labyrinth/#:~:text=Pairing%20nuclear%20energy%20with%20data%20centers%20raises%20several%20novel%20practical,the%20cost%20of%20replacing%20it.
[196] *Id.*
[197] *United States Government, Brookfield and Cameco Announce Transformational partnership to Deliver Long-term Value using Westinghouse Nuclear Reactor Technology*, WESTINGHOUSE (Oct. 28, 2025), https://westinghousenuclear.com/strategic-partnership/press-releases/brookfield/.
[198] *Id.*
[199] *Id.*
[200] Bradley Hoppenstein, *Why tech giants such as Microsoft, Amazon, Google, and Meta are betting big on nuclear power*, CNBC (Dec. 28, 2024), https://www.cnbc.com/2024/12/28/why-microsoft-amazon-google-and-meta-are-betting-on-nuclear-power.html.

V. CONCLUSION

The importance that new-generation data centers play in the overall evolution and development of AI cannot be understated.[201] These data centers not only provide massive computing power and data storage, but they also handle and disperse the large amounts of data that AI applications rely on.[202] However, the reliance on fossil fuels and natural gases as the primary source of energy is not sustainable as this industry continues to grow. To keep pace with the rapid growth and development of AI, data centers should switch their focus onto the idea of nuclear energy. Nuclear energy is a cleaner alternative as opposed to its counterparts and will allow companies and tech giants to continue to grow their AI data centers, while positively changing their ecological footprint. In addition to switching to the more reliable, cleaner, and environmentally conscious power source of nuclear energy, regulations and legislation need to continue being passed. The combination of enacted legislation and regulations, along with a stronger dependence on nuclear energy, will allow AI data centers to continue to soar.

[201] Mandloi, *supra* note 45.
[202] *Id.*

UNRAVELING THE COST: AN ANALYSIS OF ENVIRONMENTAL HARM AND REGULATORY SOLUTIONS IN THE FAST FASHION INDUSTRY

Shaylin McGuire[1]

I. INTRODUCTION

Fashion is an expressive method of displaying one's personality, style, and ways of life.[2] The ever-changing fashion trends represent shifts in social and political cultures, allowing individuals to speak through their clothes.[3] While the fashion industry presents incredible possibilities, it also creates significant harm to the environment through the process of making, distributing, and disposing of clothes.[4] In general, the textile and fashion industry is responsible for approximately ten percent of global carbon emissions.[5] The industry also severely pollutes water sources in the dyeing and washing processes, releasing around 7 million microfibers per wash into the oceans.[6] Fast fashion products are also quickly discarded causing soil degradation.[7] Over 11 million tons of textile waste end up in landfills each year, which can poison soil and further contributes to air and water pollution.[8]

These harmful environmental effects continue to increase because fast fashion companies are barely regulated, and no federal United States laws are in place to directly address the environmental issues.[9] As the condition of the environment

[1] Candidate for J.D., May 2027, Thomas R. Kline School of Law of Duquesne University.
[2] Katrina Wilkinson, *A Legal Solution to a Fast Fashion Problem*, 11 ARIZ. J. ENVTL. L. & POL'Y 186, 187 (2021).
[3] *Id.*
[4] *Id.* at 188.
[5] Shalini Rukhaya et al., *Sustainable approach to counter the environmental impact of fast fashion*, 10 TPI JOURNAL 517, 518 (2021).
[6] *Id.* at 519.
[7] *Id.* at 518.
[8] Cu Fleshman, *A History of Fast Fashion: Ethical Issues, High Demand, and Outsized Influence on the US Clothing Market*, THEREALREAL (Oct. 14, 2024), https://realstyle.therealreal.com/a-history-of-fast-fashion/.
[9] Wilkinson, *supra* note 1, at 203.

worsens, states like California and New York have started to implement new laws to enforce legal responsibility upon fast fashion companies.[10] To create a positive change in the environment, more states and the federal government will need to promulgate more regulations directed at curbing environmental impacts of fast fashion.[11]

The term "fast fashion" is used to describe a business model focused on mass-production of trendy clothing at a cheap price.[12] This model employs rapid design, production, and distribution methods to market clothes that mirror the products of high-fashion designers.[13] The appeal of such a business model lies not only in the low-cost products but also in the ability to produce large quantities of items quickly, allowing everyday consumers to join the latest fashion trends.[14] Popular brands like Zara, H&M, Shein, Fashion Nova, and Asos use fast fashion to reach global communities, but in doing so have contributed to increased air and water pollution and soil degradation.[15]

The fashion industry is certainly not new, but the fast fashion business model has become increasingly popular over the last thirty years.[16] The newfound popularity of fast fashion has had adverse effects on the environment due to mass-production and the pressure brands feel to meet new fashion trends.[17] Production

[10] Harper Johnston, *Rewriting the Rules of Fashion*, EARTHDAY.ORG (Mar. 3, 2025), https://www.earthday.org/rewriting-the-rules-of-fashion/.
[11] *Id.*
[12] Rashmila Maiti, *The Environmental Impact of Fast Fashion, Explained*, EARTH.ORG (Jan. 20, 2025), https://earth.org/fast-fashions-detrimental-effect-on-the-environment/.
[13] *Id.*
[14] *Id.*
[15] *Id.*
[16] Giada Nizzoli, *Brief History of Fast Fashion (& Changing Its Future Course)*, PROJECTCECE (Apr. 10, 2024), https://www.projectcece.com/blog/637/brief-history-of-fast-fashion/.
[17] *Id.*

methods used in fast fashion require using large amounts of natural resources throughout a product's entire lifecycle.[18]

Fast fashion businesses tend to use the same synthetic fibers, such as polyester and nylon, in most of their products.[19] Production of these fibers using fossil fuel consumes much more energy than producing clothes made of natural fibers.[20] By producing, manufacturing, and transporting millions of items of clothing, fast fashion businesses release greenhouse gases, with emissions projected to reach 2.8 billion tons by 2030 if current trends continue.[21] Additionally, the fast fashion industry uses high volumes of water throughout its entire process of creating clothes.[22] This is leading to water depletion in certain environments, which decreases water availability for other uses in those environments, and it could also lead to water pollution from the various chemicals used to process products.[23] Not only does the production process use vast amounts of water, but it also uses toxic chemicals and dyes when making clothes.[24] These chemicals and dyes are then released into local water systems, harming the water and posing risks to human health.[25] Similar effects on air quality have been linked to the fast fashion industry, as many harmful gases are emitted into the atmosphere during production.[26] The fast fashion industry further negatively impacts land and soil, as most textiles end up in landfills and

[18] Rukhaya et al., *supra* note 4, at 518.
[19] *Id.*
[20] *Id.*
[21] Jolin Li, *Fast Fashion and Emissions: What's the Link?* EARTH.ORG (Aug. 23, 2024), https://earth.org/fast-fashion-and-emissions-whats-the-link/.
[22] Rukhaya et al., *supra* note 17, at 519.
[23] *Id.*
[24] *Id.*
[25] *Id.*
[26] *Id.*

contribute to land degradation from chemical pollution.[27] Importantly, the synthetic fibers used to produce most fast fashion clothes take hundreds of years to biodegrade, and they are difficult to recycle.[28] This has led to water, land, and air pollution, degrading the environment and posing risks to human health.[29]

Although the environmental impacts of fast fashion are overwhelmingly negative, there are few laws in place that specifically target those issues.[30] Current federal environmental laws do not curb the negative effects of fast fashion because they only apply to businesses that operate in the United States, and most of the fast fashion industry produces clothing in other countries.[31] A few states, such as California and New York, have promulgated legislation attempting to ameliorate the negative impact of fast fashion.[32] California's Responsible Textile Recovery Act of 2024 holds the clothing and textile industry responsible for ensuring their products are collected, repaired, reused, and recycled to reduce waste.[33] In addition, the New York Senate has proposed the New York Fashion Act, which would "require fashion sellers to be accountable to standardize environmental and social due diligence policies."[34] These state laws are a good start to help reduce environmental pollution and waste, and create a more sustainable fashion industry.[35] However, to foster a

[27] *Id.* at 518.
[28] Maiti, *supra* note 11.
[29] Rukhaya et al., *supra* note 21, at 518-19.
[30] Wilkinson, *supra* note 8, at 203.
[31] *Id.*
[32] Johnston, *supra* note 9.
[33] CALRECYCLE, https://calrecycle.ca.gov/epr/textiles/ (last visited Sept. 26, 2025).
[34] S. 4558A, 2025 Leg., Reg. Sess. (2025).
[35] Johnston, *supra* note 31.

significant change, more states and the federal government must also create laws to directly mitigate the industry's environmental impact.[36]

II. HISTORY

Clothing has always been known as one of the necessities of life, and it remains an ever-changing industry.[37] Fashion allows individuals to express themselves in an artistic way and can often play a large role in a person's life.[38] The clothes one wears may represent their creativity, political or social views, economic status, or religion.[39] As the world continues to develop, so too does the fashion industry.[40]

While the term "fast fashion" is relatively new, the concept is one that has been prevalent for centuries.[41] In early America, clothing was handmade, quite expensive, and produced through a long and laborious process.[42] This process began to change when the Industrial Revolution took over America around the late eighteenth century.[43] The new wave of textile technology gave rise to faster production using factories and textile machines, which in turn lowered the cost of clothing.[44] It also gave more Americans steady and stable jobs, which led to an increase in income that could be used on wants rather than needs.[45] Clothing producers began making

[36] *Id.*
[37] Wilkinson, *supra* note 29, at 186.
[38] *Id.*
[39] *Id.* at 187.
[40] *Id.*
[41] Nizzoli, *supra* note 15.
[42] *Id.*
[43] *Id.*
[44] *Id.*
[45] Wilkinson, *supra* note 36, at 191.

products that were specifically geared toward changing fashion trends so individuals would buy new products when the old ones quickly went out of style.[46] This new fashion era was considered the beginning of mass production, although consumers were still limited.[47] Although there was now wide availability of textiles, they were only produced during the two cycles of fashion releases.[48]

The twentieth century brought about several changes to American society, economy, politics, and freedom, which all impacted the fashion industry.[49] More clothing stores began to emerge and become mainstream as "a new young generation could now afford to use their wages to treat themselves."[50] The 1960s and 70s became a time of expression in the United States, where individuals would use fashion to embrace their identities and show resistance to the country's turmoil.[51] Around this time was also when the modern concept of fast fashion made its breakthrough in the textile industry.[52] America and China began trade relations in the 1970s, which skyrocketed demand for expensive Chinese clothing.[53] Further, containerized shipping "allowed companies to ship massive quantities at low costs."[54] This combination resulted in several retailers implementing a new business model that would import cheaply made clothes from other countries and sell them for a profit.[55]

