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Cover Image: “Blue-green algae cover the surface of the flowing water river in a thick film”
by Sergii Petruk



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**STEMMING THE “RED TIDE”: LEGISLATIVE
APPROACHES TO ADDRESSING THE
CONTRIBUTION OF AGRICULTURAL NUTRIENT
POLLUTION TO THE DEVELOPMENT AND
CONSEQUENCES OF HARMFUL ALGAL BLOOMS**

*Caroleen M. Dineen, J.D., M.B.A.**

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INTRODUCTION

We forget that the water cycle and the life cycle are one.
- Jacques Yves Cousteau¹

The numerous, varied, and long-term challenges associated with harmful algal blooms (HABs) have become widely recognized in recent years.² While some may generally refer to all HABs as “red tides,” HABs actually result from blooms of various algal species in both marine and freshwater bodies.³ Not all algal blooms are harmful; however, a rapid, uncontrolled bloom expansion can cause: lethal oxygen depletion in an aquatic ecosystem, poisoned aquatic plant and animal life, human health effects, degraded aquatic uses, contaminated public water supplies, and economically impacted businesses dependent on those uses and on the aquatic environment.⁴

Various factors, including temperature, light, pH levels, and water circulation, are associated with the occurrence and effects of marine and freshwater HABs.⁵ While the impact of climate change and these factors play a role in the problem, “[n]utrient enrichment is widely recognized as one of the key causes of HAB formation.”⁶ High concentrations of nutrients—particularly nitrogen and phosphorus—in a water body also significantly contribute to HAB occurrence and consequences.⁷ Sources contributing nutrients to waterbodies include discharges from industrial and wastewater

1. BrainyQuotes, https://www.brainyquote.com/search_results?x=0&y=0&q=Jacques+Yves+Cousteau (last accessed Aug. 12, 2022).

2. LAURA GATZ, CONG. RSCH. SERV., R44871, FRESHWATER HARMFUL ALGAL BLOOMS: CAUSES, CHALLENGES, AND POLICY CONSIDERATIONS (2002); see, e.g., Dep’t of Health & Human Services Donald Anderson, *HABs in a Changing World: A Perspective on Harmful Algal Blooms, Their Impacts, and Research and Management in a Dynamic Era of Climactic and Environmental Change*, HARMFUL ALGAE (2012); see also *Recent Trends: National Changes*, U.S. NAT’L OFF. FOR HARMFUL ALGAL BLOOMS, <https://hab.who.edu/maps/regions-us-distribution/regions-us-recent-trends/> (last accessed Aug. 12, 2022); <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4667985/pdf/nihms691284.pdf>; see also *Recent Trends: National Changes*, U.S. NAT’L OFF. FOR HARMFUL ALGAL BLOOMS, <https://hab.who.edu/maps/regions-us-distribution/regions-us-recent-trends/> (last accessed Aug. 12, 2022).

3. *Harmful Algal Blooms*, U.S. ENV’T PROT. AGENCY, <https://www.epa.gov/nutrientpollution/harmful-algal-blooms> (last accessed Aug. 12, 2022).

4. *Id.*

5. CONG. RSCH. SERV., *Freshwater Harmful Algal Blooms: An Overview*, (2020).

6. *Id.*; *Climate Change Indicators: Oceans*, U.S. ENV’T PROT. AGENCY, <https://www.epa.gov/climate-indicators/oceans> (last accessed Aug. 19, 2022); *Climate Change Indicators: Ecosystems*, U.S. ENV’T PROT. AGENCY, <https://www.epa.gov/climate-indicators/ecosystems> (last accessed Aug. 19, 2022).

7. *Nutrient Pollution—The Issue*, U.S. ENV’T PROT. AGENCY, <https://www.epa.gov/nutrientpollution/issue> (last accessed Aug. 12, 2022).

facilities, animal feeding operations, stormwater runoff, septic systems, and emissions from fossil fuels.⁸

This Article focuses on one source of nutrient pollution—agricultural operations—and addresses the contribution of agricultural nutrient pollution to HAB occurrences. This Article also considers whether existing water quality and HAB-related laws are sufficient to eliminate, reduce, and respond to the water quality effects of agricultural nutrient pollution and its impacts on HAB proliferation. According to a 2017 United Nations Food and Agriculture Organization report, nitrate from agricultural operations “is now the most common chemical contaminant in the world’s groundwater aquifers.”⁹ The report states that agriculture “is responsible almost exclusively for groundwater pollution by nitrogen” in China and also is a significant concern for waterbodies in the European Union.¹⁰ For the United States, the report identified agriculture as “the main source of pollution in rivers and streams” and a major source in lakes and wetlands.¹¹

This Article discusses the existing legal framework related to nutrient pollution (excess nitrogen and phosphorus) for agricultural operations and its effect on HAB occurrences. This Article also evaluates whether existing laws effectively regulate agricultural nutrient pollution and considers whether alternative approaches would be more effective in reducing HAB events and their consequences.

Part I of this Article explains the nature and causes of HABs, their associated impacts, and the relationship between HABs and nutrients used in agricultural operations. Part II and Part III describe existing federal and select regional legal frameworks related to HAB prevention and response and to management, control, reduction, or elimination of agricultural nutrient pollution. Part IV evaluates the efficacy of efforts to combat HABs and manage agricultural nutrient pollution through existing legal frameworks. Additionally, this section proposes alternative approaches that may better address agricultural nutrient pollution’s contribution to HABs and perhaps

8. LAURA GATZ, CONG. RSCH. SERV., IF10690, FRESHWATER HARMFUL ALGAL BLOOMS: AN OVERVIEW (2020), https://www.everycrsreport.com/files/2020-07-08_IF10690_dd40b27d3857b0c45f24f72dc4b721b39ffa4fb0.pdf.

9. *Land & Water*, FOOD & AGRIC. ORG. OF THE UNITED NATIONS, <https://www.fao.org/land-water/news-archive/news-detail/en/c/1032702/> (last accessed Aug. 12, 2022); FOOD & AGRIC. ORG. OF THE UNITED NATIONS, *Water Pollution from Agriculture: A Global Review – Executive Summary* (2017), <https://www.fao.org/3/i7754e/i7754e.pdf>.

10. *Id.* (according to the report’s executive summary, “38 percent of water bodies in the European Union are under pressure from agricultural pollution”; the report notes various concerns regarding the impacts of chemical fertilizers, pesticides, livestock operations, and aquaculture on water quality).

11. FOOD & AGRIC. ORG. OF THE UNITED NATIONS *supra* note 9; JAVIER MATEO-SAGASTA ET AL., *WATER POLLUTION FROM AGRICULTURE: A GLOBAL REVIEW – EXECUTIVE SUMMARY*, FOOD & AGRIC. ORG. OF THE UNITED NATIONS 3 (2017), <https://www.fao.org/3/i7754e/i7754e.pdf>.

more effectively promote reduction and prevention of HAB events in the future.

I. HABs AND AGRICULTURAL OPERATIONS

*Water and air, the two essential fluids on which all life depends,
have become global garbage cans.
- Jacques Yves Cousteau¹²*

A. HABs—Background

Algae are simple photosynthetic organisms that live in both marine water and freshwater; the term includes a range of organisms from “microscopic, single-celled organisms to large seaweeds . . . that form the base of food webs.”¹³ Common types of algae related to freshwater and marine HABs include cyanobacteria (blue-green algae) and *Karenia brevis* (K. brevis).¹⁴ Algal blooms occur when algae in a particular water body expand to higher than normal levels and then proliferate (“bloom”) in that aquatic system.¹⁵ Algal blooms become harmful when their “rapid and uncontrolled expansion” results in the release of toxins, or their growth and decomposition cause depletion of oxygen in the waterbody.¹⁶ A HAB can “produce toxins that can kill fish, mammals and birds, and may cause human illness or even death in extreme cases.”¹⁷ Even blooms from nontoxic algae create impacts, including: loss of oxygen in the aquatic system and injury to fish, corals, and aquatic vegetation from their decomposition.¹⁸ Nontoxic blooms can also “discolor water, form huge, smelly piles on beaches or contaminate drinking water.”¹⁹

12. Brainy Quotes, *supra* note 1.

13. *What is a Harmful Algal Bloom?*, NAT’L OCEANIC & ATMOSPHERIC ADMIN., <https://www.noaa.gov/what-is-harmful-algal-bloom> (April 27, 2016); HARMFUL ALGAL BLOOM RSCH. INITIATIVE, *Project Update 2021*, <https://www.utoledo.edu/commissions/water-task-force/docs/HABRI%20Year%203%20and%204.pdf>.

14. *Harmful Algal Blooms*, *supra* note 3; *What is a Harmful Algal Bloom?*, NAT’L OCEANIC & ATMOSPHERIC ADMIN., (April 27, 2016) (while this bloom is named for its distinctive red color, K. brevis is not connected to tides and is not always colored red).

15. *Harmful Algal Blooms—Tiny Organisms with a Toxic Punch*, NAT’L OCEANIC & ATMOSPHERIC ADMIN., NAT’L OCEAN SERV., <https://oceanservice.noaa.gov/hazards/hab/> (last accessed Aug. 12, 2022); *What is a Harmful Algal Bloom?*, NAT’L OCEANIC & ATMOSPHERIC ADMIN., (April 27, 2016).

16. *What is a Harmful Algal Bloom?*, NAT’L OCEANIC & ATMOSPHERIC ADMIN., (April 27, 2016).

17. *Id.*

18. For example, the decomposition of nontoxic algal blooms can “clog the gills of fish and invertebrates, or smother corals and submerged aquatic vegetation.” *Id.*

19. *Id.*

Not all algal blooms harm the aquatic environment; indeed, some blooms may have environmental benefits.²⁰ An algal bloom becomes harmful when the bloom has “the potential to harm human health or aquatic ecosystems.”²¹ Sunlight and nutrients in the water stimulate the growth of algae, which can lead to an algal bloom under the right conditions.²² The algal bloom may cause oxygen depletion and/or release toxins into the water body, resulting in the death of aquatic plants and animals.²³ These impacts can have catastrophic aquatic and economic effects.²⁴ For example, a 2013 Florida red tide was associated with the deaths of 277 West Indian manatees, a protected species under federal and state law; furthermore, a 2015 toxic bloom affecting California, Oregon, and Washington resulted in losses of \$97 million to the crab fishery and \$40 million to tourism industries in those states.²⁵

The increased scope and frequency of national and global HAB events, indicated by scientific research, has stimulated legislative interest and concern.²⁶ A variety of factors associated with climate change are also factors in the development of marine and freshwater HABs, including increased water temperatures, increased evaporation rates, salinity changes, acidification, oxygen depletion, and water level increases.²⁷ Recognizing the importance of these factors, the existence of high levels of nutrients (particularly nitrogen and phosphorus) in an aquatic environment is recognized as a significant causal factor in the occurrence and effects of

20. NAT'L OCEANIC AND ATMOSPHERIC ADMIN, *Are all Algal Blooms Harmful?*, NAT'L OCEAN SERV., <https://oceanservice.noaa.gov/facts/habharm.html> (Jan. 20, 2023).

21. *Cyanobacterial Harmful Algal Blooms (CyanoHABs) in Water Bodies*, U.S. ENV'T PROT. AGENCY, <https://www.epa.gov/cyanoHABs> (April 26, 2022).

22. *Harmful Algal Blooms*, *supra* note 3.

23. *What is a Harmful Algal Bloom?*, NAT'L OCEANIC & ATMOSPHERIC ADMIN., <https://www.noaa.gov/what-is-harmful-algal-bloom> (April 27, 2016).

24. *Hitting Us Where It Hurts: The Untold Story of Harmful Algal Blooms*, NAT'L OCEANIC AND ATMOSPHERIC ADMIN FISHERIES, <https://www.fisheries.noaa.gov/west-coast/science-data/hitting-us-where-it-hurts-untold-story-harmful-algal-blooms#> (Oct. 07, 2021).

25. *Id.*; see 16 U.S.C. § 1531 (1973) (explaining that the West Indian manatee is listed as a threatened species under the Endangered Species Act and Marine Mammal Protection Act); see also 16 U.S.C. §§1361-1362 (codifying that the West Indian manatee, also known as the Florida manatee, is also protected by statute and through a species management plan under Florida law. F.S. 379.2431); FLA. FISH & WILDLIFE CONSERVATION COMM'N, *Florida Manatee Program*, <https://myfwc.com/wildlifehabitats/wildlife/manatee/> (last accessed Aug. 18, 2022).

26. *What is a Harmful Algal Bloom?*, NAT'L OCEANIC & ATMOSPHERIC ADMIN., (April 27, 2016); LAURA GATZ, CONG. RSCH. SERV., R44871, FRESHWATER HARMFUL ALGAL BLOOMS: CAUSES, CHALLENGES, & POL'Y CONSIDERATIONS I (2020) <https://crsreports.congress.gov/product/pdf/R/R44871>.

27. *Climate Change Indicators: Oceans*, U.S. ENV'T PROT. AGENCY, <https://www.epa.gov/climate-indicators/oceans> (Aug. 19, 2022); *Climate Change Indicators: Ecosystems*, U.S. ENV'T PROT. AGENCY, <https://www.epa.gov/climate-indicators/ecosystems> (March 02, 2023).