[46] *Id.* at 192.
[47] Nizzoli, *supra* note 40.
[48] Fleshman, *supra* note 7.
[49] Nizzoli, *supra* note 46.
[50] *Id.*
[51] *Id.*
[52] *Id.*
[53] Fleshman, *supra* note 47.
[54] *Id.*
[55] *Id.*

Today, most garments are made outside of the United States and consumers no longer have to wait for the next fashion cycle to purchase a trending outfit.[56]

Finally, the term "fast fashion" was first coined in the 1990s when the New York Times described Zara's quick method of clothing production, design, and sale.[57] Retailers were now fully using the fast fashion model to produce clothes faster and keep up with the latest trends.[58] This continued into the early 2000s, when e-commerce became the new norm, and into the present fashion industry, where online fashion companies now expedite the process further.[59] Companies like Shein, Asos, and Zara produce thousands of new items per week, and consumers are currently purchasing 60% more clothes than they did two decades ago.[60] This has also led to "throw-away culture" where consumers only own the clothes they purchase for a short amount of time before disposing of them.[61] Throw-away culture is prevalent in the fast fashion industry for two reasons.[62] First, the rapid production of new clothes allows consumers to buy products that are in line with the latest fashion trends and have a similar look to products of designer brands.[63] Second, the quality of fast fashion products is generally poor, so products do not stay in good condition and cannot be worn long, leading to most products ending in landfills.[64]

a. Greenhouse Gas Emissions and Pollution

[56] *Id.*
[57] Maiti, *supra* note 27.
[58] Nizzoli, *supra* note 48.
[59] *Id.*
[60] *Id.*
[61] Wilkinson, *supra* note 44, at 188.
[62] *Id.*
[63] *Id.*
[64] *Id.*

As fast fashion emerged and is continuing to grow at a rapid pace, significant amounts of greenhouse gases and carbon emissions are harming the environment at an ever increasing rate.[65] The fast fashion industry accounts for approximately ten percent of annual global emissions, which is more than the combination of emissions from aviation and shipping industries.[66] Data collected by the United Nations Environment Program (UNEP) found that if the fast fashion industry continues to increase at its current rate, greenhouse gas emissions will likely increase by over fifty percent across the industry by 2030.[67] While the fashion industry is surely not the only cause of carbon emissions, it is one of the largest contributors because the fast fashion business model requires clothes to be continuously and rapidly produced to keep up with modern trends.[68] Additionally, the business model also allows for consumers to discard garments after only a few wears, as new trends emerge and new clothes are manufactured quickly enough for consumers to recreate their closets.[69] Although this cycle is appealing to consumers, the rapid buying and discarding of clothing increases carbon and greenhouse gas emissions resulting in greater environmental concerns.[70]

Many assume that fast fashion is no more environmentally harmful than traditional fashion.[71] This common assumption is one reason consumers continue to

[65] Fleshman, *supra* note 52.
[66] *Id.*
[67] Li, *supra* note 20.
[68] *Id.*
[69] *Id.*
[70] *Id.*
[71] *Id.*

purchase fast fashion products without regard to the environmental effects.[72] Fabric production is one of the main causes of greenhouse gas emissions because cheap synthetic materials are often used to produce fast fashion clothes.[73] Synthetic materials keep costs low but are generally made with non-renewable fossil fuels, which do not decompose for hundreds of years.[74] Synthetic materials also lead to increased greenhouse gas emissions.[75] Further, the cheap materials used, such as polyester, can create three times the amount of carbon emissions than those generated by other materials like cotton.[76] When synthetic fibers are then discarded and placed in landfills, it has the same effect as food waste.[77] When organic food waste is sent to landfills to decay under "anaerobic conditions," it creates the powerful greenhouse gas methane.[78] The same process occurs when synthetic fibers are discarded to landfills, increasing the global emission of dangerous greenhouse gases.[79]

Along with the materials themselves, clothing production also increases global emissions.[80] Nearly all fast fashion companies produce their products in developing countries, such as China, Bangladesh, and India. These countries use coal-powered plants which cause much greater gas emissions.[81] Because most clothing products are

[72] *Id.*
[73] *Id.*
[74] *Id.*
[75] *Id.*
[76] *Id.*
[77] Rukhaya et al., *supra* note 28, at 518.
[78] Caroline Cole, *Lettuce Not Waste: New EPA Research Highlights Food Waste Contributions to Climate Change*, UNITED STATES ENV'T PROT. AGENCY (Dec. 19, 2023), https://www.epa.gov/sciencematters/lettuce-not-waste-new-epa-research-highlights-food-waste-contributions-climate.
[79] Rukhaya et al., *supra* note 76, at 518.
[80] Li, *supra* note 66.
[81] *Id.*

manufactured in a small number of Asian countries, global distribution of these products creates another significant source of carbon emissions.[82] Companies must first transport materials to the manufacturing countries and then distribute the clothing products globally when completed.[83] Several studies have been conducted regarding transportation in the fashion industry. Those studies found that about 91% of fast fashion's carbon footprint comes from producing jeans and transporting them across the world.[84] While the carbon footprint of an individual clothing product varies based on its materials and production methods, fast fashion collectively contributes substantially to global carbon emissions.[85] Other sources of air pollution from the fast fashion industry include "resin finishing and drying operations, printing, dyeing, fabric preparation, and wastewater treatment plants."[86] These processes not only use a lot of energy, but they can also emit volatile compounds like formaldehyde, acids, solvents, and carriers into the air.[87]

b. Water Waste and Pollution

In addition to increasing global emissions and releasing harmful pollutants into the air, the fast fashion industry depletes water sources and contaminates bodies of water.[88] The industry uses significant amounts of water throughout the entire production process, from washing fibers, bleaching, dyeing, and washing completed

[82] *Id.*
[83] *Id.*
[84] *Id.*
[85] Rukhaya et al., *supra* note 75, at 518.
[86] *Id.* at 519.
[87] *Id.*
[88] Maiti, *supra* note 56.

products.[89] While polyester is the most commonly used material in the fast fashion industry, cotton is also frequently involved in the production of clothing.[90] Because cotton requires a lot of water to grow, over 5,000 gallons of water may be needed to produce just two pounds of cotton.[91] In fact, producing one cotton shirt requires approximately 700 gallons of water, while producing one pair of jeans requires about 2,000 gallons of water.[92] Studies have shown that producing fiber has a significant effect on freshwater withdrawal, which is "water diverted or withdrawn from a surface water or groundwater source."[93] When fast fashion companies use large amounts of water just to grow cotton, they create tremendous pressure on the already scarce natural resource.[94] It also produces ecological consequences because using excessive amounts of water to produce cotton has led to the desertification of the Aral Sea.[95]

One of the largest environmental concerns of fast fashion stems from the dyeing and printing process involved in clothing production.[96] Dyeing and printing use large amounts of water and toxic chemicals that are subsequently released into the air and water sources.[97] When untreated fabric dye and waste water are dumped into local water systems, heavy metals and toxic substances are released with them, which not only harms the water but also poses risks to human health.[98] Further,

[89] Rukhaya et al., *supra* note 81, at 519.
[90] *Id.*
[91] *Id.*
[92] Maiti, *supra* note 84.
[93] *Id.*
[94] Rukhaya et al., *supra* note 88, at 519.
[95] *Id.*
[96] Rukhaya et al., *supra* note 85, at 519.
[97] *Id.*
[98] *Id.*

many dyes used to color clothes do not "stick" to the fabric, so the dye is washed off immediately and creates another source of water pollution.[99] The uncontrolled use of synthetic fibers can also runoff into water, contaminating the water and creating dead zones in river mouths.[100] Furthermore, because the synthetic fibers used to make fast fashion clothing take hundreds of years to biodegrade they leave microfibers around the planet.[101] Microfibers around the planet can cause respiratory issues for humans through direct exposure, especially those who work in clothing production factories.[102] Harm to bodies of water does not end with the production of clothes, though.[103] Since the fast fashion industry uses such a wide range of chemicals throughout each stage of production, the chemicals continue to be released into water systems when consumers wash their products.[104] It is estimated that approximately 7 million individual microfibers are shed during each wash and are subsequently released into the oceans.[105] One study found that just one individual could release 300 million microfibers per year to the environment by washing their clothes and over 900 million microfibers into the air by wearing their clothes.[106] The microfibers then make their way into the oceans where aquatic organisms ingest them, thus introducing plastic into the food chain. [107]

c. Landfills and Soil Degradation

[99] *Id.*
[100] Wilkinson, *supra* note 60, at 190.
[101] Maiti, *supra* note 88.
[102] Jianli Liu et al., *Microfiber Pollution in the Earth System,* 260 REVIEWS ENV. CONTAMINATION AND TOXICOLOGY 12-13 (2022).
[103] Rukhaya et al., *supra* note 90, at 519.
[104] *Id.*
[105] *Id.*
[106] *Id.*
[107] *Id.*

Yet another major negative environmental effect of the fast fashion industry is the impact on soil and landfills.[108] Most of the clothing products end up in landfills as a result of the rise in fast fashion production which shortens the lifecycle of each garment.[109] In 2018 alone, "more than 11 million tons of textile waste ended up in landfills."[110] Prior to the popularity of the fast fashion model, several countries exported old garments to developing countries as a solution to textile waste.[111] However, as waste began to exponentially increase at a rapid rate, countries have since stopped this practice and many have even banned the import of textile waste.[112] Developing countries could not sustain the high volumes of waste, so banning imports of textile waste protected their domestic textile production and resulted in less second-hand clothing replacing local production.[113] As a result, textile waste is building up in landfills across the world and the recycling rates remain low.[114]

The discarding of textiles to landfills leads to soil and groundwater degradation from chemical pollution.[115] It can also result in pollution from the overuse of herbicides, insecticides, and fertilizers in cultivating fibers for clothing production.[116] The herbicides, insecticides, and fertilizers that are used during cultivation follow the clothing products to landfills and degrade soil health.[117] These textiles are generally

[108] *Id.* at 518.
[109] *Id.*
[110] Fleshman, *supra* note 64.
[111] Rukhaya et al., *supra* note 97, at 519.
[112] *Id.*
[113] *Id.*
[114] *Id.*
[115] *Id.* at 518.
[116] *Id.*
[117] *Id.*

larger in size and take up more space than normal household waste.[118] This also leads to the release of even more greenhouse gases from the sheer number of textiles that end up in landfills because the portions of them that are biodegradable emit gases into the air.[119] Another important part of the production process involves packaging the garments for shipment and visual appeal.[120] Packaging materials are generally opened immediately once the consumer has possession but are then quickly discarded to end up in a landfill.[121] Because visual appeal is one goal of fast fashion companies, they often use extra packaging materials to make the products look good, which uses more unnecessary resources.[122] This aspect of fast fashion is incredibly harmful to the environment, as healthy soil is fundamental to the ecosystem but is shrinking due to human pollution.[123]

d. Laws Regulating the Industry's Environmental Impacts

Although the fashion industry is one of the largest in the world, there are few laws that regulate its negative environmental impact.[124] The industry is responsible for about 92 million tons of landfill waste, which pollutes air, water, and soil.[125] Despite the environmental impact, the fashion industry largely makes its own decisions regarding sustainability and transparency.[126] The industry's need to keep up with trends and consumer demand makes for a competitive, yet largely

[118] *Id.*
[119] *Id.*
[120] *Id.* at 519.
[121] *Id.*
[122] *Id.*
[123] *Id.* at 518.
[124] Johnston, *supra* note 34.
[125] *Id.*
[126] *Id.*

unregulated, market.[127] Thus, without government intervention companies will likely continue on this path of industry expansion with no regard of the environmental impact.[128]

There are currently no federal United States laws that directly regulate the environmental impact of the fast fashion industry.[129] Existing laws are broadly defined and are not adequate to mitigate the various issues involved throughout the entire fast fashion business model.[130] The existing laws also only apply to manufacturers that operated within the United States.[131] They do not address the environmental problems because most fast fashion companies outsource production to other countries.[132] As a result, federal laws geared toward regulating environmental concerns, such as the Resource Conservation and Recovery Act (RCRA), the Clean Air Act (CAA), and the Clean Water Act (CWA), have no effect on how fast fashion companies use and dispose of their products.[133] While these laws do regulate producers in the United States, they only address what companies should do with materials after production.[134] The current laws and regulations do not address reducing the use of toxic materials during the production process.[135]

For example, the goal of the CAA is to reduce the emissions of harmful pollutants from factories and businesses in the United States, and the CWA prohibits

[127] Li, *supra* note 79.
[128] Johnston, *supra* note 123.
[129] Wilkinson, *supra* note 95, at 203.
[130] *Id.*
[131] *Id.*
[132] *Id.*
[133] *Id.*
[134] *Id.* at 203-4.
[135] *Id.* at 204.

companies from discharging pollutants into United States waters.[136] Additionally, the RCRA "seeks to control the disposal of hazardous wastes from facilities that produce, transport, or treat or store such hazardous wastes."[137] The result of the RCRA only affects waste once it is already produced but does not address the volume of waste that is produced during the production phase of the textile industry.[138] While these laws and the Environmental Protection Agency (EPA) heavily regulate textile and clothing production, they only have force of law within the United States.[139] Since about 97% of clothing that is sold in the United States is produced in other countries, only a mere three percent of clothing sold is subject to these federal regulations.[140] Thus, the existing laws have little to no effect in regulating environmental issues caused by the fast fashion industry.[141]

Some state legislatures are slowly beginning to address the environmental impacts of fast fashion by promulgating new laws that could have a more substantial impact on environmental issues related to the fashion industry.[142] For example, California passed the Responsible Textile Recovery Act of 2024 ("Act") which aims to hold the fashion industry responsible for the entire lifecycle of clothes in order to reduce hazardous waste, decrease greenhouse gas emissions, and emphasize environmental and public health impacts.[143] The Act stems from the California

[136] *Id.*
[137] *Id.*
[138] *Id.*
[139] *Id.*
[140] *Id.*
[141] *Id.*
[142] Johnston, *supra* note 114.
[143] Cal. Pub. Res. Code § 42984.7 (2024).

Integrated Waste Management Act of 1989, which is administered by the Department of Resources Recycling and Recovery and regulates the disposal, management, and recycling of waste.[144] The California Integrated Waste Management Act of 1989 also creates stewardship programs for various products, which is how the Responsible Textile Recovery Act of 2024 was established.[145]

Specifically, the Act requires fashion companies to directly address what will happen to clothing and textiles discarded by a consumer.[146] Instead of being dumped in landfills, discarded clothes and textiles are to be "reused, repaired, and recycled into secondary products or otherwise managed in a manner that is consistent with the state's hierarchy for waste management practices."[147] The Act further requires producers of clothing to form and join a producer responsibility organization ("PRO") that will create a plan for the collection, sorting, repair, reuse, recycling, and management of clothing.[148] If producers are not in compliance with the Act by July 1 of each year, they will be given opportunities to comply.[149] If, after the opportunity to comply, a producer is still not in compliance with the Act, administrative civil penalties may be imposed.[150] Producers in violation of the Act will pay $10,000 per day. If the violation is intentional or knowing, the penalty increases to $50,000 per day.[151]

[144] S.B. 707, 2023–2024 Leg., Reg. Sess. (Cal. 2024).
[145] *Id.*
[146] *Id.*
[147] *Id.*
[148] *Id.*
[149] *Id.*
[150] *Id.*
[151] *Id.*

New York seems to be following in the footsteps of California with the proposal of the Fashion Environmental Accountability Act, also known as the New York Fashion Act.[152] If passed, this act will require fashion companies to map their supply chains and use due diligence to identify, prevent, mitigate, account for, and take remedial action to address adverse environmental and human rights impacts in their operations and supply chain.[153] The New York Fashion Act will apply to companies who operate and sell apparel, footwear, and bags in New York, provided that the companies exceed one hundred million dollars in annual gross sales.[154] It requires these companies to uphold environmental standards by implementing greenhouse gas reduction targets, enforcing the use of data to measure their emission and reduction targets, and publicly displaying annual due diligence reports.[155] If companies fail to comply with the New York Fashion Act, they will be publicly listed as "non-compliant" and could face civil fines.[156] As of now, the proposed bill is in the Consumer Protection Committee of the New York Senate.[157]

III. ANALYSIS

There are several ways in which the negative environmental effects of the fast fashion industry could be addressed, but not all of them are feasible or likely to produce significant change. There is no doubt that consumer preferences largely contribute to the environmental issues stemming from fast fashion companies.[158]

[152] S. 4558A, 2025-2026 Leg., Reg. Sess. (N.Y. 2025).
[153] *Id.*
[154] *Id.*
[155] *Id.*
[156] *Id.*
[157] *Id.*
[158] Wilkinson, *supra* note 128, at 203.

Overconsumption patterns have paralleled the rise of the fast fashion industry.[159] Moreover, the companies distributing fast fashion clothing products often market and advertise the products as "sustainable" or "eco-friendly" without giving consumers the proper information to ensure correctness that those label reflect reality.[160] Consumers should absolutely look into the clothing products they buy, and it would help to purchase clothes from brands that are transparent and truly sustainable. However, consumer choice is not enough to curb the environmental issues because there is not a direct connection between the choice of buying clothes and the consequence of environmental damage. Therefore, individual consumers are not likely to feel the effects of their choices, and collective action is difficult. There must be another way to combat the environmental effects of the fast fashion industry that does not solely rely on consumer regulation. Government regulation is likely the best way to do this.

a. California and New York Laws

As previously mentioned, there are no federal laws directly governing the environmental concerns of the fast fashion industry.[161] California and New York are currently the only two states that have created acts to target fast fashion environmental concerns, but New York has not yet passed its act. The question then becomes whether other states should implement similar laws to the California and

[159] *Id.*
[160] *Id.*
[161] *Id.*

New York acts, or if states should choose a different route to regulate negative impacts of fast fashion on the environment.

Since the California Act was only recently passed and the New York Act has not yet been passed, it is difficult to know if they will reduce negative environmental effects. However, just by reading both Acts it is evident that the California Act is stricter in its regulation and really focuses on holding fast fashion companies accountable. California specifically requires fashion companies to join a PRO and set out a detailed plan regarding each separate step of the clothing cycle.[162] New York's Act seems to have a more general goal, evidenced by its requirement of "due diligence" and "taking remedial action."[163] Furthermore, there are general targets that each New York fashion company must meet to comply with the Act, but no requirement to specifically account for each step of the clothing cycle.[164] Because it lacks specific targets and does not have accountability for every step in the clothing cycle, the California Act is a better model for other states to follow.

Both Acts do hold fashion companies publicly accountable by posting non-compliance lists and imposing civil fines.[165] This is an incredibly vital aspect of each Act because every fast fashion company is concerned with public image and maintaining profits. Recent social media trends have created a "cancel culture" that is quick to boycott individuals, organizations, and companies for engaging in socially

[162] S.B. 707, 2023–2024 Leg., Reg. Sess. (Cal. 2024).
[163] S. 4558A, 2025-2026 Leg., Reg. Sess. (N.Y. 2025).
[164] *Id.*
[165] CALRECYCLE, *supra* note 160. *See also*, S. 4558A, *supra* note 161.

unacceptable beliefs or practices.[166] Thus, the threat of being perceived as environmentally unfriendly can be a great motivation for fashion companies to use more sustainable methods.

The possibility of paying fines is another motivating factor that both Acts have included. All businesses, including ones in the fashion industry, aim to maximize profits while keeping costs as low as possible. That is how the fast fashion industry became so successful in the first place. The creators of the California and New York Acts have clearly understood this, as fines for noncompliance can reach high amounts. Fashion companies are more likely to comply with the Acts and in turn consider environmental impacts of their products to avoid paying fines.

b. Additional Mitigating Methods

While it is helpful that states are beginning to implement laws and regulations that directly address negative environmental impacts of the fast fashion industry, those new laws can only do so much. State and federal laws only apply to fast fashion clothing distributors but cannot apply to producers in other countries.[167] The Acts that are in place now can help mitigate environmental concerns regarding what occurs after the clothing products have been sold, such as soil, air, and water quality from textiles being placed in landfills. However, so many of the harmful effects to the environment occur during the production stage.[168] The United States does not have the ability to create laws for other countries where fast fashion clothing products are

[166] Bethan Gwynne, *The Short Memory of Fashion: Why Cancel Culture Fades and Real Change Struggles to Stick*, VOGUE COLLEGE (Nov. 19, 2024), https://www.voguecollege.com/articles/london/the-short-memory-of-fashion-why-cancel-culture-fades-and-real-change-struggles-to-stick/.
[167] Wilkinson, *supra* note 156, at 203.
[168] Li, *supra* note 66.

being produced, but it could implement tariffs and subsidies that could incentivize domestic consumers to purchase more environmentally friendly clothing products.[169]

Tariffs and subsidies are "considered protectionist economic policies" that seek to encourage consumers to purchase domestic products by making imported goods more expensive than domestic goods.[170] They essentially do the opposite of each other.[171] Tariffs would place taxes on imported fast fashion clothing products to make them more expensive for United States consumers and possibly discourage overconsumption.[172] Subsidies, on the other hand, can lower the price of domestic clothing products to encourage consumers to buy those instead of imported fast fashion clothing products.[173] This usually occurs in either of two forms: direct subsidies or indirect subsidies.[174] Direct subsidies are typically cash grants that are given to consumers or industries to promote that industry, while indirect subsidies are typically "tax deductions, rebates, and low interest loans."[175] Whichever form the subsidies take will have the goal of promoting United States clothing companies, which could in turn reduce some of the negative environmental effects that occur during the production stage of fast fashion clothing.[176]

[169] Wilkinson, *supra* note 163, at 204.
[170] *Id.*
[171] *Id.* at 205.
[172] *Id.*
[173] *Id.*
[174] *Id.*
[175] *Id.*
[176] *Id.* at 207.