HABs.²⁸ This type of “nutrient pollution” results from various sources, including: fertilizer application on agricultural, commercial, and residential lands; animal waste (commercial, livestock, and domestic); stormwater runoff from various sources; fossil fuel emissions from power generation, transportation, and agricultural operations; and discharges from sewage treatment facilities.²⁹

HABs are a national and international problem. A recent large-scale global study of HAB events determined that potentially toxic algal species occur in each region of the world.³⁰ In the United States, “HABs occur in all U.S. waters” and are a “major environmental problem in all 50 states.”³¹ HABs can occur in fresh and salt waterbodies, including rivers, lakes, estuaries, and oceans.³² HABs can result from various types of algae, including cyanobacteria (blue-green algae), a common source of lake blooms, and *Karenia brevis* (*K. brevis*).³³ Blooms caused by some freshwater cyanobacteria produce “highly potent” cyanotoxins; *K. brevis* causes a type of HAB known as “red tide,” which is not connected to tides and is not always red.³⁴

Cyanobacteria and red tide events in Ohio, Florida, and other states during the past 20 years have increased public awareness of the significant water quality, health, and economic impacts of HABs and generated interest in addressing problems related to HABs.³⁵ For example, Lake Erie’s 2011 cyanobacteria bloom “broke the record” for this lake in terms of size and concentration:

28. *Nutrient Pollution—The Issue*, *supra* note 7; Catherine Janasie, *Harmful Algal Blooms and Water Quality*, NAT’L SEA GRANT L. CTR. (Jun. 2, 2018), <http://nsglc.olemiss.edu/projects/ag-food-law/files/harmful-algal-blooms-and-water-quality.pdf>.

29. *Nutrient Pollution: Sources and Solutions*, U.S. ENV’T PROT. AGENCY, <https://www.epa.gov/nutrientpollution/sources-and-solutions> (Aug. 11, 2022); Catherine Janasie, *President Trump Signs New Legislation Concerning Harmful Algal Blooms*, NAT’L SEA GRANT L. CTR. (Jan. 18, 2019), <https://nsglc.olemiss.edu/blog/2019/jan/18/index.html>; *Harmful Algal Blooms and Water Quality*, NAT’L SEA GRANT L. CTR., (June 2018).

30. INTERGOVERNMENTAL OCEANOGRAPHIC COMMISSION, *Global Harmful Algal Bloom: Status Report 2021* at 4 (2021), <https://unesdoc.unesco.org/ark:/48223/pf0000378691?locale=en>. (The study, based on 9,503 harmful algal bloom events, noted the widespread nature of potentially toxic species but specified that “they do not cause harmful events everywhere, nor with the same intensity at different places”).

31. *Harmful Algal Blooms—Tiny Organisms with a Toxic Punch*, NAT’L OCEANIC & ATMOSPHERIC ADMIN., NAT’L OCEAN SERV., <https://oceanservice.noaa.gov/hazards/hab/> (last accessed Aug. 12, 2022); U.S. GOV’T ACCOUNTABILITY OFF., GAO-22-104449, WATER QUALITY: AGENCIES SHOULD TAKE MORE ACTIONS TO MANAGE RISKS FROM HARMFUL ALGAL BLOOMS AND HYPOXIA 1 (June 2022), <https://www.gao.gov/assets/gao-22-104449.pdf>.

32. *What is a Harmful Algal Bloom?*, NAT’L OCEANIC & ATMOSPHERIC ADMIN., <https://www.noaa.gov/what-is-harmful-algal-bloom> (April 27, 2016); *Harmful Algal Blooms*, *supra* note 3.

33. *Id.* (discussing that while this bloom is named for its distinctive red color, *K. brevis* is not connected to tides and is not always colored red.).

34. *Id.*

35. *Hitting Us Where It Hurts: The Untold Story of Harmful Algal Blooms*, *supra* note 24.

In the summer and fall of 2011, a green tide of blue-green algae enshrouded 230 square miles of Lake Erie's western basin. This algae "bloom" poisoned the water with toxins, suffocating the aquatic life of oxygen, burdening the city of Toledo, Ohio's water treatment plant and threatening a \$11.5 billion tourism industry in Ohio.³⁶

The 2011 bloom was not an isolated incident; federal and state agencies have collaborated to forecast or record HAB events in the western portion of Lake Erie every year since 2002.³⁷

In addition to the temporary effects of the seasonal blooms, HABs can have significant long-term consequences on affected waterbodies. HABs can create a hypoxic (low oxygen) or anoxic (no oxygen) area "that can kill fish and marine life . . . [and] may persist and remain incapable of sustaining aquatic life."³⁸ While these "dead zones" have occurred widely throughout the world for many years, "the frequency of their occurrences in shallow coastal and estuarine areas worldwide is increasing, largely attributed to anthropogenic nutrient pollution."³⁹ The northern Gulf of Mexico hypoxic area is "the largest zone of oxygen-depleted coastal waters in the United States, and the second largest for the world's coastal oceans."⁴⁰ According to data recorded since 1985, the Gulf of Mexico dead zone has ranged in size from approximately 2,000 square miles in 2000 to 8,776 square miles in 2017; the average size during this period was 5,380 square miles.⁴¹ In 2021,

36. Tiffany Stecker, *Algal Blooms May Become the Norm in Lake Erie*, SCIENTIFIC AMERICAN (Apr. 2, 2013), https://www.scientificamerican.com/article/algal-blooms-may-become-the-norm-in-lake-erie/?gclid=EAIaIqobChMImeHBjtPG-QIVyCZMCh3odQxDEAMYASAAEglQaPD_BwE.

37. *Below-average Harmful Algal Bloom Forecast for Western Lake Erie*, NAT'L OCEANIC & ATMOSPHERIC ADMIN., (June 30, 2022), <https://www.noaa.gov/news-release/below-average-harmful-algal-bloom-predicted-for-western-lake-erie#:~:text=Below%2Daverage%20harmful%20algal%20bloom%20predicted%20for%20western%20Lake%20Erie,-Focus%20areas%3A&text=NOAA%20and%20its%20research%20partners,in%20the%20lake%20in%202020>.

38. *Larger-than-average Gulf of Mexico 'Dead Zone' Measured*, NAT'L OCEANIC & ATMOSPHERIC ADMIN., <https://www.noaa.gov/news-release/larger-than-average-gulf-of-mexico-dead-zone-measured#:~:text=Today%2C%20NOAA%20supported%20scientists%20announced,to%20fish%20and%20bottom%20species> (Aug. 3, 2021); *NCCOS-Supported Research Provides Foundation for Management of the "Dead Zone" in the Northern Gulf of Mexico*, NAT'L OCEANIC & ATMOSPHERIC ADMIN., NAT'L CTRS. for COASTAL OCEAN SCIS., <https://coastalscience.noaa.gov/research/stressor-impacts-mitigation/habhrca/dead-zone/> (last accessed Aug. 14, 2022).

39. *NCCOS-Supported Research Provides Foundation for Management of the 'Dead Zone' in the Northern Gulf of Mexico*, NAT'L OCEANIC & ATMOSPHERIC ADMIN., NAT'L CTRS. for COASTAL OCEAN SCIS., <https://coastalscience.noaa.gov/science-areas/habs/habhrca/dead-zone/> (last accessed Aug. 14, 2022).

40. *Id.*

41. *Larger-than-average Gulf of Mexico 'Dead Zone' Measured*, NAT'L OCEANIC & ATMOSPHERIC ADMIN., (Aug. 3, 2021).

this “dead zone” was “approximately 6,334 square miles, or equivalent to more than four million acres of habitat potentially unavailable to fish and bottom species.”⁴²

The impacts of HAB events are diverse and substantial. HABs can damage the environment by depleting oxygen in water bodies, creating hypoxic areas, impacting air quality, and reducing water quality in the affected water bodies. HABs can also result in injury or death to humans and to the aquatic and non-aquatic wildlife that they affect. In addition, HABs can: disrupt drinking water supplies; preclude recreational uses of coastal areas’ water bodies; create economic losses for aquaculture, fisheries, and tourism industries; and impact operations of water-dependent and water-adjacent commercial uses.⁴³ The following are some examples of those effects.

Water supply: Public water utilities face disruption from HAB events. The HAB’s effect on water quality can cause public drinking water utilities to issue public health advisories or suspend service. HAB events may also require water utilities to incur costs to treat algal toxins and address the health, taste, and odor issues related to these toxins.⁴⁴

HABs impact both rural areas and large cities. For example, Lake Erie has been affected by cyanobacterial toxins for more than 20 years, and HAB events have caused a variety of impacts, including substantial disruption in the public water supply.⁴⁵ Within the region, approximately 11 million people rely on Lake Erie for drinking water.⁴⁶ Additionally, the Lake plays an essential role in supporting tourism, commercial and recreational fishing, agriculture, and manufacturing industries in surrounding states and provinces. However, recurrent HABs and dead zones in Lake Erie have impaired drinking water, threatened public health, and hurt the regional economy. In August 2014, more than 500,000 Toledo, Ohio residents were subject to a “do not drink” order for their water service because of a Lake Erie HAB event.⁴⁷ The total economic impact of this HAB event was

42. *Id.*

43. *Nutrient Pollution: The Effects*, ENV’T PROT. AGENCY, (Aug. 11, 2022), <https://www.epa.gov/nutrientpollution/effects>.

44. *Id.*

45. *Lake Erie’s Toxic Algae Blooms: Why is the Water Turning Green?*, NAT’L SCI. FOUND. (Apr. 8, 2019), <https://beta.nsf.gov/news/lake-eries-toxic-algae-blooms-why-water-turning-green>.

46. Blue Acct., *Measuring What Matters: Shared Goal for Lake Erie Phosphorus*, GREAT LAKES COMM’N DES GRANDS LACS, <https://www.blueaccounting.org/issue/eriestat/> (last visited Sept. 11, 2022).

47. LAURA GATZ, CONG. RSCH. SERV., R44871, FRESHWATER HARMFUL ALGAL BLOOMS: CAUSES, CHALLENGES, & POL’Y CONSIDERATIONS 1 (2020), <https://crsreports.congress.gov/product/pdf/R/R44871>.

estimated at \$65 million.⁴⁸ Since that time, HABs have become an almost annual occurrence in this area of the lake.⁴⁹ Those recurring HABs continue to create the potential for economic, health, and aesthetic effects for: the wildlife; residents; recreational users; commercial users; and fisheries, tourism, commercial, and recreational industries reliant on the lake.⁵⁰

As another example, the May 2018 discovery of “dangerous levels” of cyanotoxins in Detroit Lake, a water supply source for Salem, Oregon, led the city to issue a “do not drink” water advisory that lasted for weeks.⁵¹ This HAB event prompted the Oregon Health Authority to temporarily require specified large drinking water systems to test their water supplies for cyanotoxins on a regular basis.⁵² To protect the city’s drinking water, Salem invested heavily in HAB protection, including the construction of a \$48 million drinking water treatment facility.⁵³

Economic effects: HABs can have significant impacts on the economy. Water-dependent businesses and property owners can incur significant economic losses when a HAB event impacts how businesses and people use the aquatic resources associated with them. The economic impacts of HAB events include: commercial and recreational fisheries impacts from fish kills; revenue losses for aquatic sporting and commercial businesses; financial impacts from reservation cancelations; and reduced traffic for waterfront hotels, restaurants, and other service businesses.⁵⁴

HABs also can seriously impact use and enjoyment of aquatic environments.⁵⁵ Negative impacts on both commercial and recreational aquatic uses from nutrient-polluted waters and HABs can result in significant losses in “tourism, property values, and business revenues.”⁵⁶ Further, the businesses dependent on aquatic resources, uses, or environments suffer from

48. M. BINGHAM ET AL., ECONOMIC BENEFITS OF REDUCING HARMFUL ALGAL BLOOMS IN LAKE ERIE 1, 3 (Env’t Consulting & Tech., 2015), <https://legacyfiles.ijc.org/tiny/mce/uploaded/Publications/Economic-Benefits-Due-to-Reduction-in-HABs-October-2015.pdf>.

49. Experimental Lake Erie Harmful Algal Bloom (HAB) Tracker, NAT’L OCEANIC ATMOSPHERIC ADMIN-GREAT LAKES ENV’T RSCH. LAB’Y, https://www.glerl.noaa.gov/res/HABs_and_Hypoxia/habTracker.html; Great Lakes Harmful Algal Blooms (HABs) and Hypoxia, NOAA-Great Lakes Env’t Rsch. Lab’y, https://www.glerl.noaa.gov/res/HABs_and_Hypoxia/ (last accessed Sept. 20, 2022).

50. Blue Acct., *Measuring What Matters: Shared Goal for Lake Erie Phosphorus*, GREAT LAKES COMM’N DES GRANDS LACS, <https://www.blueaccounting.org/issue/eriestat/> (accessed Sept. 11, 2022).

51. U.S. GOV’T ACCOUNTABILITY OFF., GAO-22-104449, WATER QUALITY: AGENCIES SHOULD TAKE MORE ACTIONS TO MANAGE RISKS FROM HARMFUL ALGAL BLOOMS AND HYPOXIA 1, 1, 9 (June 2022), <https://www.gao.gov/assets/gao-22-104449.pdf>.

52. *Id.*

53. *Id.*

54. *Id.* at 1, 60-61 (citing *The Effects: Economy*, U.S. ENV’T PROT. AGENCY (Aug. 27, 2022), <https://www.epa.gov/nutrientpollution/effects-economy>).

55. *Id.* at 1.