Introducing tariffs and subsidies into the fashion industry has the potential to reduce some of the environmental effects of fast fashion production, but it is also important to consider other effects of these methods because both have other potential consequences.[177] Tariffs can help to correct the price of imported goods that are much lower than domestic goods, but this in turn can create a burden on the market and slow economies.[178] Tariffs also increase prices for domestic consumers, which is good in the sense that it will discourage them from buying environmentally unfriendly imported products.[179] However, if tariffs were to be placed on fast fashion products, it could result in negative consequences for domestic consumers who end up paying up to one billion additional dollars per year due to tariffs on imported clothing products.[180] Implementing tariffs alone could make clothing inaccessible to lower income consumers.[181]

Subsidies can also have negative consequences on the government and environment if left in place for too long.[182] These are known as "perverse subsidies," which can be expensive for governments and actually encourage increased consumption in the subsidized industry.[183] Perverse subsidies can foster overuse of resources and create unintended consequences in the areas that were not targeted.[184] For example, subsidies intended to target fossil fuels can result in aggravated

[177] *Id.* at 205.
[178] *Id.*
[179] *Id.*
[180] *Id.*
[181] *Id.*
[182] *Id.*
[183] *Id.*
[184] Norman Myers, *Consumption and Sustainable Development: The Role of Perverse Subsidies*, HDR 1, 3 (1998).

pollution effects.[185] Implementing subsidies also allows companies to continue using cheaper existing methods that harm the environment rather than adopting new methods that require new technology, and thus require the company to spend more.[186] However, this threat can be overcome by implementing a subsidy for long enough to serve its purpose and then removing it before overconsumption occurs.[187] Using subsidies instead of tariffs seems to be a better option to reduce the negative environmental effects of fast fashion clothing production and ensure that the American economy is stable.[188] Rewarding domestic fashion companies for environmentally safe production would allow these companies to reduce their prices, making them more affordable to domestic consumers.[189] This could have a great impact on the environment because it would allow domestic consumers to purchase clothing brands that were previously not in their price range, while also ensuring that consumers are buying sustainably made goods.[190] Further, the rise of social media users holding companies accountable has led to more Americans wanting to purchase from brands that use sustainable methods.[191] Implementing subsidies would allow American consumers to promote that cause further by purchasing from responsible companies.

[185] *Id.*
[186] *Id.* at 4.
[187] *Id.* at 206.
[188] *Id.*
[189] *Id.*
[190] *Id.* at 207.
[191] Gwynne, *supra* note 165.

c. Levels of Government Regulation to Consider

Another perspective on how to best mitigate the negative environmental impact of the fast fashion industry is to consider the government level on which issues would be most effectively handled. Regardless of what laws may be implemented, the government must consider whether to implement those laws at the local, state, or federal level. On one hand, federal laws can provide nationwide consistency and set a minimum standard for certain issues.[192] On the other hand, state laws offer flexibility in addressing specific local needs in areas that often differ between states.[193]

Having uniform federal laws can be a great way to create consistent legal framework across the country, which is crucial for issues that affect the nation as a whole.[194] In the fast fashion context, federal laws can aid in regulating unfair practices and monopolistic behavior so that businesses in the industry can compete on a level playing field.[195] However, implementing federal laws can also create disadvantages for some areas that may be better addressed at a state or local level.[196] For example, requiring everyone to abide by federal laws can create additional pressures for business because those laws often involve strict regulations.[197] Federal compliance can be especially tough on small businesses that do not have as many

[192] OpenStax, *Advantages and Disadvantages of Federalism*, AMERICAN GOVERNMENT, https://courses.lumenlearning.com/atd-monroecc-americangovernment/chapter/advantages-and-disadvantages-of-federalism/ (last visited Nov. 7 2025).
[193] *Id.*
[194] *Id.*
[195] COMPASS ADVOCACY, https://www.compassadvocacy.com/government-relations/the-benefits-and-downsides-of-government-regulations-for-businesses/ (last visited Nov. 7, 2025).
[196] OpenStax, *supra* note 184.
[197] COMPASS ADVOCACY, *supra* note 187.

resources as large companies, such as the fast fashion clothing companies that are currently running the industry.[198]

Laws that are implemented on a state or local level have the ability to tailor regulations to the unique characteristics of each state.[199] State laws can better reflect the specific needs, values, and political, social, and economic cultures of their residents.[200] This can strengthen citizen participation by creating a closer relationship between state governments and its citizens.[201] When citizens are given the opportunity to actively participate in local decision-making processes, the decision-makers are then able to formulate policies to reflect citizens' needs.[202] State laws can also encourage policy innovation by giving local authorities more freedom to design socio-economic plans that will make a positive impact within the state.[203]

With that being said, implementing laws on a state or local level can have even more drawbacks than laws implemented on a federal level.[204] The main issue surrounding state laws is the economic disparities across states.[205] Differences in state laws can have a profound effect on the well-being of citizens, as incomes and funding can vary significantly.[206] Additionally, financial disparities between states can result in some states being unable to properly implement laws due to a lack of

[198] *Id.*
[199] OpenStax, *supra* note 188.
[200] Ion Ilasco, *Pros and Cons of Public Decentralization*, DEVELOPMENT AID (Jun. 24, 2021), https://www.developmentaid.org/news-stream/post/95146/pros-and-cons-of-public-decentralization.
[201] *Id.*
[202] *Id.*
[203] *Id.*
[204] OpenStax, *supra* note 191.
[205] *Id.*
[206] *Id.*

resources and funding.[207] Along with state economic disparities, implementing laws at a state or local level can make it difficult to enforce action on issues of national importance.[208] Another disadvantage of state-level laws is commonly referred to as "race-to-the-bottom" dynamics.[209] This stems from the idea that states may compete to attract businesses by lowering taxes and regulations, which can result in reduced protection for state citizens.[210] If the fast fashion industry were to be regulated at a state level, there is a high possibility of race-to-the-bottom tactics becoming prevalent, which would contradict the entire purpose of fashion laws. Instead of implementing stricter regulations about environmental safety in the fast fashion industry, states may be inclined to actually lower regulations to attract fashion companies. This could provide those fast fashion companies that use environmentally harmful practices with a way to bypass expensive and time-consuming regulations.

Regulations on the environmental effects of the fast fashion industry would likely be better enforced at the federal level. Federal laws would provide more uniformity and consistency between states to ensure that all fashion companies domiciled in the United States abide by the economic regulations. Federal regulation would also prevent fashion companies from finding new ways to continue using environmentally harmful practices by simply moving the business to a different state that may have less strict regulations. The primary disadvantage of federal regulation is the potential burden on small businesses. However, if the larger fashion business

[207] Ilasco, *supra* note 192.
[208] OpenStax, *supra* note 196.
[209] *Id.*
[210] *Id.*

were to be regulated on a federal level, the smaller businesses would be on more of an equal playing field because all companies would be required to introduce environmentally cautious practices.

If the environmental effects of fast fashion companies are to be regulated at a federal level, yet another question remains: should the federal government create completely new laws to directly address this issue, or should federal agencies add additional provisions to acts that are already in place? New federal laws begin as bills, but the process for a bill to become a law can be extremely time intensive.[211] When a bill is introduced, it is assigned to a committee.[212] The members of that committee will then research, discuss, and make changes to the bill if needed.[213] Next, the bill is put before the chamber to be voted on and, if the bill passes one body of Congress, it goes to the other body.[214] The other body of Congress will partake in a similar process of research, discussion, changes, and voting on the bill.[215] Finally, the president will consider the bill and either approve or veto it.[216] If the president chooses to approve the bill, it is then signed into law.[217] If the president chooses to veto the bill, Congress can vote to override that veto, resulting in the bill becoming a law.[218] However, if Congress chooses not to override the president's veto, the bill

[211] USA Gov, https://www.usa.gov/how-laws-are-made (Nov. 17, 2025).
[212] *Id.*
[213] *Id.*
[214] *Id.*
[215] *Id.*
[216] *Id.*
[217] *Id.*
[218] *Id.*

remains unsigned.[219] This process can take years, even without additional amendments made to the bill.[220]

Executive and independent agencies can also engage in a rulemaking process, provided that the process is conducted in accordance with the Administrative Procedure Act (APA).[221] An agency engaging in the rulemaking process must go through several steps before a rule can be enforced.[222] First, the agency must issue a Notice of Proposed Rulemaking that states its intention, purpose of the rule, and provides a summary of the agency action.[223] For "significant" rules that "are likely to have an effect on the economy of at least $100 million, create inconsistency or interfere with another agency's actions…or raise 'novel legal or policy issues'" the Office of Information and Regulatory Affairs (OIRA) must review it pursuant to Executive Order 12866.[224]

Next, the agency must publish the Notice of Proposed Rulemaking in the Federal Register to provide the public an opportunity to comment.[225] This publication begins the rule's public comment period, usually lasting from 30 to 90 days.[226] Once the notice and comment period has ended, the agency must then review all comments and consider public feedback.[227] Not all comments will be implemented into the final

[219] *Id.*
[220] *Id.*
[221] Harv. L. Sch., *A Step-by-Step Guide to Agency Rulemaking and Rule Rollbacks*, ENVIRONMENTAL & ENERGY LAW PROGRAM 1 (Jan. 2025), https://eelp.law.harvard.edu/wp-content/uploads/2025/01/EELP-Regulatory-Process-Summary.pdf.
[222] *Id.*
[223] *Id.* at 2.
[224] *Id.*
[225] *Id.*
[226] *Id.*
[227] *Id.* at 3.

rule, but agencies will consider including comments they deem to be significant.[228] An agency will then prepare the final rule following APA and court procedures.[229] The language of the final rule must be a "logical outgrowth" of the Notice of Proposed Rulemaking that was submitted for public notice and comment.[230] So long as the interested parties should have anticipated the final rule in light of the notice, the agency meets the notice and comment requirement.[231] Again, the OIRA will review "significant" rules a second time and circulate them to other agencies for review.[232]

After all changes have been made and reviewed, the final rule can be published in the Federal Register after a 30-day notice period.[233] The timing of each stage is subject to change based on what type of rule is being proposed.[234] Regardless of the time period, once the final rule is published in the Federal Register, Congress may review it within 60 days.[235] It should be noted that there are several exemptions to these rules depending on statutory regulations among other factors.[236] However, the above steps are generally how an agency creates a new rule.[237]

d. Proposal to Implement New Laws Through the EPA

When comparing the two rulemaking options, agency rulemaking stands out as the most effective choice for encouraging more environmentally friendly practices in the fashion industry. Regardless of whether the federal government creates a new

[228] *Id.*
[229] *Id.*
[230] *Id.*
[231] *Id.*
[232] *Id.*
[233] *Id.*
[234] *Id.*
[235] *Id.* at 4.
[236] *Id.*
[237] *Id.* at 1.

law from a bill or whether an agency engages in the rulemaking process, creating a new law will take a significant amount of time. However, the agency rulemaking process has an advantage over Congress's process: public notice and comment.

When agencies give the public the opportunity to view a rule and comment concerns before it is finalized, the rule will be much better suited to the public's needs, whether they be social, political, or economic. In a sense, the notice and comment requirement has a similar impact as state laws in that the agency can take feedback from individuals who will be directly affected by the rule. The notice and comment aspect of agency rulemaking would provide an opportunity for United States companies in the fashion industry to express their concerns with and potential struggles they might encounter if a new rule is proposed that would enforce environmentally safe procedures in the fashion industry. From there, an agency could take those concerns into consideration to promulgate a rule that would help to mitigate negative environmental impacts of domestic fast fashion companies, while also ensuring that the rule does not harm those domestic companies to the point where they can no longer operate. Thus, United States environmental regulation of the fast fashion industry should be directly addressed through agencies.

Out of the United States agencies already in place, the Environmental Protection Agency (EPA) would most likely create a rule to specifically address fast fashion environmental impacts. The EPA is the most obvious agency for this particular task because its general mission is to "protect human health and the

environment."[238] This general mission encompasses practically all areas of environmental concern, including air, land, and water.[239] Therefore, the EPA could directly address each negative environmental impact that comes from domestic companies in the fast fashion industry.

IV. CONCLUSION

Ultimately, there is not one correct way to mitigate the negative environmental effects of the fast fashion industry. Complete consumer awareness would be difficult to achieve and would not make a significant impact because most environmental harm in the fashion industry stems from the producing countries. Despite this challenge, government regulation is more likely to reduce environmental harm through various ways. Tariffs and subsidies could provide short-term relief, but have additional consequences. State and local regulation offers flexibility, but this route does not account for economic disparities between states. Moreover, implementing fast fashion regulations on state and local levels could increase the use of harmful environmental practices due to race-to-the-bottom tactics.

Environmental effects of fast fashion should be regulated at the federal level. Congress could create laws to regulate this specific issue, but the process is lengthy and does not have the benefit of notice and comment. Therefore, agency regulation will likely have the most significant impact on reducing environmental harms of fast fashion companies. The agency process is also time-consuming, but it allows for public

[238] U.S. ENV'T PROT. AGENCY, https://www.epa.gov/aboutepa/our-mission-and-what-we-do (last visited Nov. 7, 2025).
[239] *Id.*

notice and comment, which provides feedback from individuals directly affected by agency rules. Moving forward, the EPA would be best suited to create rules that directly address environmental concerns of the fast fashion industry.

NEPA DECLAWED IN A POST-*LOPER* WORLD–A *SEVEN COUNTY* CASE NOTE

Thane Zeeh[1]

I. INTRODUCTION AND BACKGROUND

The granular purpose of the 1887 Interstate Commerce Act was to function as a mechanism for federal regulation of the railroad industry across the United States.[2] A central feature of this regulatory framework was the establishment of an enforcement body designated as the Interstate Commerce Commission (Commission).[3] Today, the Surface Transportation Board (Board), which succeeded the Commission in 1996,[4] stands at the center of *Seven County Infrastructure Coalition v. Eagle County*, a significant procedural ruling by the Supreme Court of the United States.[5] At its most fundamental level, this ruling significantly alters the scope of legal obligations under the National Environmental Policy Act (NEPA),[6] driven by the Court's early proclamation that "NEPA is a procedural cross-check, not a substantive roadblock."[7]

The *Seven County* decision arrives as a "post-*Loper* correction"[8] intended to rein in judicial review under NEPA with what the Court characterized as "common

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[2] Interstate Commerce Act, Pub. L. No. 49-41, 24 Stat. 379 (1887); Interstate Commerce Act (1887), NAT'L ARCHIVES, https://www.archives.gov/milestone-documents/interstate-commerce-act (last reviewed Feb. 8, 2022).
[3] *Id.*
[4] *Id.* (noting that in 2015, the Surface Transportation Board Reauthorization Act established the Board as a fully independent agency and continues operation today).
[5] *Seven County Infrastructure Coalition v. Eagle County*, 605 U.S. 168, 188 (2025); (citing 49 U.S.C. § 10901) (requiring railroad construction and operation must first be approved by the U. S. Surface Transportation Board).
[6] *See infra* Part II.
[7] *Seven Cnty.,* 605 U.S. at 173.
[8] *Loper Bright Enters. v. Raimondo*, 603 U.S. 369, 412 (2024) (overruling *Chevron* Deference).

sense and the statutory text."[9] The Court's use of *Loper* is particularly striking because NEPA, as a universally applied procedural statute, was generally not subject to *Chevron* deference to begin with, making the insertion of *Loper* seemingly less about correcting agency deference and more about deliberately declawing environmental review.[10] In light of this anomaly, Justice Kavanaugh's language in *Seven County* is worth exploring given its potentially broad implications.

The case involved the Board's approval of an 88-mile railroad line connecting Utah's oil-rich Uinta Basin to the Gulf Coast of Louisiana and Texas, designed to facilitate the transportation of crude oil to Gulf Coast refineries.[11] The Board conditionally approved the railroad,[12] but as mandated by NEPA,[13] withheld final approval until an official Environmental Impact Statement (EIS) was conducted and completed.[14] The EIS stood at a massive 3,600 pages and included numerous scientific findings on the environmental effects that the 88-mile railroad would have across the west.[15]

[9] *Seven Cnty.,* 605 U.S. at 184.
[10] *Chevron U.S.A. Inc. v. Nat. Res. Def. Council, Inc.*, 467 U.S. 837, 841 (1984) (limiting review to the agencies specifically "entrusted to administer" the statute), overruled by *Loper Bright,* 603 U.S. at 412; *see also Bowen v. Am. Hosp. Ass'n,* 476 U.S. 610, 642, n.30 (1986) (plurality opinion) (establishing Chevron does not apply to a statute when multiple agencies promulgate those regulations by statute).
[11] Thomas C. Chidsey, Jr., *Oil and Gas in the Uinta Basin, Utah – What to Do with the Produced Water*, SURV. NOTES BY UTAH GEOLOGICAL SURV., May 2018, at 4, https://geology.utah.gov/map-pub/survey-notes/uinta-basin-produced-water/.
[12] *Seven Cnty.*, 605 U.S. at 173.
[13] 40 CFR § 1502.3; Tiffany Middleton, *What Is an Environmental Impact Statement?,* ABA: TEACHING LEGAL DOCS (Mar. 2, 2021) https://www.americanbar.org/groups/public_education/publications/teaching-legal-docs/what-is-an-environmental-impact-statement-/ (providing the EIS is a government document that outlines the impact of a proposed project on its surrounding environment, mandated by the National Environmental Policy Act requiring advance advanced identification and disclosure of harm).
[14] *Seven Cnty*, 605 U.S. at 173.
[15] *Id.*

In the wake of such conditional approval, Colorado County and several environmental organizations sued by filing petitions for review in the U.S. Court of Appeals for the D.C. Circuit.[16] The D.C. Circuit faulted the Board for not sufficiently considering environmental effects separate from the railroad line itself.[17] These deficiencies include a failure to consider the effect oil drilling would have on upstream water in the Uinta Basin and the effect that an increase in oil refining downstream would have along the Gulf Coast of Louisiana and Texas.[18]

Based on these deficiencies, the D.C. Circuit vacated the EIS and the Board's final approval order.[19] The Coalition and the Uinta Basin Railway sought review and the Court granted *certiorari*.[20]

The Court reversed the D.C. Circuit, holding that the Board was not required under NEPA to evaluate the environmental effects of upstream drilling or downstream refining.[21] To reach this conclusion in the immediate wake of *Loper*, the Court engineered a highly discretionary threshold between legal interpretation and factual deference.[22]

First, the majority in applying *Loper*, held that defining statutory terms—such as [what is a] "proposed action"[23] or the requirement that an EIS be "detailed"—is

[16] *Id.* at 176.
[17] *Id.* (citing *Eagle Cty. v. Surface Transp. Bd.*, 82 F.4th 1152, 1196 (2023)).
[18] *Id.* at 173-74.
[19] *Seven Cnty.*, 605 U.S. at 177.
[20] *Eagle Cty.,* 82 F.4th at 1152, *cert. granted sub nom. Seven Cnty. Infrastructure Coal. v. Eagle Cty.*, 605 S. Ct. 2640 (2024).
[21] *Id.* at 192.
[22] *Bifurcate*, WEX, LII, https://www.law.cornell.edu/wex/bifurcate (last reviewed Dec. 2021) (defining "bifurcate" as "the dividing of a case into two parts for trial").
[23] 42 U. S. C. §4332(2)(C).

purely a question of law subject to independent *de novo* judicial review.[24] Second, and shortly thereafter, the Court provided that the extent of the "details" that should be included in the EIS is a factual determination reserved for the Board, subject to the arbitrary and capricious standard.[25]

The Court continued by providing, "the textual focus of NEPA is the 'proposed action,'"[26] which is to be determined by, "the project at hand," not separate projects.[27] The Court then quickly declared that agencies possess "broad latitude to draw a 'manageable line'" when determining the scope of environmental reviews.[28] Shielded by this latitude, the Court held that the Board acted within a "*broad zone of reasonableness*"[29] by excluding upstream and downstream impacts because they were not *proximately caused* by the railroad itself,[30] and therefore did not necessitate such analysis in the EIS.[31] In other words, the "upstream drilling or downstream refining" oil operations were not a part of the, "project at hand."[32]