56. *Id.* at 9.

the effects of a HAB.⁵⁷ The following examples demonstrate some of the significant economic impacts of HABs:

- During May–July 2016, a large HAB occurred on Florida’s Lake Okeechobee, the largest freshwater lake in the state. Because of high water levels in the lake at the time the HAB occurred, some HAB-impacted water was transported through canals and rivers to coastal areas. As a result, the Lake Okeechobee HAB affected agriculture, caused tourism losses, required beach closures, and impacted aquatic life.⁵⁸
- Freshwater HABs were the basis for at least 281 public health notices (e.g., “cautions, warnings, public health advisories, and public health warnings”) reported by states during an approximately two-month period in 2017.⁵⁹
- Another Florida red tide event in 2018, which lasted for months, caused “beach closures and fish kills [that] plagued the state’s coasts.”⁶⁰ Florida declared a state of emergency because of the effects of this HAB.⁶¹

Health effects: In addition to the impacts on water quality and aquatic life, HABs can affect human health. Human health impacts include serious respiratory problems, neurological effects, and skin rashes and burns.⁶² Toxins in saltwater HABs of red and brown algae can cause human illness, paralytic shellfish poisoning, respiratory issues, “[g]astrointestinal illness, muscle cramps, seizures, paralysis,” and death.⁶³ Freshwater HAB toxins can

57. *Id.* at 9 (citing *The Effects: Economy*, U.S. ENV’T PROT. AGENCY (Aug. 27, 2022), <https://www.epa.gov/nutrientpollution/effects-economy>).

58. Env’t Health Program, *Cyanobacteria from 2016 Lake Okeechobee Harmful Algal Bloom Photo-Documented*, U.S. GEOLOGICAL SURV. (June 14, 2017), <https://www.usgs.gov/programs/environmental-health-program/science/cyanobacteria-2016-lake-okeechobee-harmful-algal>; LAURA GATZ, CONG. RSCH. SERV., R44871, FRESHWATER HARMFUL ALGAL BLOOMS: CAUSES, CHALLENGES, & POL’Y CONSIDERATIONS 1 (2020), <https://crsreports.congress.gov/product/pdf/R/R44871>.

59. LAURA GATZ, CONG. RSCH. SERV., R44871, FRESHWATER HARMFUL ALGAL BLOOMS: CAUSES, CHALLENGES, & POL’Y CONSIDERATIONS 1 (2020), <https://crsreports.congress.gov/product/pdf/R/R44871>.

60. Catherine Janasie, *President Trump Signs New Legislation Concerning Harmful Algal Bloom*, SEA GRANT L. CTR. (Jan. 19, 2019), <https://nsglc.olemiss.edu/blog/2019/jan/18/index.html>.

61. *Id.*

62. LAURA GATZ, CONG. RSCH. SERV., R44871, FRESHWATER HARMFUL ALGAL BLOOMS: CAUSES, CHALLENGES, & POL’Y CONSIDERATIONS 1, 3 (2020), <https://crsreports.congress.gov/product/pdf/R/R44871>.

63. *Algal Blooms*, NAT’L INST. ENV’T HEALTH SCIS., <https://www.niehs.nih.gov/health/topics/agents/algal-blooms/index.cfm> (Sep. 08, 2021).

cause liver damage and gastrointestinal illness.⁶⁴ Toxins can spread to humans from contact with the water, fish, or shellfish, and from the airborne form of the toxins when walking near affected waterbodies.⁶⁵

HABs can also adversely affect animal health. Animal impacts from HAB exposure may be similar to those experienced by humans. For example, HAB-related symptoms include: “skin, ear, eye, nose, or throat irritation; respiratory issues; lethargy, paralysis, tremors or seizures; abdominal pain, diarrhea, or vomiting.”⁶⁶ In addition, the hypoxia and toxins associated with HAB events can be lethal for fish and other aquatic life; indirect health impacts can occur when aquatic animals (e.g., sea lions, turtles, birds, and manatees) and domestic animals (e.g., dogs) consume toxin-affected fish and shellfish.⁶⁷

B. Agricultural Operations’ Contribution to HABs

According to the United States Department of Agriculture (USDA), 53% of the land in the United States was used for agricultural purposes in 2012.⁶⁸ Of those acres, 392 million were used for agricultural crop land.⁶⁹ For this estimate, the USDA definition of cropland includes land actively used for harvesting crops and cropland not currently being used for that purpose (i.e., fallow land, cropland used for pasture or range, and cropland idled in connection with federal conservation or acreage-reduction programs).⁷⁰ The acreage of cropland used for crop production accounted for 87% of the total acreage.⁷¹

The Environmental Protection Agency (EPA) has identified agricultural production as “the largest single contributor to water quality impairment for rivers and lakes.”⁷² The nitrogen and phosphorus used in agricultural

64. *Id.*

65. *Nutrient Pollution—The Effects: Environment*, ENV’T PROT. AGENCY, (April 19, 2022), <https://www.epa.gov/nutrientpollution/effects-environment>.

66. MONT. DEP’T OF PUBLIC HEALTH AND HUMAN SERVICES, *Public Health & Safety: Harmful Algal Blooms*, MONTANA.GOV, <https://dphhs.mt.gov/publichealth/epidemiology/hab/> (last accessed Sept. 9, 2022).

67. *Id.*; *Nutrient Pollution—The Effects: Environment*, *supra* note 65.

68. Daniel Hellerstein et al., *Agricultural Resources and Environmental Indicators*, U.S. DEP’T AGRIC. 1 (May 2019), <https://www.ers.usda.gov/webdocs/publications/93026/eib-208.pdf?v=5766>.

69. *Id.*

70. *Id.*; Econ. Rsch. Serv., *Major Land Uses*, U.S. Dep’t of Agric. <https://www.ers.usda.gov/data-products/major-land-uses/> (last accessed Aug. 29, 2022) (the USDA estimates are published every five years).

71. Daniel P. Bigelow, Allison Borchers, *Major Uses of Land in the United States, 2012* US DEP’T OF AGRIC. 1, 14 (Aug. 2017), <https://www.ers.usda.gov/webdocs/publications/84880/eib-178.pdf?v=9914.4>.

72. Nat’l Inst. of Food & Agric., *Manure and Nutrient Management Programs*, U.S. DEP’T OF AGRIC., <https://www.nifa.usda.gov/grants/programs/manure-nutrient-management-programs> (last accessed Oct. 1, 2022).

operations contribute to the nutrient pollution facilitating the proliferation of HABs.⁷³ According to the USDA, “[m]ost of the cropping systems in the world are naturally deficient in nitrogen, making nitrogen inputs necessary to produce the crop yields needed to support human populations.”⁷⁴ For crop production, the nitrogen and phosphorus in chemical fertilizers and manure stimulate plant development and production of crop plants.⁷⁵ If these nutrients are not fully used for that purpose, they can be indirectly introduced into the air and water in various ways.⁷⁶ For example, the excess nutrients can leach into groundwater from the soil or be carried to waterbodies from agricultural field runoff from storm events and snow melt.⁷⁷ Nutrients can also be introduced directly through animal waste discharges from livestock using waterbodies on agricultural lands.⁷⁸ Introduction of large amounts of these nutrients can result in nutrient pollution and eutrophication conditions associated with HAB events.⁷⁹

The contribution of nitrogen and phosphorus from agricultural operations to nutrient pollution has been recognized for a long time. In 2011 the USDA recognized agriculture as the “single largest source of nitrogen compounds entering the environment” in the United States.⁸⁰ Noting these compounds “can change form and move easily between air, land, and water,” the Agency in 2011 identified agriculture as the source of “73 percent of nitrous oxide emissions, 84 percent of ammonia emissions, and 54 percent of nitrate emissions in recent years.”⁸¹

A 2019 report by the USDA describes the significant contribution of agriculture to water quality impairment.⁸² The report discussed United States waters that had been assessed in 2016.⁸³ The data showed impaired water quality occurred in: “55 percent of assessed rivers and streams; 71 percent of lakes; and 84 percent of bays and estuaries.”⁸⁴ The number of impaired water

73. *Id.*

74. Marc Ribaldo et al., *Nitrogen in Agricultural Systems: Implications for Conservation Policy* U.S. DEP’T OF AGRIC. 1 (2006), https://www.ers.usda.gov/webdocs/publications/44918/6767_err127.pdf?v=5279.

75. *The Sources and Solutions: Agriculture*, U.S. ENV’T PROT. AGENCY, (Oct. 28, 2022), <https://www.epa.gov/nutrientpollution/sources-and-solutions-agriculture>.

76. *Id.*

77. *Id.*

78. *Id.*

79. *Id.*; see also *Eutrophication*, Bitannica (2023) (defining Eutrophication as “the gradual increase in the concentration of phosphorus, nitrogen, and other plants nutrients in an aging aquatic ecosystem”).

80. Marc Ribaldo, *Reducing Agriculture’s Nitrogen Footprint: Are New Policy Approaches Needed?* U.S. DEP’T OF AGRIC. (Sept. 1, 2011), https://www.ers.usda.gov/amber-waves/2011/september/nitrogen-footprint/?source=post_page.

81. *Id.*

82. Hellerstein, *supra* note 68 at V-VI.

83. *Id.* at 90 (the USDA report noted that the 2016 data included “32 percent of rivers and streams, 44 percent of lakes, and 64 percent of bays and estuaries . . . assessed for water quality.”).

84. *Id.* at VI.

bodies unable to “support their designated uses (e.g., fishing, recreation, and/or drinking water)” increased approximately 40% between 2005 and 2016. This significant percentage increase incorporates the additional water body assessments completed during the period indicated. The report identifies “sediments, nutrients, and pathogens” as the “largest causes of impairments in rivers and streams.”⁸⁵ The impacts of nutrient pollution are not limited to the water bodies directly associated with lands on which agricultural activities occur; rather, nutrient pollution issues can occur “hundreds of miles from these sources.”⁸⁶ For example, excess nitrogen contribution from fertilizer use “in the Mississippi and Missouri river basins is thought to be the major cause of the hypoxia problem in the Gulf of Mexico.”⁸⁷ Recognizing that these pollutants may originate from other sources, the USDA report identified agriculture as “the largest source of impairments in rivers and streams and the second-largest source in lakes and ponds.”⁸⁸

Fertilizer use on croplands contributes to nutrient pollution of aquatic systems.⁸⁹ Commercial fertilizers include three primary nutrients: nitrogen, phosphorus, and potassium.⁹⁰ Nitrogen is required for the protein formation that is essential for plant development; nitrogen is also the element most absorbed by plants.⁹¹ Phosphorus is necessary for plant growth, development, and use and storage of energy. Potassium is essential for improving plants’ disease resistance, improving crop quality, increasing crop quality, and improving root system strength and crop yields.⁹²

One way to mitigate nitrogen loss from commercial fertilizer is fertilizer composition and efficiency. Nitrogen emissions from fertilizers can be reduced by using “enhanced-efficiency nitrogen fertilizers”—without sacrificing crop yield.⁹³ However, most fertilizers used by United States agricultural operations are not produced in the United States, and currently

85. *Id.* at 90.

86. *Manure and Nutrient Management Programs*, *supra* note 72.

87. *Id.*

88. *Agricultural Resources and Environmental Indicators, 2019*, *supra* note 68, at 90.

89. While this issue is beyond the scope of this article, fertilizer use on residential and other commercial lands also affects water quality through introduction of nutrients. See *Nutrients*, U.S. ENV’T PROT. AGENCY, <https://www.epa.gov/caddis-vol2/nutrients> (last accessed March 20, 2023).

90. *Fertilizer 101: The Big 3 - Nitrogen, Phosphorus and Potassium*, FERTILIZER INST. (May 7, 2014), <https://www.tfi.org/the-feed/fertilizer-101-big-3-nitrogen-phosphorus-and-potassium>.

91. *Id.*

92. *Id.*

93. Allen G. Good & Perrin H. Beatty, *Fertilizing Nature: A Tragedy of Excess in the Commons*, NAT’L CTR. FOR BIOTECHNOLOGY INFO. (Aug. 16, 2011), <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3156687/>.

there are no federal laws requiring the use of enhanced fertilizer.⁹⁴ China, Russia, Canada, and Morocco are major producers of fertilizer’s main components. The United States is the “second or third top importer” of these components.⁹⁵

Another way to reduce nitrogen and phosphorus loss from fertilizer application is through agricultural management practices. Since agricultural crops have varying rates for required nitrogen application amount, uptake, and “return in residue,” the addition of more nitrogen than needed for crop production can contribute to nutrient pollution.⁹⁶ Further, excess phosphorus contributes to nutrient pollution through runoff and soil erosion when fertilizer is applied.⁹⁷ Thus, excess application of fertilizer to crops can lead to the nutrient loading in water bodies that can promote HAB growth and hypoxia events.⁹⁸

Choice of fertilizer application practices can positively affect water quality. For example, application methods that consider the timing, amount, and method of fertilizer application can help control the amount of excess nitrogen that results from application practices.⁹⁹ Other management practices can decrease the amount of nitrogen lost from crop production.¹⁰⁰ For example, the use of cover crops during periods when production crops are not in the agricultural fields can absorb nitrogen from the soil and significantly reduce nitrogen loss from erosion, surface runoff, and leaching.¹⁰¹

Animal manure is used as a fertilizer for agricultural operations because manure is considered an excellent source of plant nutrients and a soil builder because of manure’s contributions to improving soil quality. According to the USDA, using properly applied manure for crop fertilization may result in

94. *USDA Announce Plans for \$250 Million Investment to Support Innovative American-made Fertilizer to give US Farmers More Choices in the Marketplace*, U.S. DEP’T AGRIC. (Mar. 11, 2022), <https://www.usda.gov/media/press-releases/2022/03/11/usda-announces-plans-250-million-investment-support-innovative>.

95. *Id.*

96. INST. OF MED. & NAT’L RSCH. COUNCIL, *A FRAMEWORK FOR ASSESSING EFFECTS OF THE FOOD SYS.* 344 (Malden C. Nesheim et al. eds., 2015) (ebook) (discussing the effects of nutrients in the agriculture system).

97. *Id.* at 132.

98. Allen G. Good & Perrin H. Beatty, *Fertilizing Nature; A Tragedy of Excess in the Commons*, NAT’L CTR. FOR BIOTECHNOLOGY INFO. (Aug. 16, 2011), <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3156687/>; Comm. on a Framework for Assessing the Health, Env’t, & Soc. Effects of the Food Sys. Et al., *A Framework for Assessing Effects of the Food System*, NAT’L CTR. FOR BIOTECHNOLOGY INFO. (June 17, 2015).

99. Good & Beatty, *supra* note 98; *see also* NITROGEN IN AGRICULTURE SYSTEMS: IMPLICATIONS FOR CONSERVATION POLICY, iii, 1 17, U.S. DEP’T AGRIC., https://www.ers.usda.gov/webdocs/publications/44918/6767_err127.pdf?v=3907.7 (discussing that “corn is the most intensive user of nitrogen” and “improvements in rate, timing, and/or application method are needed on 70 percent of corn acres” to improve nitrogen use efficiency).

100. *Id.*

101. INST. OF MED. & NAT’L RSCH. COUNCIL, *supra* note 96, at 138.

less nitrate loss through leaching, soil erosion, and runoff than from use of commercial fertilizers.¹⁰² Manure provides an organic source of nitrogen, phosphorus, and other nutrients. Nitrogen in manure is a more stable form of nitrogen and is more slowly released than the nitrogen from commercial fertilizers. The release timing is a factor in the amount of nitrate leaching that occurs from fertilizer application.¹⁰³

Animal manure, however, significantly contributes to the nutrient pollution problem when used as a fertilizer in agricultural operations. Despite the USDA's indication that manure may result in less nutrient leaching, EPA research indicates that nutrient losses from equivalent rates of nutrients from commercial fertilizer and manure are similar.¹⁰⁴ The efficiency of manure application for fertilization can be affected by nutrient imbalances and difficulty in estimating available nutrients from this source.¹⁰⁵ The form of manure used as a fertilizer may also be a factor; manure compost may be a more efficient form than fresh manure because of its comparable nutrient composition and the ability to apply it more evenly and with more control.¹⁰⁶ Like use of commercial fertilizers, timing of application may also be a factor.¹⁰⁷ Similarly, nutrient loss from manure application may occur from management practices that result in overapplication of nutrients for crop production.¹⁰⁸ In addition, nitrate loss may occur in different forms (e.g., ammonia from stored manure) and at greater rates than commercial fertilizer with direct manure application to fields.¹⁰⁹

Manure also directly contributes to nutrients in water bodies through animal agriculture. According to the EPA, “[a]nimal agriculture manure is a primary source of nitrogen and phosphorus to surface and groundwater.”¹¹⁰

102. Nat'l Inst. of Food & Agric., *Manure and Nutrient Management Programs*, U.S. DEP'T AGRIC., <https://www.nifa.usda.gov/grants/programs/manure-nutrient-management-programs> (last visited Oct. 1, 2022).

103. *Id.*

104. JOHN A. LORY ET AL., USING MANURE AS A FERTILIZER FOR CROP PRODUCTION, U.S. ENV'T PROT. AGENCY, https://www.epa.gov/sites/default/files/2015-07/documents/2006_8_25_msbasin_symposia_ia_session8.pdf (last visited Oct. 1, 2022).

105. *Id.*

106. *Animal Feeding Operations—Uses of Manure*, U.S. DEP'T AGRIC., <https://www.epa.gov/npdes/animal-feeding-operations-uses-manure#:~:text=1%20Nutrients,%20Farmers%2C%20gardeners%2C%20landscapers%2C%20and%20others%20commonly,based%20on%20the%20fiber%20content%20of%20the%20manure> (last visited Oct. 1, 2022).

107. ELIZABETH GRAHAM ET AL., *Manure Effects on Soil Organisms and Soil Quality*, MICH. STATE UNIV. EXTENSION 1, 4, <https://www.canr.msu.edu/uploads/files/AABI/Manure%20effects%20on%20soil%20organisms.pdf> (last visited February 13, 2023).

108. LORY ET AL., *supra* note 104.

109. *Id.*

110. *Estimated Animal Agriculture Nitrogen and Phosphorus from Manure*, U.S. ENV'T PROT. AGENCY, <https://www.epa.gov/nutrient-policy-data/estimated-animal-agriculture-nitrogen-and-phosphorus-manure> (last visited Oct. 1, 2022) (noting the amount of nitrogen and phosphorus produced from animal manure based on data from 2007).

Animal manure negatively impacts quality of surface and ground water sources through contribution of excess nutrients—including nitrogen and phosphorus—and through pathogens and other contaminants and pollutants from this organic matter.¹¹¹

A measure of the amount of excess nutrients is the “recovery rate,” which reflects “the ratio of the amount of nutrient in the harvested crop to the amount of nutrient applied.”¹¹² The 2019 USDA report reflected data from 2015, which stated that approximately 22 million short tons of commercial fertilizer was used in that year and reported that nitrogen recovery rates from corn, winter wheat, and cotton crops were approximately 70%, while phosphate recovery rates were 60%.¹¹³ Using data from 2011, the 2019 USDA report stated that the percentages of livestock operations with nutrient management plans to manage animal manure were 66%, 54%, and 41% for broiler, hog, and dairy operations respectively.¹¹⁴

Agricultural irrigation practices play a role in facilitating nutrient pollution. The USDA tracks irrigation use across “six regions with significant concentrations of irrigated farmland” in the United States.¹¹⁵ During the past seven decades, the extent of irrigated cropland has changed within these regions.¹¹⁶ While the acreage of irrigated agriculture has decreased by 30% in the Mountain and Pacific regions, the Mississippi Delta and Northern Plains regions experienced an increase of more than 25%. Factors related to the increase in irrigation for the latter regions include availability of surface water and the combination of humidity and drought, respectively.¹¹⁷

Subject to these conditions, agricultural producers “are more likely to practice supplemental irrigation to replenish soil moisture deficits during critical crop growth stages.”¹¹⁸ Within the Mississippi Delta region, the Mississippi River Valley is the area of increased expansion. Other areas that were “historically dominated by rain-fed agriculture” but have increased use of irrigated agriculture include Chesapeake Bay’s eastern region, “north-central Corn Belt region,” and the “southeastern Atlantic Coastal Plain.”¹¹⁹

Further, technology use in agricultural operations may facilitate improvements in nutrient retention and reduce nutrient pollution. Precision

111. Nat’l Inst. of Food & Agric., *supra* note 102.

112. Econ. Rsch. Serv., *Nutrient Management*, U.S. DEP’T AGRIC., (April 28, 2020).

113. Hellerstein ET AL., *supra* note 68, at 45.

114. *Id.*

115. R. Aaron Hrozencik & Marcel Aillery, U.S. DEP’T AGRIC., *Trends in U.S. Irrigated Agriculture: Increasing Resilience Under Water Supply Scarcity*, 1, 10 (Dec. 2021) (specifying that the six regions are Mississippi Delta, Mountain, Northern Plains, Southern Plains, Southeast, and Pacific).

116. *Id.*

117. *Id.*

118. *Id.*

119. *Id.* at 12.

agriculture technologies include “guidance systems and variable-rate technology.”¹²⁰ These technologies may assist in reducing agricultural nutrient pollution from irrigation systems that result in nutrient-laden runoff, infiltration, and irrigation return flows.¹²¹

II. FEDERAL LAW APPROACHES TO ADDRESSING HABs

If we pollute the air, water and soil that keep us alive and well, and destroy the biodiversity that allows natural systems to function, no amount of money will save us.

– David Suzuki.¹²²

Various federal and state laws and regional legal frameworks relate to the problem of HAB detection, response, mitigation, and prevention. Some of these laws were enacted specifically to address problems associated with HABs. Other laws relate to nutrient pollution activities which contribute to bloom events and impacts. For example, federal and state water quality laws, including the federal Clean Water Act and state counterparts, establish water quality requirements, prohibitions, and programs. Various federal and state agencies have regulatory, research, planning, and other responsibilities concerning agricultural operations and issues associated with HABs.¹²³

Some federal and state laws and regional legal frameworks provide for coordination of efforts concerning water quality issues, including nutrient pollution and HABs. Jurisdiction for addressing HABs and coordinating efforts among agencies or within regional partnerships may depend on whether the bloom occurs in marine and coastal waters or in freshwater bodies. For example, under federal law the National Oceanic and Atmospheric Administration (NOAA) generally has jurisdiction over marine and coastal waters, and the EPA has authority over freshwater bodies.¹²⁴

Some federal, regional, and state initiatives respond to HABs by creating commissions and establishing research, monitoring, and management programs. Other initiatives target nutrient pollution more directly by

120. HELLERSTEIN ET AL., *supra* note 68, at V.

121. PHILLIP R. MCLoud ET AL., PRECISION AGRICULTURE: NRCS SUPPORT FOR EMERGING TECHNOLOGIES 7 (U.S. DEP’T AGRIC, 2007); *See e.g. Nonpoint Source: Agric.*, U.S. ENV’T PROT. AGENCY, <https://www.epa.gov/nps/nonpoint-source-agriculture> (last visited July 11, 2022) (explain nonpoint source pollution); *see e.g. also Nat’l Mgmt Measures to Control Nonpoint Pollution from Agric.*, U.S. ENV’T PROT. AGENCY, <https://www.epa.gov/nps/national-management-measures-control-nonpoint-source-pollution-agriculture> (last visited March 20, 2023) (explaining that taking measures to improve fertilizer would help to limit runoff).

122. BrainyQuotes, https://www.brainyquote.com/search_results?x=0&y=0&q=David+suzuki (last visited Aug. 12, 2022).

123. 33 U.S.C. §§ 1251, 4001.

124. 33 U.S.C. §§ 1251, 4001.

prescribing requirements for fertilizer application and nutrient management and for onsite sewage treatment operations (e.g., septic tanks). Still others involve land use restrictions on the type or timing of fertilizer applications and on the use or conversion of septic systems.¹²⁵

The various federal and state laws related to addressing the problem of HABs generally do not provide specific regulatory or enforcement mechanisms concerning nutrient pollution from agricultural operations. Rather, these federal laws focus on research, coordination, and planning to understand the nature of HABs and to develop mechanisms to detect, monitor, and mitigate their occurrences and impacts.

A. Harmful Algal Bloom Hypoxia Research and Control Act

More than 20 years ago, Congress recognized the need for action to address the significant problem of HABs in the United States by enacting the Harmful Algal Bloom and Hypoxia Research and Control Act (HABHRCA).¹²⁶ A “harmful algal bloom” is defined in HABHRCA as:

. . . marine and freshwater phytoplankton that proliferate to high concentrations, resulting in nuisance conditions or harmful impacts on marine and aquatic ecosystems, coastal communities, and human health through the production of toxic compounds or other biological, chemical, and physical impacts of the algae outbreak.¹²⁷

“Hypoxia” is defined as “a condition where low dissolved oxygen in aquatic systems causes stress or death to resident organisms.”¹²⁸

As enacted in 1998, HABHRCA included specific legislative findings concerning the causes and effects of HABs.¹²⁹ Congress recognized the significance of recent HAB occurrences, including: “red tides in the Gulf of Mexico and the Southeast; brown tides in New York and Texas; ciguatera fish poisoning in Hawaii, Florida, Puerto Rico, and the United States Virgin Islands; and shellfish poisonings in the Gulf of Maine, the Pacific Northwest, and the Gulf of Alaska.”¹³⁰ Congress also noted concerns regarding the increasing frequency and intensity of HABs and their impacts on human and animal health, such as “fish kills, the deaths of numerous endangered West

125. *Id.* § 1251, §§ 4001–4009.

126. Harmful Algal Bloom and Hypoxia Research and Control Act of 1998, Pub. L. 105-383, 112 Stat. 3447.

127. Harmful Algal Bloom and Hypoxia Research and Control Act of 2014, Pub. L. 113-124 § 608, § 10(a)(3), 128 Stat. 1379, 1385-86 (2014).

128. *Id.*

129. Harmful Algal Bloom and Hypoxia Research and Control Act, Pub. L. 105-383, § 602 (1998).

130. *Id.* § 602(1)–602(3).