The Court, however, failed to provide a guiding principle for when or how to pivot between law and fact.[33] This seemingly permits the Court to arbitrarily choose

[24] *Seven Cnty.*, 605 U.S. at 179 (citing *Loper Bright*, 603 U.S. at 391-92; 412) (explaining the deference that *Chevron* requires of courts reviewing agency action cannot be squared with the [Administrative Procedure Act]) (citing §4332(2)(C)); 5 U.S.C. § 706.
[25] *Id.* at 180-81 (providing what details to include are a matter of fact for the [Board]).
[26] 42 U. S. C. §4332(2)(C) (2018).
[27] *Seven Cnty.*, 605 U.S at 182-83 (citing §4332(2)(C)).
[28] *Id.* at 183.
[29] *Id.* at 183 (emphasis added) (establishing a "broad zone of reasonableness" for agency discretion without providing a direct statutory or precedential citation for such phrasing effectively creating a new common law principle yet to be addressed).
[30] *Id.* at 187 (emphasis added) (citing *DOT v. Public Citizen*, 541 U.S. 752, 767 (2004)) (establishing that a separate project, such as the oil drilling operations, breaks the chain of proximate causation between the project at hand and the environmental effects of the separate project).
[31] *Id.* at 191.
[32] *Seven Cnty.*, 605 U.S. at 191.
[33] Note, *National Environmental Policy Act — Administrative Law — Agency Deference — Seven Cnty Infrastructure Coalition v. Eagle Cnty*, 139 HARV. L. REV. 409 (2025).

on a case-by-case or statute-by-statute basis on when to apply *Loper*.[34] By doing so, courts can selectively expand or restrict an agency's procedural requirements effectively bypassing the deference owed to agencies on matters of fact by restricting the agency's conduct under a narrower interpretation of law.[35]

Justice Sotomayor's concurrence exposes this bifurcated pivot as essentially an unnecessary judicial "sleight of hand."[36] In her concurring opinion, joined by Justices Kagan and Jackson, Sotomayor immediately agrees with Justice Kavanaugh that the Board would not be responsible for the harms caused by the oil industry even though the railway it approved would deliver oil to refineries and spur drilling in the Uinta Basin.[37] Unlike the majority though, Sotomayor simply concludes that, under its "organic statute" the Board had no authority to reject petitioners' application on account of the harms *third parties* would cause with products transported on the proposed railway.[38]

While it is likely that courts will continue to wrestle with the impact of *Loper*, the implications of the *Seven County* decision are significant. In *Seven County*, the difference between "law" and "fact" is muddied, making the gap between discretion provided under the Administrative Procedure Act (APA) and questions of law to be granted *de novo* review minimal.[39] It appears the Court may now exercise discretion to cherry-pick when to restrict or shield agency conduct across the broader

[34] *Id.*
[35] *Id.*
[36] *Seven Cnty*, 605 U.S. at 192.
[37] *Id.* at 193.
[38] *Id.* (emphasis added).
[39] *See supra* notes 21-35.

administrative state, potentially "on the basis of the Judge's personal policy preferences."[40]

These "personal policy preferences," empowered by *Seven County's* failure to establish a principled boundary between *de novo* legal interpretation and factual deference, have broad implications. This is especially true given the sheer volume and frequency of NEPA litigation.[41] The danger of *Seven County* lies not in what the Court mandated, but in what it deliberately left unsaid.[42] By using this shift between law and factual deference, without articulating a guiding principle for when to deploy either, the Court effectively "opened the door" to environmental deregulation.[43]

This was not a mistake by the Court. Instead, it was an intentionally driven policy preference designed to reduce and "declaw" NEPA's enforcement mechanism.[44]

II. **DISCUSSION**

Lower courts are already "walking through the door" that *Seven County* opened and have begun to dismantle environmental protections, starting with the most comprehensive document in the administrative state: the EIS.[45] An EIS is a government document that outlines the impact of a proposed project on its surrounding environment which, in the United States, are mandated by federal law

[40] *See Chevron*, 467 U.S. at 865 (providing judges are not experts in the field, and are not part of either political branch of the government and that courts must, in some cases, reconcile competing political interests, but not on the basis of the judges' personal policy preferences).
[41] *See infra* Part II.A.
[42] *Seven Cnty*, 605 U.S. at 192.
[43] *See infra* Part III (discussing the implications of the federal lower courts).
[44] *See infra* Part II.
[45] *See infra* Part II(A).

for certain projects.[46] An EIS is a legally required report that identifies and publicly discloses the potential environmental harms of a project, rather than strictly prohibiting them from happening.[47] This mandate applies to any major federal action, including infrastructure and development projects that utilize federal funding, land, or agency jurisdiction.[48]

A. Federal Courts have Already Begun to Declaw NEPA's EIS Mandate

In *Metro. Transp. Auth. v. Duffy*, the Southern District of New York illustrates how quickly *Seven County* has "declawed" NEPA from a tool used for environmental protection to a mere formality.[49] In March 2026, the New York court applied the deregulatory tool created by *Seven County* to legally ignore the environmental consequences of canceling a pro-environmental initiative.[50] By adopting *Seven County's* characterization of NEPA as a mere "procedural cross-check," the Court demonstrated how agencies can entirely bypass environmental review when terminating protective programs.[51]

At the heart of this dispute was the federal cancellation of a Value Pricing Pilot Program (VPPP) agreement, which effectively terminated New York's Central Business District Tolling Program (CBDTP), Manhattan's first major congestion

[46] Tiffany Middleton, *What is an Environmental Impact Statement?*, ABA: TEACHING LEGAL DOCS (Mar. 2, 2021), https://www.americanbar.org/groups/public_education/publications/teaching-legal-docs/what-is-an-environmental-impact-statement-/.
[47] *Id.*
[48] *Id.*
[49] *Metro. Transp. Auth. v. Duffy*, No. 25-cv-1413 (LJL), 2026 U.S. Dist. LEXIS 43178, at *203–04 (S.D.N.Y. Mar. 3, 2026) (citing *Seven Cnty.*, 605 U.S. at 173).
[50] *Id.* at 203.
[51] *Id.* at 204-205.

pricing initiative.[52] Known as the Congestion Relief Zone (CRZ), the program launched in January 2025 and charges vehicles entering Manhattan below 60th Street around $9 during peak hours.[53] The initiative aims to reduce traffic by over 10%, thereby improving air quality, and generating, on average, $550 million annually for MTA public transit infrastructure upgrades.[54]

Then, in February 2025, the newly confirmed Secretary of Transportation of the U.S. Department of Transportation (Department) abruptly rescinded this approval and terminated the VPPP agreement.[55] The Secretary justified the termination on two statutory grounds: first, that the program's "cordon pricing" model lacked a toll-free option and therefore exceeded the legal scope of the VPPP; and second, that the program was unlawfully designed primarily to raise revenue for the Metropolitan Transportation Authority (MTA) rather than to reduce congestion.[56]

Plaintiffs, including the MTA and organizational intervenors, challenged the termination under NEPA.[57] They alleged that "the Federal Government was required to undertake a new environmental review upon cancellation" of the VPPP Agreement.[58]

[52] *Id.* at 16-17.
[53] Chris McCahill, *One Year into Congestion Pricing, Every DOT Can Learn from New York City*, INNOVATIVE DOT: SSTI BLOG (Jan. 20, 2026), https://ssti.us/2026/01/one-year-into-congestion-pricing-every-dot-can-learn-from-new-york-city/.
[54] *Id.*
[55] *Duffy*, 2026 U.S. Dist. LEXIS 43178, at *17.
[56] *Id.* at 16-17.
[57] *Id.*
[58] *Id.* at 17.

The court then applied *Seven County* to dismantle the plaintiffs' NEPA challenge.[59] By agreeing with the Secretary's legal interpretation of what authority the Department was provided by statute, the court reduced the legal threshold for the definition of an agency action to exclude the *termination* of the program entirely from EIS review. [60] The court ruled that because the Secretary correctly concluded the Department lacked the "regulatory authority" to enter the VPPP agreement in the first place, his termination of the program "did not involve a 'decision'" capable of triggering NEPA.[61]

Referencing *Seven County*, the court declared that NEPA "is a procedural cross-check, not a substantive roadblock" and "does not require the agency to weigh environmental consequences in any particular way," in turn validating the Department's silence regarding environmental impacts.[62] Even though the court ultimately vacated the termination on separate APA grounds, [63] its granting of summary judgment to the Defendants on the NEPA claim proves that the *Seven County* framework functions as a durable shield for deregulation, allowing agencies to dismantle environmental protections without pushback from the populace.

Next, in *American Wild Horse Campaign v. Raby*, the Tenth Circuit utilized *Seven County* to dismiss challenges to the Bureau of Land Management's (BLM)

[59] *Id.* at 203-04 (citing *Seven Cnty*, 605 U.S. 173).
[60] *Duffy*, 2026 U.S. Dist. LEXIS 43178, at *203-204.
[61] *Id.* (citing *Dept. of Transp. v. Pub. Citizen*, 541 U.S. 752, 767 (2004)) (extending the "rule of reason" principle ensuring that agencies themselves get to determine whether and to what extend to prepare an EIS based on the usefulness of any new potential information to the decision-making process).
[62] *Id.* at 203.
[63] *Id.* at 206.