Indian manatees, beach and shellfish bed closures, threats to public health and safety, and concern among the public about the safety of seafood.”¹³¹ The HABHRCA findings also specified that both “HABs and blooms of non-toxic algal species may lead to other damaging marine conditions such as hypoxia (reduced oxygen concentrations), which are harmful or fatal to fish, shellfish, and benthic organisms.”¹³² In addition, Congress noted that at the time the legislation was enacted, “53 percent of United States estuaries experience[d] hypoxia for at least part of the year and a 7,000 square mile area in the Gulf of Mexico off Louisiana and Texas suffer[ed] from hypoxia.”¹³³ Finally, Congress recognized the financial impact of harmful algal bloom events, finding that “HABs may have been responsible for an estimated \$1 billion in economic losses” during the ten years preceding this legislation.¹³⁴

In the 1998 legislation enacting HABHCRA, Congress specifically recognized scientific support for determining nutrient pollution to be a causal factor in HAB and hypoxia events.¹³⁵ Congress found that the “factors causing or contributing to HABs may include excessive nutrients in coastal waters” and that “a factor believed to cause hypoxia is excessive nutrient loading into coastal waters.”¹³⁶ Further, Congress found that “a need [exists] to identify more workable and effective actions to reduce nutrient loadings to coastal waters.”¹³⁷ HABHCRA defines “United States coastal waters” to include the Great Lakes.¹³⁸

Task Force: Through the 1998 HABHRCA legislation and later amendments, Congress established a specific statutory program to develop mechanisms to address the problem of HABs.¹³⁹ A foundational component of HABHRCA was the creation of the Inter-Agency Task Force on Harmful Algal Booms and Hypoxia (Task Force).¹⁴⁰ The Task Force was directed to

131. *Id.* § 602(1)–602(3).

132. *Id.* § 602(6).

133. *Id.* § 602(7).

134. *Id.* § 602(5).

135. *Id.* §§ 602(4), 602(8).

136. *Id.*

137. *Id.* § 602(9).

138. Harmful Algal Bloom and Hypoxia Amendments of 2014, Pub. L. 113-124, §10(a)(9), 128 Stat. at 1385-86 (2014).

139. 33 U.S.C. § 4001.

140. *Id.*; See also Harmful Algal Bloom and Hypoxia Amendments of 2014, Pub. L. 113-124, §10(a)(7), 128 Stat. at 1385–86 (2014) (explaining the initial legislation and subsequent amendments to the Task Force composition resulted in a membership including representatives from each of the following agencies and from other agencies as determined by the President: the Department of Commerce, Environmental Protection Agency, Department of Agriculture, Department of the Interior, Department of the Navy, Department of Health and Human Services, National Science Foundation, National Aeronautics and Space Administration, Food and Drug Administration, Office of Science and Technology Policy, Council on Environmental Quality, Centers for Disease Control and Prevention, and Army Corps of Engineers.).

study the “ecological and economic consequences of hypoxia in United States coastal waters, alternatives for reducing, mitigating, and controlling hypoxia, and the social and economic costs and benefits of such alternatives.”¹⁴¹ As initially established, the Task Force included representatives from the following agencies: Department of Commerce; EPA; Departments of Agriculture, Interior, Navy, and Health and Human Services; Food and Drug Administration; National Science Foundation; National Aeronautics and Space Administration; Office of Science and Technology Policy; Council on Environmental Quality; and “other Federal agencies as the President considers appropriate.”¹⁴² The 2014 HABHCRA amendments added the Centers for Disease Control and Prevention to the Task Force.¹⁴³ The 2019 HABHCRA amendments added the United States Army Corps of Engineers to the Task Force.¹⁴⁴ While the initial legislation authorized the President to “disestablish the Task Force” after submission of a required plan,¹⁴⁵ the 2004 amendment eliminated this authority.¹⁴⁶

Assessments: HABHCRA provides a statutory framework for researching and assessing the various impacts associated with HABs and potential options for prevention, response, and mitigation. This framework does not create mechanisms for regulating activities or actions that contribute to HABs or modify existing statutory or regulatory water quality programs that may impact the occurrence and impacts of HABs. Rather, HABHCRA is focused on planning, assessment, research, and recommendations rather than regulatory and permitting programs.¹⁴⁷

HABHCRA requires the Task Force to conduct assessments concerning both HABs and hypoxia. Further, HABHCRA required the first national HAB and hypoxia assessments by HABHCRA for United States waters to be conducted within 12 months of the legislation’s enactment.¹⁴⁸ For the HAB assessment, the statute required the Task Force to submit “an assessment which examines the ecological and economic consequences of [HABs], alternatives for reducing, mitigating, and controlling [HABs], and the social

141. 33 U.S.C. § 4001.

142. Harmful Algal Bloom and Hypoxia Research and Control Act of 1998, § 603(a)(1)–(12).

143. Harmful Algal Bloom and Hypoxia Amendments of 2014, Pub. L. 113-124, § 3, 128 Stat. at 1379 (2014).

144. 33 U.S.C. § 4001; *see, e.g.*, Water Resources Development Act of 2020, H.R. 7575, 116th Cong. (2020); *see also* GOV’T ACCOUNTABILITY OFF., GAO-22-104449, *Water Quality: Agencies Should Take More Actions to Manage Risks from Harmful Algal Blooms and Hypoxia* 1 (June 2022), <https://www.gao.gov/assets/gao-22-104449.pdf> (noticing that while HABHCRA provides a broad interagency framework for coordination and activities, other federal laws include provisions directing action concerning HABs and hypoxia).

145. Harmful Algal Bloom and Hypoxia Research and Control Act of 1998, § 603(a)(1)–(12).

146. Harmful Algal Bloom and Hypoxia Amendments of 2004, Pub. L. 108-456, § 102, 118 Stat. 3630, 3630.

147. *Id.*

148. Harmful Algal Bloom and Hypoxia Research Control Act, Pub. L. 105-383, § 603(b)-(c).

and economic benefits of such alternatives.”¹⁴⁹ To assess bloom effects, response, mitigation, and prevention, the Task Force was required to include “alternatives for preventing unnecessary [federal agency] duplication of effort” and provisions for “[f]ederal cooperation and coordination with and assistance to the Coastal states, Indian tribes, and local governments.”¹⁵⁰

For the initial hypoxia assessment, the Task Force was required to examine “the ecological and economic consequences of hypoxia in United States coastal waters, alternatives for reducing, mitigating, and controlling hypoxia, and the social and economic costs and benefits of such alternatives.”¹⁵¹ In addition, the Task Force was required to include in this assessment: the “needs, priorities, and guidelines for a peer-reviewed, inter-agency research program on the causes, characteristics, and impacts of hypoxia.”¹⁵² For both assessments, the Task Force was required to examine “the social and economic costs and benefits of such alternatives” and to “identify alternatives for preventing unnecessary duplication of effort among Federal agencies and departments.”¹⁵³ In conducting both initial assessments, the Task Force was required to cooperate with: state, tribal, and local governments; academic institutions and non-governmental organizations with relevant expertise; and “industry”; the directive included specific reference to cooperation with agricultural organizations.¹⁵⁴ This statute also requires periodic assessments of the ecological and economic impacts of hypoxia and “benefits of possible policy and management actions for preventing, controlling, and mitigating hypoxia.”¹⁵⁵

Later amendments to HABHCRA increased the Task Force’s assessment and reporting requirements. The 2004 HABHCRA amendments directed the Task Force to evaluate HAB prediction and response measures.¹⁵⁶ This amendment required the Task Force to: review current techniques’ “accuracy and utility in protecting environmental and public health”; “identify innovative research and development methods for the prevention, control, and mitigation of HABs and provisions for their development”; and “identify incentive-based partnership approaches . . . where practicable.”¹⁵⁷ Congress amended the requirement in the 1998 legislation to “cooperate” with specified governmental, nongovernmental, and academic entities, and also

149. *Id.* § 603(b)(1) (1998).

150. *Id.* § 603(b)(2) (1998).

151. *Id.* § 603(c)(1) (1998).

152. *Id.* § 603(c)(2)(A) (1998).

153. *Id.* § 603(b)(2)(A), 603(c)(2)(B) (1998).

154. *Id.* § 603(b)(1), (c)(1) (1998).

155. 33 U.S.C. § 4001(f).

156. Harmful Algal Bloom and Hypoxia Research Control Act of 2004, Pub. L. 108-456, § 103(d)(1) (requiring the Task Force to complete and submit this report within twelve months of the enactment of the 2004 amendments).

157. *Id.* § 103(d)(2)(B); 33 U.S.C. § 4001(d)(2).

with industry to instead require the Task Force to “consult” with these entities and add fisheries and fertilizer to the identified industries.¹⁵⁸

In the 2014 HABHCRA amendments, Congress created a new research and action strategy. The amendments required the Task Force to “develop . . . a comprehensive research plan and action strategy to address marine and freshwater HABs and hypoxia” (Action Strategy).¹⁵⁹ In addition to providing for activities and assignment of Task Force members’ roles, this legislation provided for research and activities for regional focus areas to identify priorities, research needs, and methods “to reduce the duration and intensity” and “address human health dimensions of HABs and hypoxia.”¹⁶⁰ In developing the Action Strategy, the Task Force was required to: “coordinate with” affected state and tribal government officials and agencies; and to “consult with public health [and] emergency management officials,” individuals and institutions with relevant expertise, and “industries and businesses affected by marine and freshwater [HABs] and hypoxia.”¹⁶¹ Congress also required the Task Force to submit a report describing the activities related to the Action Strategy and progress on its implementation within two years of submitting it.¹⁶² Among other revisions, the 2019 HABHCRA amendments added national program responsibilities, including: duties for NOAA to implement grant funding to “accelerate the utilization of effective methods of intervention and mitigation to reduce the frequency, severity, and impacts of harmful algal bloom and hypoxia events”; “use cost effective methods” in implementing the program; and “develop contingency plans for the long-term monitoring of hypoxia.”¹⁶³

In 2014, Congress also directed the Task Force to “maintain and enhance a national harmful algal bloom and hypoxia program” for marine and freshwater bodies, including: program objectives, a comprehensive research plan, and an action strategy.¹⁶⁴ Program objectives include “detecting, predicting, controlling, mitigating, and responding” to bloom and hypoxia events and implementing the research and action strategy established in the

158. Harmful Algal Bloom and Hypoxia Amendments of 2004, § 102, 118 Stat. at 3630.

159. Harmful Algal Bloom and Hypoxia Research and Control Act of 2014, Pub. L. 113-124 § 603B, § 5, 128 Stat. 1379, 1382 (2014). The deadline for submission of the Action Strategy was June 30, 2014. 33 U.S.C. § 4003(a).

160. Harmful Algal Bloom and Hypoxia Research and Control Act of 2014, Pub. L. No. 113-124. § 603B(b), § 5 (2014); 33 U.S.C § 4003(b).

161. Harmful Algal Bloom and Hypoxia Research and Control Act of 2014, Pub. L. No. 113-124. § 603B(b), § 5 (2014); 33 U.S.C § 4003(b).

162. Harmful Algal Bloom and Hypoxia Research and Control Act of 2014, Pub. L. No. 113-124. § 603B(b), § 5 (2014); 33 U.S.C § 4003(b).

163. Pub. L. 115-423 § 9(e)(1)(D), (2)(7)–(8); 33 U.S.C. § 4002(e)(3)(D), (2)(7)–(8).

164. Harmful Algal Bloom and Hypoxia Research and Control Act of 2014, § 603A, § 3; 33 U.S.C.A. § 4002.

2014 amendments.¹⁶⁵ Task Force responsibilities include: establishing interagency working groups; coordinating interagency review of program objectives; and support for the action strategy's implementation, new technology development, and program funding distribution.¹⁶⁶

NOAA was designated as the lead agency for program implementation; EPA was delegated authority for the freshwater aspects of the program.¹⁶⁷ As with previous HABHCRA legislation, the 2014 amendments provided for coordination within federal agencies and with governmental and other stakeholders and for avoiding duplication of effort concerning research and development programs.¹⁶⁸

Finally, in the 2019 amendments, Congress established authority to designate a marine, coastal, or freshwater hypoxia or HAB an "event of national significance."¹⁶⁹ For purposes of the designation, a "hypoxia or harmful algal bloom event" is defined as "the occurrence of hypoxia or a harmful algal bloom as a result of a natural, anthropogenic, or underdetermined cause."¹⁷⁰ The statute defines "event of national significance" as "a hypoxia or harmful algal bloom event that has had or will likely have a significant detrimental environmental, economic, subsistence use, or public health impact on an affected State."¹⁷¹ Considerations for designating an event of national significance include:

the toxicity of the harmful algal bloom, the severity of the hypoxia, its potential to spread, the economic impact, the relative size in relation to the past 5 occurrences of HABs or hypoxia events that occur on a recurrent or annual basis, and the geographic scope, including the potential to affect several municipalities, to affect more than 1 State, or to cross an international boundary.¹⁷²

After NOAA (marine or coastal) or the EPA (freshwater) designates an event of national significance, the agency can "ma[k]e available to the affected State or local government" funding up to 50% of the cost of authorized activities.¹⁷³ Activities that may be funded include "assessing and mitigating the detrimental, environmental, economic, subsistence use, and public health effects of the event of national significance."¹⁷⁴

165. *Id.* §§ 603A(a), 4; 33 U.S.C. § 4002(a).

166. *Id.* § 4002(c).

167. *Id.* § 4002(d), (h).

168. *Id.* § 4002(f)–(h).

169. *Id.* § 4010(2)(A).

170. *Id.* § 4010(3)(C).

171. *Id.* § 4010(3)(B).

172. *Id.* § 4010(2)(B).

173. *Id.* § 4010(1)(A), (2)(B).

174. *Id.* § 4010(1)(A).

HABHCRA created specific provisions for scientific assessments concerning HABs and hypoxia. In 2004, Congress required the Task Force to “provide for local and regional scientific assessments of hypoxia and [HABs], as requested by States, Indian tribes, and local governments,” or identified “affected areas.”¹⁷⁵ Subsequent HABHCRA amendments also required an initial and periodic five-year scientific assessments of marine and freshwater HABs and hypoxia.¹⁷⁶ The purpose and reporting requirements for the scientific assessments reflect those of other HABHCRA-required assessments, including: identifying progress made on “causes, characteristics, and impacts” of HABs and hypoxia; assessing their causes, ecological and economic consequences and costs; options for “preventing, controlling, and mitigating” blooms and hypoxia; and “ways to improve coordination and to prevent unnecessary duplication of effort” regarding agency research efforts.¹⁷⁷ Finally, the 2004 amendments required the Task Force to submit a “comprehensive and coordinated national research program” focusing on “prevention, control, and mitigation methods to reduce impacts . . . on coastal ecosystems (including the Great Lakes), public health, and the economy.”¹⁷⁸

In addition to the comprehensive HAB and hypoxia assessments, HABHCRA requires assessments to address specific water body concerns. The 1998 enacting legislation created the Mississippi River/Gulf of Mexico Watershed Nutrient Task Force and required the Nutrient Task Force to complete “an integrated assessment of hypoxia in the northern Gulf of Mexico.”¹⁷⁹ The legislation specified that this assessment must examine hypoxia “distribution, dynamics, and causes” and “ecological and economic consequences.”¹⁸⁰ Notably, Congress expressly directed the Task Force to consider nutrient pollution in the Gulf of Mexico, specifying the assessment would include: “sources and loads of nutrients transported by the Mississippi River to the Gulf of Mexico; effects of reducing nutrient loads; methods for reducing nutrient loads; and the social and economic costs and benefits of such methods.”¹⁸¹ Congress directed the Nutrient Task Force to submit a plan based on this assessment “for reducing, mitigating, and controlling hypoxia

175. *Id.* § 4001(e)(1).

176. *Id.* § 4001(f)–(h) (requiring the initial assessment to be submitted within twenty-four months of enactment of the 2004 amendments).

177. *Id.*

178. *Id.* § 4001(h)(1), (h)(2) (requiring priorities and guidelines “for a competitive, peer-reviewed, merit based interagency research, development, demonstration, and technology transfer program” incorporating agency coordination, “prevent[ing] unnecessary duplication” and including “diverse institutions”).

179. Coast Guard Authorization Act of 1998, Pub. L. 105-383, § 604(a), 112 Stat. 3412, 3449.

180. *Id.* (requiring the Task Force to complete the assessment by May 30, 1999).

181. *Id.*

in the northern Gulf of Mexico.”¹⁸² The 2014 HABHCRA amendments required biennial progress reports on goals established in the Gulf Hypoxia Action Plan 2008.¹⁸³ This requirement includes evaluation of “progress made toward nutrient load reductions” as well as hypoxic zone response, water quality, and “economic and social effects.” Congress later created specific provisions to assess hypoxia and HAB events for the Great Lakes region and for south Florida.¹⁸⁴

Plans and Programs: HABHCRA includes requirements for developing a strategy to address HABs. The statute requires the Task Force to submit to Congress by the end of 2005 “a plan providing for a comprehensive and coordinated national research program to develop and demonstrate prevention, control, and mitigation methods to reduce the impacts of HABs on coastal ecosystems (including the Great Lakes), public health, and the economy.”¹⁸⁵ The statute requires the Task Force, when “developing the [required] assessments, reports, and plans,” to consult with various governmental, academic, and commercial stakeholders, including notably agriculture and fertilizer.¹⁸⁶

Amendments to HABHCRA required the Task Force to: create a “national harmful algal bloom and hypoxia program”; include “a statement of objectives, including understanding, detecting, predicting, controlling, mitigating, and responding to marine and freshwater harmful algal bloom and hypoxia events”; and develop a “comprehensive research plan and action strategy.”¹⁸⁷ Among other requirements, the developed strategy must include: a regional focus on HABs and hypoxia; research; and actions “needed to develop and advance technologies and techniques for minimizing the occurrence of [HABs] and hypoxia[;] and improving capabilities to detect, predict, monitor, control, mitigate, respond to, and remediate [HABs] and hypoxia.”¹⁸⁸

Leadership: NOAA and the EPA share leadership responsibility for implementing HABHCRA. The 1998 legislation directed the Department of Commerce, which includes NOAA, to chair the Task Force.¹⁸⁹ The congressional findings in that legislation specifically recognized NOAA’s expertise, stating the agency “possesses a full range of capabilities necessary

182. *Id.* § 604(b) (requiring the Task Force to submit the plan by March 30, 2000).

183. Harmful Algal Bloom and Hypoxia Research and Control Act of 1998, 2014 Amendments, Pub. L. No. 113-124, § 604(a), 128 Stat. 1379, 1384 (amended 2014). *See also* Harmful Algal Bloom and Hypoxia Research and Control Act of 2014, 33 U.S.C. § 4004 (requiring submission of the first progress report by June 30, 2014, and biennial reports after the initial report).

184. *Id.* § 4004(a)–(4005).

185. *Id.* § 4001(h)(1).

186. *Id.* § 4001(a).

187. *Id.* §§ 4002(a), 4003(a).

188. *Id.* § 4003(b)(1)–(2).

189. Coast Guard Authorization Act of 1998, Pub. L. 105-383, § 603(a)(1), 112 Stat. 3412, 3449.

to support a near and long-term comprehensive effort to prevent, reduce, and control HABs and hypoxia.”¹⁹⁰ The 2014 HABHCRA amendments identified a shared responsibility between NOAA and the EPA for administering the National Harmful Algal Bloom and Hypoxia Program established in that legislation.¹⁹¹ NOAA is identified as the lead federal agency and has the primary responsibility for program administration.¹⁹² Specific duties assigned to NOAA include: responding to “marine and Great Lakes harmful algal bloom and hypoxia events”; creating and improving “critical observations, monitoring, modeling, data management, information, and operational forecasts” concerning these events; and “enhanc[ing] communication and coordination among Federal agencies carrying out marine and freshwater harmful algal bloom and hypoxia activities and research.”¹⁹³

The amendments also charge NOAA with “work[ing] cooperatively and avoid[ing] duplication of effort” with other Task Force agencies and with “States, tribes, and nongovernmental organizations concerned with marine and freshwater issues” related to HAB and hypoxia “activities and research.”¹⁹⁴ While significant responsibility for HABHCRA administration is delegated to NOAA, the amendments delegate EPA the authority for “the freshwater aspects of the [National Harmful Algal Bloom and Hypoxia] Program” not specifically delegated to NOAA.¹⁹⁵ EPA responsibilities for freshwater HABs include “research on the[ir] ecology and impacts” and “forecasting and monitoring of and event response to freshwater [HABs] in lakes, rivers, estuaries (including their tributaries), and reservoirs.”¹⁹⁶ The amendments specifically direct the EPA to “focus on new approaches to addressing freshwater [HABs]” and to avoid duplication “of existing research and development programs.”¹⁹⁷

Limitation on Authority: HABHCRA does not create or expand federal regulatory authority, and the Act also precludes limitation of state regulatory authority granted or delegated to states through federal water quality law.¹⁹⁸ The enacting legislation specified that “[n]othing in this title shall be interpreted to adversely affect existing State regulatory or enforcement power which has been granted to any State through the Clean Water Act or Coastal Zone Management Act of 1972.”¹⁹⁹ This legislation also prohibited

190. *Id.* § 602(10).

191. *Id.* § 4, 128 Stat. at 1379–82.

192. *Id.* § 4(d), at 1380.

193. *Id.* § 4(f), at 1381.

194. *Id.* § 4(g), at 1381.

195. *Id.* § 4(h), at 1381–82.

196. *Id.* § 4(h)(1), at 1382.

197. *Id.* § 4(h)(2), at 1382.

198. Coast Guard Authorization Act of 1998, Pub. L. 105-383, § 606, 112 Stat. 3412, 3450.

199. *Id.* § 606(a).

interpreting HABHCRA “to expand the regulatory or enforcement power of the Federal government which has been delegated to any State through” those statutes.²⁰⁰ In 2014, Congress amended HABHCRA to specify that the statute may not “be construed as establishing new regulatory authority for any agency” and does not “supersede[] or limit[] the authority of any agency or carry out its responsibilities and missions under other laws.”²⁰¹

Funding Provisions: As initially enacted and through subsequent amendments, HABHCRA has provided significant funding for implementing its provisions. The 1998 enacting legislation appropriated more than \$35 million for research, education, and monitoring during fiscal years 1999–2001.²⁰² In 2004, Congress appropriated \$74 million for fiscal years 2005–2008 and approximately \$102.5 million for fiscal years 2014–2018, in HABHCRA amendments enacted in 2014.²⁰³ In the most recent amendments, Congress authorized annual appropriations of \$20.5 million for the period 2019–2023.²⁰⁴ In this appropriation, Congress included funding for up to half of the costs to respond to hypoxia or HAB events of national significance.²⁰⁵

B. The Clean Water Act

Goals: The federal Clean Water Act provides the foundational legal framework for water quality protection in the United States. The Clean Water Act was enacted in 1972 as amendments to the Federal Water Pollution Control Act.²⁰⁶ Through this statutory amendment, Congress declared its overall goal “to restore and maintain the chemical, physical, and biological integrity of the Nation’s waters.”²⁰⁷ One “national goal” Congress identified in the Clean Water Act was to eliminate “the discharge of pollutants into the navigable waters . . . by 1985.”²⁰⁸ The “navigable waters” within the jurisdiction of the Clean Water Act are defined as “the waters of the United States, including the territorial seas.”²⁰⁹

Pollution: For purposes of the Clean Water Act, “[t]he term ‘pollution’ means the man-made or man-induced alteration of the chemical, physical,

200. *Id.* § 606(b).

201. *Id.* § 9, 128 Stat. at 1385.

202. Coast Guard Authorization Act of 1998 § 605.

203. Harmful Algal Bloom and Hypoxia Amendments of 2004, Pub. L. 108-456, § 105, 118 Stat. 3630, 3633–34; § 609, 128 Stat. 1386–87; Janasie, *supra* note 28.

204. National Integrated Drought Information System Reauthorization Act of 2018, Pub. Law 115-423, § 9(h), 132 Stat. 5454, 5464 (2019); Janasie, *supra* note 28.

205. National Integrated Drought Information System Reauthorization Act of 2018, § 9(h); Janasie, *supra* note 28.

206. Federal Water Pollution Control Act Amendment, P.L. 92-500, 86 Stat. 816 (1972); 33 U.S.C. § 1251 et seq.

207. *Id.* § 1251(a).

208. *Id.* § 1251(a)(1).

209. *Id.* § 1362(7).

biological, and radiological integrity of water.”²¹⁰ A “pollutant” includes various substances and materials that may be discharged into water through construction, industrial processes, commercial and human activities, and other methods.²¹¹ Specifically, the term “means dredged spoil, solid waste, incinerator residue, sewage, garbage, sewage sludge, munitions, chemical wastes, biological materials, radioactive materials, heat, wrecked or discarded equipment, rock, sand, cellar dirt and industrial, municipal, and agricultural waste discharged into water.”²¹² A “toxic pollutant” is a pollutant—alone or in combination with other pollutants—that “after discharge and upon exposure, ingestion, inhalation or assimilation into any organism, either directly . . . or indirectly, will . . . cause death, disease, behavioral abnormalities, cancer, genetic mutations, physiological malfunctions (including malfunctions in reproduction) or physical deformations in . . . organisms or their offspring.”²¹³

Pollutant Discharges: The Clean Water Act specifies the types of pollutant discharges that are within its scope. A “discharge of a pollutant” is defined as “any addition of any pollutant to navigable waters from any point source” or to “waters of the contiguous zone or the ocean from any point source other than a vessel or other floating craft.”²¹⁴ A “point source” is “any discernible, confined and discrete conveyance, including but not limited to any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, or vessel or other floating craft, from which pollutants are or may be discharged.”²¹⁵ This statutory point source definition expressly excludes “agricultural stormwater discharges and return flows from irrigated agriculture.”²¹⁶ The term “nonpoint source” is not specifically defined in the Clean Water Act; however, the EPA describes a nonpoint source as “any source of water pollution that does not meet the legal definition of ‘point source’ in the statute.”²¹⁷

Research and Technology: In addition to establishing the national goal of eliminating pollutant discharges within 13 years of enactment, the Clean Water Act specifies national goals concerning research, technology, and

210. *Id.* § 1362(19).

211. *Id.* § 1362(6).

212. *Id.* § 1362(6) (clarifying that the statutory “pollutant” definition includes some exceptions, including certain discharges from vessels, military operations, and oil and gas production.).

213. *Id.* § 1362(13).

214. *Id.* § 1362(12)(A)–(B) (italics added).

215. *Id.* § 1362(14).

216. *Id.* (return flows result from runoff occurring on agricultural lands irrigated through natural precipitation or irrigation systems).