"minimal" EIS regarding wild horse herd elimination.[64] By using *Seven County's* rule and that separate *third-party* projects break the chain of proximate causation,[65] the court demonstrated how this highly discretionary judicial framework permits an agency to harm wildlife populations without ever confronting the environmental consequences.[66]

The underlying controversy involved an amended Regional Management Plan (RMP) under the Wild Free-Roaming Horses and Burros Act,[67] governing southern Wyoming's "checkered" lands, an environment of alternating public and private square-mile parcels.[68] Complying with the requests of private-party grazing associations, the BLM's amendment altered two Herd Management Areas to "Herd Areas," reducing the wild horse population goal in those tracts of land to zero.[69] This removal of the protected horses then created an environmental harm on the public lands that would eventually be filled by increased commercial livestock grazing.[70]

Plaintiffs, a coalition of wild horse advocates challenged, among other things, the EIS under NEPA.[71] Plaintiffs argued that: first, the BLM failed to properly consider land swap alternatives–specifically, the possibility of trading, with private

[64] *Am. Wild Horse Campaign v. Raby*, 144 F.4th 1178, 1192 (10th Cir. 2025) (citing *Seven Cnty.*, 605 U.S. at 182).
[65] *See Seven Cnty.*, 605 U.S. at 187 (citing *Pub. Citizen*, 541 U.S. at 767) (establishing that a separate project, such as oil drilling operations, breaks the chain of proximate causation between the project at hand and the environmental effects of the separate project); *see also supra* note 30.
[66] *Wild Horse*, 144 F.4th at 1192. (providing that just because the effects are foreseeable, does not mean BLM can be held responsible for these effects at this time).
[67] 16 U.S.C. §§ 1331-1340.
[68] *Wild Horse*, 144 F.4th at 1184.
[69] *Id.* at 1188.
[70] *Id.* at 1192.
[71] *Id.* at 1188.

parties, the checkerboard land to consolidate federal property for wild horse management; second, the BLM did not consider the environmental impacts of increased grazing.[72] In response, the Tenth Circuit utilized *Seven County* to neutralize the plaintiffs' NEPA claims on two distinct fronts. [73]

First, to address the plaintiffs' argument that the agency failed to fully consider land swap alternatives, the court utilized *Seven County* to grant the agency factual deference on when an "alternative analysis" is sufficient.[74] The court deferred to the agency's judgement that plaintiffs' demand of full consideration would be too burdensome and time consuming.[75] When petitioners argued that how "quickly an alternative solves a problem," should not excuse the agency from considering such alternative, the Tenth Circuit disagreed.[76] Quoting *Seven County*, the court ruled that determining whether an alternative is "so slow and expensive as to be infeasible is the exact kind of 'fact-dependent, context-specific, and policy-laden choice'" that demands "substantial deference."[77] By using this deference, the court completely shielded the agency's refusal to rigorously explore the land swap alternative from further judicial scrutiny.

Second, to address the agency's failure to analyze the downstream environmental impacts of *potential* increased livestock grazing, the court applied

[72] *Id.* at 1191.
[73] *Wild Horse*, 144 F.4th at 1191.
[74] *Id.* at 1192.
[75] *Id.*
[76] *Id.*
[77] *Id.*

Seven County to sever the agency's liability purely as a matter of law.[78] The court concluded that because increased grazing cannot occur without a "separate decision-making process," it legally constitutes a "separate project."[79] Relying on the Court's mandate, the Tenth Circuit declared that "[j]ust because these effects are foreseeable does not mean BLM can be held responsible for these effects at this time."[80] By utilizing this legal threshold, the court permitted the agency to remove the wild horses without ever having to evaluate the clearly foreseeable environmental damage that would follow.[81]

Indeed, the court in *Wild Horse* did more than apply *Seven County*; it expanded its deregulatory utility. The court first deployed a "deference trap" to insulate the agency's refusal to explore land-swap alternatives, reclassifying a failure of environmental inquiry as a mere "fact-dependent" and "policy-laden" choice beyond judicial reach.[82] Having shielded the agency's present conduct, the court then utilized the "separate project" principle as a legal barrier to break the causal chain between the immediate horse removal and the downstream commercial operations despite environmental impacts.[83] In effect, this reasoning successfully shielded the foreseeable environmental destruction of the Wyoming plains from the legal record.[84] Through this approach, the Tenth Circuit demonstrated that *Seven County* provides

[78] *Wild Horse*, 144 F.4th at 1192.
[79] *Id.*
[80] *Id.*
[81] *Id.*
[82] *See supra* Part II.A.
[83] *See supra* Part II.A.
[84] *See supra* Part II.A.

a shield for agencies to achieve possibly environmentally harmful outcomes while remaining legally silent on such harms.[85]

B. Federal Courts have Already Begun to Expand *Seven County* to non-NEPA EIS Procedures and Questions including Environmental Assessments and Categorical Exclusions

In both *Duffy* and *Raby*, *Seven County* proved rather effective at ending the mandate for massive, landscape-sized-EIS from judicial scrutiny.[86] However, a critical question remains: if *Seven County* can shield a lack-luster EIS, may agencies also utilize the shield in other procedures?

The Ninth Circuit answered: yes.[87] By using *Seven County*, the judiciary began applying the same deference to, pursuant to NEPA, the more concise Environmental Assessment (EA).[88] An EA, unlike the more comprehensive EIS, is a concise review document taking into account the purpose and needs of the proposal, its alternative, and a brief review of the impacted environment.[89] In terms of procedure, to determine whether an EIS is required at all, an agency may first prepare an EA.[90] If after the preparation of the EA, an agency determines the action will not have a significant

[85] *See supra* Part II.A.
[86] *See supra* Part II.A.
[87] *See infra* discussion accompanying Part II.B.
[88] *See infra* discussion accompanying Part II.B.
[89] *The Difference Between an Environmental Assessment (EA) and an Environmental Impact Statement (EIS)*, CITIZENS FOR HEALTHY COMMUNITY, www.chc4you.org/wp-content/uploads/2016/11/EA-vs-EIS_NFMMDP.pdf (last visited Mar. 25, 2026).
[90] *Id.*

effect on the human environment, then the agency may make a "Finding of No Significant Impact" (FONSI) and need not prepare an EIS.[91]

In *Cascadia Wildlands v. United States BLM*, the Ninth Circuit utilized the Court's ruling in *Seven County* to validate a narrow interpretation of forest management obligation regarding what information to include in the EA, in turn permitting the glossing over of the EIS entirely.[92]

The dispute centered on the "Big Weekly Elk Forest Management Project" (BWE Project) in coastal Oregon, created to authorize the thinning and harvesting of thousands of acres of forest habitat.[93] The BWE Project proposed a series of forest management activities on BLM-administered lands in Coos County, Oregon, located within 28 miles of the Pacific Coast.[94] Specifically, the proposal authorized heavy commercial thinning in certain forest stands and "regeneration harvesting" in others to meet federal timber sale quotas.[95]

While the BLM did not propose thinning directly inside "occupied" murrelet stands, it authorized harvesting in a "substantial" number of acres immediately adjacent to them.[96] To authorize these actions, the BLM utilized a "tiering" strategy, referring back to a landscape-level EIS from 2016 rather than conducting a new, comprehensive study for the site-specific impacts of the BWE Project.[97] By asserting

[91] *Id.*
[92] *Cascadia Wildlands v. U.S. Bureau of Land Mgmt.*, 153 F.4th 869, 907 (9th Cir. 2025).
[93] *Id.* at 883.
[94] *Id.* at 887.
[95] *Id.* at 881.
[96] *Id.* at 887.
[97] *Cascadia Wildlands,* 153 F.4th at 903.

that the environmental consequences had been "covered sufficiently" by this decade-old document, the BLM issued an EA and FONSI.[98]

Plaintiffs, Cascadia Wildlands and Oregon Wild, challenged the project under both Federal Land Policy and Management Act of 1976 (FLPMA) and NEPA, asserting that the BLM's approval of the BWE Project failed to conform to the governing Resource Management Plan (RMP) and failed to take a "hard look" at environmental impacts under NEPA by "tiering" a decade-old document instead of a new environmental assessment.[99]

Under the FLPMA claim, plaintiffs argued that the project violated the RMP's strict prohibition against "modifying" marbled murrelet nesting habitat.[100] They asserted that authorizing heavy commercial thinning immediately adjacent to the nests would indirectly "modify" the habitat by creating harmful microclimate "edge effects."[101] To resolve this dispute, the Ninth Circuit applied *Kisor* deference, a doctrine which dictates that a court *must* defer to an agency's reasonable reading of its own genuinely ambiguous regulations, to the BLM's interpretation of its own plan.[102] The court deferred to the agency's "narrow interpretation" of the term "modifying nesting habitat," legally concluding that the term applies only to the *direct* alteration of habitat and *excludes* indirect "edge effects" caused by thinning in

[98] *Id.*
[99] *Id.* at 882, 878.
[100] *Id.* at 893-94.
[101] *Id.* at 895-96.
[102] *Cascadia Wildlands,* 153 F.4th at 894-97 (citing *Kisor v. Wilkie*, 588 U.S. 558 (2019)) (applying the *Kisor* framework to defer to the agency's narrow interpretation after finding that the plan's language was genuinely ambiguous, the interpretation was reasonable, and the character and context of the interpretation entitled it to controlling weight); *compare Loper Bright,* 603 U.S. at 412 (overturning *Chevron's* mandate to defer to an agencies reasonable interpretation of an genuinely ambiguous statute).

adjacent stands.[103] This legal reclassification of the harm directly dictated the court's subsequent NEPA analysis.[104]

Next, on the NEPA claim, Plaintiffs argued the EA was deficient because it failed to provide a detailed, site-specific analysis of how thinning adjacent to murrelet habitat would degrade that habitat via edge effects.[105] However, the court, after acknowledging the factual distinction between the EIS in *Seven County* and the EA in the present matter,[106] utilized *Seven County* to shield the agency's EA brevity.[107] The court ruled that because the court had already legally accepted the agency's narrow definition of "modifying" habitat, the BLM was not required to provide an "exhaustively detailed discussion" of those indirect effects in the EA.[108]

By tethering *Kisor* deference to the *Seven County* "broad zone of reasonableness," a standard that insulates discretionary agency choices from judicial review,[109] the court permitted the agency to effectively vanish the site-specific impacts of the project from the legal record. [110]

In sum, the *Cascadia* court successfully demonstrated how *Seven County* can be paired with other deference doctrines to further walk through *Seven County's* deregulatory door.[111] By first utilizing *Kisor* to legally narrow the agency's

[103] *Id.* at 894-97.
[104] *Id.* at 902 (addressing plaintiffs second claim of the NEPA violation).
[105] *Id.* at 905.
[106] *Id.* at 903 (providing that although *Seven* involved a different NEPA posture from the case before us, it arose in the context of evaluating plaintiffs' challenge to an EIS rather than an EA, we find its teachings fully applicable here).
[107] *Cascadia Wildlands,* 153 F.4th at 905.
[108] *Id.*
[109] *Id.* at 903.
[110] *Id.*
[111] *See supra* discussion accompanying note 100-108.

management duties, and then deploying *Seven County* to lower the bar for factual review, the court allowed the BLM to completely avoid analyzing the actual, site-specific destruction of marbled murrelet habitat.[112] The result is a complete NEPA procedural bypass: by reclassifying an omission of environmental inquiry as a "policy-laden" choice, the court ensures that NEPA's "hard look" is reduced to a mere "procedural cross-check."[113]

Finally, In *Sweetwater Coalition of Volusia Cnty. Inc. v. Perdue*, the Middle District of Florida applied *Seven County* to shield a federally funded highway interchange constructed in "protected wetlands" through agency deference.[114] By applying *Seven County* to justify the use of a minimal "categorical exclusion" finding, the court demonstrated how the mandate of administrative deference under NEPA, allows agencies to bypass review by internally reclassifying "significant impacts" as minor effects.[115]