217. *Basic Information about Nonpoint Source (NPS) Pollution*, U.S. ENV’T PROT. AGENCY, <https://www.epa.gov/nps/basic-information-about-nonpoint-source-nps-pollution> (last accessed Feb. 9, 2023).

funding to achieve the statutory goal of restoring and maintaining water quality.²¹⁸ Congress specified policies to control pollutant discharges through prohibition of “discharge of toxic pollutants in toxic amounts” and initiation of a “major research and demonstration effort . . . to develop technology necessary to eliminate the discharge of pollutants into the navigable waters, waters of the contiguous zone, and the oceans.”²¹⁹ Further, the Clean Water Act’s national policies provide for federal construction funding for “publicly owned waste treatment works” and “development and implementation” of “areawide waste treatment management planning processes . . . to assure adequate control of sources of pollutants.”²²⁰ Importantly, Congress also included a national policy for development and implementation of “programs for the control of nonpoint sources . . . in an expeditious manner so as to enable the goals of this chapter to be met through the control of both point and nonpoint sources of pollution.”²²¹

Effluent Limitations: The Clean Water Act directs the EPA to develop and periodically revise “regulations, providing guidelines for effluent limitations” for point sources of pollution.²²² The regulations must specify “the degree of effluent reduction attainable through the application of the best practicable control technology currently available for [point source] classes and categories” and the relevant factors for “determining the control measures and practices” to apply to point sources of pollution.²²³ For assessing the factors related to “best practicable control technology,” the EPA must compare the: technology application cost to the resulting “effluent reduction benefits”; “age of equipment and facilities”; process technology’s engineering aspects; process as a whole; and “non-water quality environmental impact.”²²⁴ The Agency must address similar considerations for assessment of best available control measures, “including treatment techniques, process and procedure innovations, operating methods, and other alternatives” for point sources.²²⁵ In addition, the Agency must, with consideration of costs, “identify control measures and practices available to eliminate the discharge of [categories and classes of] pollutants.”²²⁶ Under the Clean Water Act, pollutant discharges must comply with these adopted effluent limits.²²⁷

218. *Id.* § 1251.

219. *Id.* § 1251(a)(3), (6).

220. *Id.* § 1251(a)(4)–(5).

221. *Id.* § 1251(a)(7) (*italics added*).

222. *Id.* § 1314(b).

223. *Id.* § 1314(b)(1)(A).

224. *Id.* § 1314(b)(B).

225. *Id.* § 1314(b)(2)(A).

226. *Id.* § 1314(b)(3).

227. *Id.* § 1311(a).

Further, the EPA must determine “the degree of effluent reduction attainable through the application of the best conventional pollutant control technology.”²²⁸ Factors the agency must consider in evaluating the best conventional pollutant control technology include a cost-benefit analysis of achieving effluent reduction, relationship between cost and benefit level, facility and equipment age, process, engineering aspects of control techniques, and non-water quality environmental impact.²²⁹ The statute also requires the agency to provide information and technical assistance to states regarding “the processes, procedures, or operating methods” that eliminate or reduce pollutant discharge.²³⁰ The EPA is also authorized to promulgate supplemental effluent limitation regulations for toxic or hazardous pollutants to address industrial best management practices that would be incorporated into a point source permit.²³¹

Point Source Permitting: The Clean Water Act’s regulatory provisions include limitation and permitting of pollutant discharges. The “discharge of any pollutant by any person” is prohibited, except as authorized by, and when in compliance with, specified Clean Water Act provisions.²³² When enacted, the Clean Water Act imposed a five-year deadline for industries to incorporate best practical control technology and publicly owned treatment plants to provide for secondary treatment. The Clean Water Act also required the use of “best available technology” for point source discharges.²³³ The statute requires establishment of effluent limitations, which are defined as “any restriction[s] . . . on quantities, rates, and concentrations of chemical, physical, biological, and other constituents which are discharged from point sources.”²³⁴ Effluent limitations for point sources include compliance schedules and are based on “the application of the best practicable control technology” and established according to the need “to meet water quality standards, treatment standards, or schedules of compliance, . . . or any other Federal law or regulation.”²³⁵

The Clean Water Act also establishes a permitting program, the National Pollutant Discharge Elimination System (NPDES), for wastewater

228. *Id.* § 1314(b)(4)(A).

229. *Id.* § 1314(b).

230. *Id.* § 1314(c).

231. *Id.* § 1314(e).

232. *Id.* § 1331(a) (listing the authorization and compliance exceptions include: the effluent limitation provisions in § 1331(a); and the water quality-based limits in § 1312; the national standards of performance in § 1316; toxic and pretreatment effluent standards in § 1317; aquaculture permitting in § 1328; and pollutant and dredge and fill discharge permitting provisions in §§ 1342 and 1344); *see generally id.* §§ 1342, 1344 (outlining respective permitting statutory provisions).

233. *Id.* § 1331(b)(2)(A).

234. *Id.* § 1362(11).

235. *Id.* §§ 1311(b)(1)(A)–(C), 1317 (explaining that for publicly owned treatment plants existing on July 1, 1977, the Clean Water Act specified effluent limitations based on secondary treatment and compliance with the toxic and pretreatment effluent standards).

discharges to surface waters and for discharges that have a “significant potential to impact surface waters.”²³⁶ In 1987, the Clean Water Act was amended to include certain municipal, industrial, and construction stormwater discharges.²³⁷ Concentrated animal feeding operations also are subject to NPDES permitting.²³⁸

NPDES permits are issued as individual permits for site-specific facilities and activities (such as commercial or industrial operations) that result in point source pollutant discharges. Individual NPDES permit conditions consider the best available technology for effluent treatment and water-quality-based limits based on the receiving water body’s designated uses.²³⁹ Under the Clean Water Act, general NPDES permits also are issued; these permits prescribe conditions to cover a category of similar discharges from activities such as construction and industrial operations. Rather than specific, technology-based conditions, general NPDES permit conditions are based on best management practices.²⁴⁰

The foundation of the Clean Water Act’s regulatory framework is a cooperative federal-state relationship. The Clean Water Act specifies a congressional policy “to recognize, preserve, and protect the primary responsibilities and rights of States to prevent, reduce, and eliminate pollution.”²⁴¹ Congress delegated authority for Clean Water Act administration, permitting, and enforcement to the EPA.²⁴² However, Congress also provided for the EPA to delegate authority to states to implement the Clean Water Act’s NPDES and dredge and fill permit programs in their jurisdictions.²⁴³ As of 2016, “more than 65,000 conventional industrial and municipal dischargers” and “more than 150,000 industrial and municipal sources of stormwater dischargers” were required to obtain NPDES permits from either the EPA or states with federally delegated permit authority.²⁴⁴

Water Quality Standards: The Clean Water Act provides for adoption of state water quality standards as a means to assess and regulate water

236. *Id.* § 1362(a).

237. *See generally id.* § 1342 (outlining municipal, industrial, and construction stormwater discharges); and 40 CFR § 122 (2013) (discussing the purpose of the NPDES system).

238. 33 U.S.C. § 1362(14).

239. *Id.* § 1342(s)(5)(A).

240. *Id.* § 1342(p)(3)(B)(iii).

241. *Id.* § 1251(b).

242. *Id.* §§ 1251(d), 1361 (outlining EPA’s authority under the Clean Water Act).

243. *Id.* § 1251(b) (stating the United States Army Corps of Engineers administers the dredge and fill permits authorized under the Clean Water Act).

244. Claudia Copeland, Congressional Research Service, CRS Report RL 30030, *Clean Water Act: A Summary of the Law* (October 18, 2016), <https://crsreports.congress.gov/product/pdf/RL/RL30030>.

bodies.²⁴⁵ Designed to protect both public health and water quality, these standards “serve the dual purposes of establishing the water quality goals for [all or part of] a specific water body and serve as the regulatory basis for the establishment of water-quality-based treatment controls and strategies”²⁴⁶ The standards define these goals “by designating the use or uses to be made of the water and by setting criteria that protect the designated uses.”²⁴⁷ Under the Clean Water Act, water quality standards should address water quality considerations by: “wherever attainable, provid[ing] water quality for the protection and propagation of fish, shellfish and wildlife and for recreation in and on the water.”²⁴⁸ The standards should also consider “agricultural, industrial, and other purposes including navigation.”²⁴⁹

State water quality standards identify desired conditions or protection for water bodies within the respective state jurisdictions and for the basis of public health advisories or notifications concerning water quality issues for recreational waters.²⁵⁰ Once adopted, the state water quality standards “serve as the regulatory basis for the establishment of water-quality-based treatment controls and strategies beyond the technology-based levels of treatment required” under the Clean Water Act.²⁵¹ The water quality criteria in the standards includes both narrative and numeric criteria.

The Clean Water Act directs the EPA to develop its recommended water quality criteria.²⁵² The agency’s criteria must “[reflect] the latest scientific knowledge” for state and tribal governments to adopt or use as guidance when “determining when water has become unsafe for people and wildlife.”²⁵³ The statute specifies that the criteria must address: the “kind and extent of all identifiable effects on health and welfare . . . which may be expected from the presence of pollutants in any body of water”; the “concentration and dispersal of pollutants, or their byproducts, through biological, physical, and chemical processes”; and the “effects of pollutants on biological community diversity, productivity, and stability, including

245. See 40 C.F.R. § 131.3(j) (2021) (defining “State” to mean “[t]he 50 States, the District of Columbia, Guam, the Commonwealth of Puerto Rico, Virgin Islands, American Samoa, the Commonwealth of the Northern Mariana Islands, and Indian Tribes that EPA determines to be eligible for purposes of the water quality standards program.”).

246. *Id.* § 131.2.

247. 40 C.F.R. § 131.2.

248. *Id.*; 33 U.S.C. §§ 1251(a)(2), 1313(c).

249. *Id.*

250. Laura Gatz, Cong. Rsch. Serv., R44871, *Freshwater Harmful Algal Blooms: Causes, Challenges, & Policy Considerations* (2020).

251. 40 C.F.R. § 131.3(b); 33 U.S.C. § 1311(b), § 1316.

252. 33 U.S.C. § 1314(a)(1)–(3) (the recommended criteria must be published, “issued to [s]tates,” and “otherwise made available to the public”).

253. *Basic Information on Water Quality Criteria*, ENV’T PROT. AGENCY, <https://www.epa.gov/wqc/basic-information-water-quality-criteria> (last visited Feb. 8, 2023).

information on the factors affecting rates of eutrophication and rates of organic and inorganic sedimentation for varying types of receiving waters.”²⁵⁴ The agency is also required to develop and publish information identifying the factors needed to: “restore and maintain the chemical, physical, and biological integrity” of covered waters; protect aquatic life, wildlife, and recreational uses; measure and classify water quality; and identify “pollutants suitable for [total] maximum daily load measurement.”²⁵⁵ States may consider water quality criteria when developing their water quality standards, which describe the desired condition or level of protection of a water body and what is needed for protection. States may also use these values as the basis of swimming advisories for public notification purposes at recreational waters.²⁵⁶

States are also required by the Clean Water Act to develop a list of impaired waters, identified as waters that do not meet the state’s adopted water quality standards.²⁵⁷ States must create a priority list of the impaired waters and adopt a total maximum daily load (TMDL) (i.e., a pollution “budget”) for each pollutant of concern. The TMDL must address “the maximum amount of a particular pollutant that the listed waterbody can receive while meeting water quality standards.”²⁵⁸

The EPA published final water quality criteria in 2019 for two algal toxins in waters used for recreational purposes.²⁵⁹ Most states have identified nutrient pollution as a water quality priority in some way. Some states have developed algal toxin guidelines for public health advisories, while others have listed waters as impaired (i.e., not meeting water quality standards) or developed TMDLs based on either algal blooms or toxins. States have also used federal funding for nonpoint source pollution programs.²⁶⁰

Nonpoint source pollution: Water quality issues associated with nonpoint source pollution are addressed by the Clean Water Act through a separate process. The Clean Water Act requires the EPA to issue and update information including: “(1) guidelines for identifying and evaluating the nature and extent of nonpoint sources of pollutants, and (2) processes, procedures, and methods to control pollution.”²⁶¹ Among other nonpoint

254. 33 U.S.C. §1314(a)(1).

255. *Id.* § 1314(a)(2).

256. Laura Gatz, Cong. Rsch. Serv., R44871, *Freshwater Harmful Algal Blooms: Causes, Challenges, & Pol’y Considerations* (2020).

257. 33 U.S.C. § 1313(d).

258. *Id.*

259. U.S. Env’t Prot. Agency, *Implementing the 2019 National Clean Water Act Section 304(a) Recommended Human Health Recreational Ambient Water Quality Criteria or Swimming Advisories for Microcystins and Cylindrospermopsin 1* (July 2022), <https://www.epa.gov/system/files/documents/2021-08/final-tds-implement-2019-rwqc.pdf>.

260. *Id.* at 14.

261. 33 U.S.C. § 1314(f).

pollution sources, “pollution resulting from . . . agricultural and silvicultural activities, including runoff from fields and crop and forest lands” are identified for purposes of this statutory requirement.²⁶² The Clean Water Act also directs the EPA to enter into an agreement with the Department of Agriculture “to provide for the maximum utilization of other Federal laws and programs for the purpose of achieving and maintaining water quality” concerning “nonpoint pollution management programs” related to agricultural operations.²⁶³

In addition to permitting, states have a role in establishing water quality standards and in certifying whether projects comply with those standards. The Clean Water Act provides for states to adopt water quality standards to specify the standards that will apply in their jurisdictions.²⁶⁴ Water quality standards include criteria for total nitrogen and total phosphorus in three water-types: lakes/reservoirs, rivers/streams, and estuaries. According to the EPA, more than half of the states currently have no approved total nitrogen and/or total phosphorus criteria.²⁶⁵ The EPA has categorized state progress according to five different compliance levels:

- Level 5: “Complete set of” nitrogen and/or phosphorus criteria for all watertypes” (no states at this level, but there is compliance by American Samoa, Commonwealth of Northern Marianas, Guam, and the United States Virgin Islands);²⁶⁶
- Level 4: “[Two] or more watertypes with” nitrogen and/or phosphorus criteria (five states and Puerto Rico);²⁶⁷
- Level 3: “[One] watertype with” nitrogen and/or phosphorus criteria (three states);²⁶⁸
- Level 2: “Some waters with” nitrogen and/or phosphorus criteria (sixteen states);²⁶⁹ and
- Level 1: No nitrogen and/or phosphorus criteria (26 states and the District of Columbia).²⁷⁰

262. *Id.* § 1314(f)(1)(A).