The conflict here centered on the Florida Department of Transportation (FDOT) and the Army Corps of Engineers (ACOE) authorizing the construction of a new highway interchange between Pioneer Trail Road and Interstate 95 in New Smyrna Beach, Florida.[116] The project site involved "special aquatic sites," requiring the dredging and excavation of wetlands.[117] Relying on their own findings of fact

[112] *Cascadia Wildlands,* 153 F.4th at 881.
[113] *Seven Cnty*, 605 U.S. at 173.
[114] *Sweetwater Coal. of Volusia Cnty. Inc. v. Perdue*, 6:25-cv-1695-PGB-LHP, 2026 U.S. Dist. LEXIS 11395, at *10–11 (M.D. Fla. Jan. 22, 2026) (citing *Seven Cnty*., 605 U.S. at 173).
[115] *Id.* at 13.
[116] *Id.* at 2.
[117] *Id.* n.1.

regarding the impact of the highway over an aquatic ecosystem, FDOT classified the massive construction project as a "categorical exclusion" under NEPA to avoid drafting an EIS.[118] A categorical exclusion is a category of actions that an agency has determined normally does not significantly affect the quality of the human environment.[119] Following this classification, the ACOE issued a discharge permit without considering off-site alternatives to save the wetlands.[120]

The Sweetwater Coalition challenged the project under the APA, asserting violations of NEPA.[121] Seeking a preliminary injunction, the plaintiffs argued that FDOT's designation of the project as a categorical exclusion, under NEPA, was incorrect because the massive interchange would induce significant impacts to planned growth, travel patterns, and water quality.[122]

The court applied *Seven County* to establish strong agency deference.[123] Providing that, NEPA "does not require the agency to weigh environmental consequences in any particular way,"[124] an agency only needs to make a "short statement" that it considered the environment.[125] When the plaintiffs presented evidence of actual impacts to water quality and traffic,[126] the court neutralized the challenge by providing that a "categorical exclusion contravenes the APA only when

[118] *Id.* at 7, 10.
[119] Categorical Exclusions, U.S. Dep't of the Interior, https://www.doi.gov/oepc/programs/nepa/categorical-exclusions (last visited Apr. 6, 2026); 42 U.S.C. § 4336e(1).
[120] *Sweetwater*, 2026 U.S. Dist. LEXIS 11395, at *8.
[121] *Id.* at 3.
[122] *Id.* at 11-13.
[123] *Id.* 10-11.
[124] *Id.* at 11 (citing *Seven Cnty*, 605 U.S. at 173).
[125] *Sweetwater*, 2026 U.S. Dist. LEXIS 11395, at *11.
[126] *Id.* at 13

the record demonstrates that the agency failed to consider the environmental consequences."[127] Quoting *Seven County's* mandate that "the central principle of judicial review in NEPA cases is deference,"[128] the court used such standard to accept the agency's subjective finding that the water impacts were minor.[129] Shielded by *Seven County*, the court permitted the agency to bypass a full EIS for a major infrastructure project with nothing more than a brief statement.

Given the widespread use of *Seven County* across these lower courts,[130] a question naturally arises: what happens when a judge actively attempts to hold an agency accountable for factual errors? Even in those instances, the Court's *Seven County* ruling continues to function as a durable structural shield for agency conduct.[131] As the following case demonstrates, a court may successfully strike down flawed data on a localized issue, only to have *Seven County* constrain its ability to review broader, landscape-scale environmental impacts.

C. Even When a Judge Tries to Hold the Line and Enforce NEPA, *Seven County* Provides the Agency with a Strong Deference Shield

In *Ctr. for Biological Diversity v. United States Forest Serv.*, the District of Montana highlights the power of the unprincipled *Seven County* ruling.[132] While the Montana court enforced NEPA's "hard look" mandate under the APA on one claim

[127] *Id.* at 11.
[128] *Id.* at 10.
[129] *Id.* at 13
[130] *See supra* Section II(A)(B).
[131] *See infra* Section II(C).
[132] *Ctr. for Biological Diversity v. U.S. Forest Serv.,* No. 22-91-M-DLC, 2025 U.S. Dist. LEXIS 230653, at *41 (D. Mont. Nov. 24, 2025).

through the striking down of the agency's insufficient data on grizzly bear habitat,[133] the court shielded the agency's failure to address landscape-scale cumulative impacts analysis on a separate claim.[134] While the court did enforce the "hard look mandate",[135] *Seven County* has functionally restricted large-scale cumulative impacts of environmental harm from judicial review.[136]

At issue was the Forest Service's authorization of the Knotty Pine Project, a "logging and prescribed burning initiative" across thousands of acres of threatened grizzly bear habitat in the Kootenai National Forest.[137] Central to the environmental review was the agency's "road density" calculation,[138] which relied on purposefully excluding known "illegal motorized road use" to create the illusion of healthy habitat.[139]

Plaintiffs challenged the project under NEPA and the ESA.[140] They successfully asserted that the Forest Service's failure to identify and analyze unauthorized road use resulted in its habitat analysis being arbitrary and capricious under the APA.[141] However, plaintiffs also raised a "cumulative impacts claim," arguing the agency failed to provide a sufficiently detailed analysis of how this project

[133] *Id.* at 33.
[134] *Id.* at 44.
[135] *Id.* at 30 (citing *Alliance for the Wild Rockies v. Probert*, 412 F. Supp. 3d 1188 (D. Mont. 2019)).
[136] *Id.* at 41.
[137] *Ctr. for Biological Diversity*, 2025 U.S. Dist. LEXIS 230653, at *3-4.
[138] *Id.* at 29 (providing federal defendants contradicted themselves by using the "road density" calculation in IGBC guidelines).
[139] *Id.* at 25, 27-28, 30.
[140] *Id.* at 9-10.
[141] *Id.* at 29.

combined with other foreseeable logging actions in adjacent areas, would impact the environment.[142]

Having struck down the agency's use of insufficient factual road data, the court, in following precedent, utilized *Seven County* to neutralize the cumulative impacts challenge.[143] Quoting *Seven County*, the Montana court provided agency deference, that agencies possess "broad latitude to draw a 'manageable line" regarding other projects.[144] The court classified the agency's refusal to "aggregate" the adjacent environmental logging damage as a "policy-laden" choice falling within a still unaddressed "broad zone of reasonableness,"[145] thereby restricting judicial oversight through agency deference.[146]

Ultimately, the bifurcated ruling in *Center for Biological Diversity* is evidence of the inescapable trap of *Seven County*. Even when a judge successfully strikes down flawed data in an attempt to enforce environmental accountability, the Court's mandate of deference provides agencies with a final, judicial shield.[147] By ensuring that landscape-scale environmental harm legally "vanishes" under the guise of agency discretion, *Seven County* continues the dismantling of NEPA.[148]

III. ANALYSIS

[142] *Ctr. for Biological Diversity*, 2025 U.S. Dist. LEXIS 230653, at *41-43.
[143] *Id.* at 44.
[144] *Id.* at 43-44 (citing *Seven Cnty*, 605 U.S. at 168).
[145] *Id.* at 42-44; *see Seven Cnty.*, 605 U.S. at 182 (establishing a "broad zone of reasonableness" for agency discretion without providing a direct statutory or precedential citation for such phrasing effectively creating a new common law principle yet to be addressed).
[146] *Id.* at 44.
[147] *See supra* Part II.C.
[148] *See supra* Part II.C.

The common law principles sprawling across the aforementioned case law arise from the Court's failure to provide a guiding principle for determining when to apply questions of legal interpretation or agency discretion, which in *Seven County*, was an intentional effort at NEPA deregulation.[149] By intentional design, the application of *Loper* to NEPA, "opened the door" to a country-wide deregulatory toolkit, requiring lower courts to use *Seven County* to shield agency action that otherwise would harm the environment or permit the agency to simply ignore certain harms.[150]

Courts are utilizing the Court's ruling regarding how deep an agency must look to legally justify the agency not looking at all.[151] Ultimately, the judiciary has significantly lowered NEPA's procedural floor, driving the statute further along to a point where one day, it may be entirely declawed under the guise of agency discretion.[152] Because *Seven County* allows an agency to legally ignore environmental harm at the outset of a project, *Seven County* effectively permits agencies to green-light possibly environmentally destructive actions without ever confronting the risks.[153]

Furthermore, an additional consequence of *Seven County* is its function as an inevitable and inescapable precedent that captures even those judges attempting to protect the environment.[154] Even when a court seeks to use NEPA to strike down insufficient, localized baseline data, the *Seven County* "broad latitude to draw a

[149] *See supra* Part I.
[150] *See supra* Part II.A-B.
[151] *See supra* Part II.B.
[152] *See supra* Part II.B. (examining the absolute deference granted in *Sweetwater*).
[153] *See supra* Part II.B.
[154] *See supra* Part II.C.

'manageable line" language provides the administrative state with an ultimate, unreviewable "shield" to legally vanish environmental cumulative impacts into an agency's "broad zone of reasonableness."[155]

IV. CONCLUSION

The Court's ruling in *Seven County* represents a fundamental shift in the judicial oversight of environmental protection, marking a significant step in NEPA's transition from an enforceable environmental safeguard to a declawed procedural formality. By engineering an unprincipled pivot between *de novo* legal interpretation and absolute factual deference, the Court effectively "opened the door" for agencies to bypass rigorous environmental review. Through this ruling, the Court granted agencies the "broad latitude to draw a 'manageable line'" regarding the scope of their environmental inquiries, essentially providing a versatile deregulatory toolkit that lower courts are now required to apply.[156]

Ultimately, the "post-*Loper* correction" seen in *Seven County* does more than just rein in judicial review under NEPA; it effectively vanishes environment harm and risk from the legal record. When courts are mandated to defer to an agency's "manageable line" and accept a mere "procedural cross-check" as sufficient review, the statutory purpose of NEPA is fundamentally subverted. Even when a judge identifies clear factual deficiencies in the agency's data, the overarching weight of *Seven County* ensures that the agency's ultimate operations remain untouched. By

[155] *See supra* Notes 29, 109, 145.
[156] *See supra* Parts I–III (discussing the procedural-substantive split).

prioritizing administrative efficiency and agency discretion over the advanced identification of environmental harm, the Court has not only declawed NEPA but has also ushered in a new era of environmental deregulation that operates beyond the reach of citizens and the law.[157]

[157] *See supra* Part II.A-C. (analyzing factual deference and the "manageable line" doctrine).