263. *Id.* § 1314(k)(1).

264. *Id.* § 1313.

265. *State Progress Toward Adopting Numeric Nutrient Water Quality Criteria for Nitrogen and Phosphorus*, Env’t Prot. Agency, <https://www.epa.gov/nutrient-policy-data/state-progress-toward-developing-numeric-nutrient-water-quality-criteria#tbl> (last accessed Feb. 11, 2023).

266. *Id.*

267. *Id.*

268. *Id.*

269. *Id.*

270. *Id.*

The EPA also tracks adoption of water quality criteria for chlorophyll-a, an important indicator for whether waters are impaired due to nitrogen and phosphorus pollution. Progress in adoption of criteria for chlorophyll-a is worse than for state's efforts to adopt nutrient and phosphorus criteria. Current data indicates that 26 states have no criteria, and 19 states have some waters with criteria. Only the District of Columbia and American Samoa have adopted criteria for one water type, and only three states have adopted either criteria for at least two water types.²⁷¹

As explained above, the scope of EPA's ability to regulate agriculture's contribution to nutrient pollution under the Clean Water Act is limited by statute. Congress, however, authorized EPA to issue permits for concentrated animal feeding operations under the Clean Water Act. Animal feeding operations are non-aquatic facilities or lots dedicated to livestock production where "[a]nimals . . . are, or will be stabled or confined and fed or maintained for a total of 45 days or more in any 12-month period."²⁷² Animal feeding operations meeting the EPA's concentrated animal feeding operation definition are regulated as point sources under the Clean Water Act's NPDES permitting program.²⁷³ The concentrated animal feeding operations permitting program is based on development of nutrient management plans which, among other provisions, include best management practices to address discharges of manure, wastewater, and stormwater runoff from these operations.²⁷⁴

The Clean Water Act authorizes the EPA to delegate authority to states and territories to administer and enforce the statute's NPDES permitting programs. Most states are fully authorized to administer the program. Further, all but a few states have at least partial delegated authority for permitting.²⁷⁵ Therefore, much of the administration of this important permitting program is conducted by state governments rather than federal authorities.

Nonpoint source regulation: Other than provisions for water quality standards and concentrated animal feeding operations permitting, the Clean Water Act largely relies on nonpoint source programs to address agricultural nutrient pollution's water quality impacts. Although agriculture lands constitute nearly half of the nation's land base, the actions taken to reduce and mitigate the water quality impacts of agricultural operations are based in

271. *Id.*

272. 40 C.F.R. § 122.23(b)(1)(i).

273. ENVIRONMENTAL PROTECTION AGENCY, *Animal Feeding Operations (AFOs)*, <https://www.epa.gov/npdes/animal-feeding-operations-afos> (accessed August 30, 2022).

274. 40 C.F.R. § 122.23.

275. ENVIRONMENTAL PROTECTION AGENCY, *NPDES Authorized States, 2021*, https://www.epa.gov/sites/default/files/2021-02/documents/authorized_states_2021.pdf (accessed February 21, 2023).

large part on voluntary and incentive-based efforts.²⁷⁶ Significant aspects of nonpoint source pollution are exempt from both NPDES permitting and from dredge and fill permitting under § 404 of the Clean Water Act. Activities exempted for the latter permits include: “[e]stablished (ongoing) farming, ranching, and silviculture activities”; drainage ditch maintenance; irrigation ditch and farm or stock pond construction and maintenance; farm and forest road construction and maintenance when conducted according to “best management practices”; and dam, dike, and levee maintenance.²⁷⁷

The Clean Water Act includes provisions for states to adopt nonpoint source management programs.²⁷⁸ States are directed to identify waters requiring control of nonpoint pollution sources to achieve established water quality standards or water quality goals. States must also identify the nonpoint sources adding “significant pollution” and the amounts of contributions affecting water quality standards.²⁷⁹ Further, states must develop processes and programs for implementation of “best management practices and measures to control” nonpoint sources and “reduce, to the maximum extent practicable, the level of pollution resulting from” these sources.²⁸⁰ The Clean Water Act identifies required components for state management programs, including: best management practices to reduce pollutant loads; “nonregulatory or regulatory” programs to provide assistance, education, training, and enforcement of the best management practices; and a schedule for completion of program implementation and milestones for achieving the program’s objectives. Further, the state must certify either that state laws provide “adequate authority” for management plan implementation or, if not, identify needed state authority to make that certification.²⁸¹

C. Coastal Zone Management Act

The Coastal Zone Management Act (CZMA) is a federal management framework for the nation’s coastal areas.²⁸² Originally enacted in 1972, the CZMA recognizes that “present state and local institutional arrangements for planning and regulating land and water uses in such areas are inadequate” and the “competing demands and the urgent need to protect and to give high

276. ENVIRONMENTAL PROTECTION AGENCY, *Nonpoint Source: Agriculture*, <https://www.epa.gov/nps/nonpoint-source-agriculture> (accessed September 1, 2022).

277. 33 U.S.C. § 1344(f)(1)(E).

278. *Id.* § 1329.

279. *Id.*

280. *Id.*

281. *Id.*

282. Coastal Zone Management Act, 16 U.S.C. § 1451 (1972); NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION, COASTAL ZONE MANAGEMENT ACT (last accessed Aug. 21, 2022). <https://coast.noaa.gov/czm/act/> (last accessed Aug. 21, 2022).

priority to natural systems in the coastal zone.”²⁸³ In addition, the statute notes the impacts coastal zone land uses have on water quality and finds that “efforts to control coastal water pollution from land use activities must be improved.”²⁸⁴ The statute also identifies as the “key” to a more effective program for coastal use and protection “is to encourage the states to exercise their full authority over” coastal areas, with federal and local cooperation and assistance, and to have states “develop[] land and water use programs for the coastal zone, including unified policies, criteria, standards, methods, and processes for dealing with land and water use decisions of more than local significance.”²⁸⁵

The CZMA defines coastal zone as: coastal waters, lands, and the adjacent shorelands “strongly influenced by each other and in proximity to the shorelines of the several coastal states,” including the Great Lakes coastal areas.²⁸⁶ The statute authorizes federal grants for state coastal zone management plan development, implementation, and enhancement activities, and it prescribes some requirements for states concerning plan development.²⁸⁷

Like CZMA’s other provisions, the approach to addressing nonpoint pollution is through the cooperative federal-state framework. When HABHCRA was initially enacted in 1998, and until the 2014 statutory amendments, HABHCRA was enacted as notes to CZMA’s statutory sections.²⁸⁸ The CZMA’s nonpoint pollution provisions, enacted in 1990, required NOAA and EPA to publish guidance to coastal zone states concerning management methods, measures, or practices to control nonpoint pollution.²⁸⁹ The conference committee report concerning these amendments indicates Congress’s expectation that the guidance would “concentrate on the large nonpoint sources that are widely recognized as major contributors of water pollution and on which there is broad consensus on the appropriate management measures that must be developed and implemented.”²⁹⁰ Examples in this report included “use of buffer strips, setbacks, techniques

283. 16 U.S.C. § 1451(h).

284. *Id.* § 1451(k).

285. *Id.* § 1451(i).

286. *Id.* § 1453(1) (the statute defines “coastal state” as a state “in, or bordering on, the Atlantic, Pacific, or Arctic Ocean, the Gulf of Mexico, Long Island Sound, or one or more of the Great Lakes. 16 U.S.C. § 1453(4). This definition “also includes Puerto Rico, the Virgin Islands, Guam, the Commonwealth of the Northern Mariana Islands, and the Trust Territories of the Pacific Islands, and American Samoa.”).

287. *Id.* §§ 1454, 1455(a)–(b).

288. Harmful Algal Bloom and Hypoxia Research and Control Act of 1998, Pub. L. No. 105-383, 112 Stat. 3447 (1998); Harmful Algal Bloom and Hypoxia Research and Control Act of 2014, Pub. L. No. 113-124, 128 Stat. 1379 (2014).

289. 16 U.S.C. §§ 1455b(g)(1), 1455b(g)(2)(A).

290. U.S. GOV’T ACCOUNTABILITY OFF., CONGRESSIONAL RECORD, 101ST CONGRESS, EXTENSION OF REMARKS, H.R. 5835, at E3725 (1990).

for identifying and protecting critical coastal areas and habitats, soil erosion and sedimentation controls, and siting and design criteria for water-related uses such as marinas.”²⁹¹ As enacted, the statutory amendments specified that the guidance must include:

(C) an identification of the individual pollutants or categories or classes of pollutants that may be controlled by the measures and the water quality effects of the measures; (D) quantitative estimates of the pollution reduction effects and costs of the measures; (E) a description of the factors which should be taken into account in adapting the measures to specific sites or locations; and (F) any necessary monitoring techniques to accompany the measures to assess over time the success of the measures in reducing pollution loads and improving water quality.²⁹²

For purposes of the nonpoint pollution guidance, “management measures” is defined as “economically achievable measures for the control of the addition of pollutants from existing and new categories and classes of nonpoint sources of pollution.”²⁹³ The statutory definition specifies these measures must “reflect the greatest degree of pollutant reduction achievable through the application of the best available nonpoint pollution control practices, technologies, processes, siting criteria, operating methods, or other alternatives.”²⁹⁴

The CZMA amendments required states with federally-approved management plans to adopt a nonpoint pollution control plan.²⁹⁵ These state plans were to be submitted to NOAA for approval after the publication of the federal guidance.²⁹⁶ The CZMA authorizes NOAA to withhold grant funds from states that fail to submit or implement the nonpoint pollution control plan.²⁹⁷

Rather than being a separate regulatory framework for coastal protection and management, the CZMA structure is based on federal assistance and cooperation for state and local action. The CZMA provides for NOAA approval of the management plans that are developed by the coastal states and territories.²⁹⁸ NOAA is directed to cooperate with other federal agencies concerning coastal zone management activities and to ensure consistency

291. *Id.*

292. 16 U.S.C. § 1455b(g)(2)(C)–(F).

293. *Id.* § 1455b(g)(5).

294. *Id.*

295. *Id.* § 1455b(a)(1).

296. *Id.*

297. *Id.* § 1455b(c)(3).

298. *Id.* § 1455b(c)(1).

with these state management plans.²⁹⁹ The CZMA specifies that this statute does not “diminish either Federal or state jurisdiction, responsibility, or rights in the field of planning, development, or control of water resources” or “affect any requirement (1) established by the [Clean Water Act] . . . or (2) established by the Federal Government or by any state or local government pursuant to” the Clean Water Act.³⁰⁰ The statute also specifies these requirements will be incorporated as requirements into any CZMA program.³⁰¹

D. Safe Drinking Water Act

The impact of HABs on the delivery and safety of public water supplies has been the subject of attention and concern for a long time. The long saga of HAB events in Lake Erie—where cyanobacteria HABs have occurred since the 1990s—demonstrates the magnitude of disruption that can occur from a HAB event.³⁰² For example, public water supply impacts from the 2014 Lake Erie HAB included illness for 100 people, a loss of water supply for 500,000 people for several days, and \$65 million in lost benefits.³⁰³ In recent years, Lake Erie HABs have become an annual occurrence.³⁰⁴ Water supply systems in Oregon have also experienced HABs caused by cyanotoxins that required the utilities to issue health advisories and water restrictions.³⁰⁵

The federal Safe Drinking Water Act (SDWA) protects drinking water quality for groundwater and surface water sources that are or may be used for public drinking water supply.³⁰⁶ With certain statutory exceptions, the SDWA’s “national primary drinking water regulations . . . apply to each public water system in each State.”³⁰⁷ The definition of primary drinking

299. *Id.* § 1456.

300. *Id.* § 1456(e)–(f).

301. *Id.* § 1456(f).

302. LARA GATZ, CONG. RSCH. SERV., R44871, FRESHWATER HARMFUL ALGAL BLOOMS: CAUSES, CHALLENGES, AND POLICY CONSIDERATIONS 1 (updated June 8, 2020), <https://crsreports.congress.gov/product/pdf/R/R44871>.

303. *Lake Erie's toxic algae blooms: Why is the water turning green?*, NAT'L SCIENCE FOUND., <https://beta.nsf.gov/news/lake-eries-toxic-algae-blooms-why-water-turning-green> (last accessed Aug. 20, 2022).

304. *Id.*

305. *Id.*

306. 42 U.S.C. § 300f–g; United States Environmental Protection Agency, *Summary of the Safe Drinking Water Act*, <https://www.epa.gov/laws-regulations/summary-safe-drinking-water-act> (last accessed Aug. 19, 2022).

307. 42 U.S.C. § 300g.

water regulation includes public water system rules that,³⁰⁸ among other requirements, “specif[y] contaminants which . . . may have any adverse effect on” human health.³⁰⁹ For any specified contaminant, these regulations must include a maximum contaminant level.³¹⁰ The SDWA defines the term maximum containment level as “the maximum permissible level of a contaminant in water which is delivered to any user of a public water system.”³¹¹ A maximum contaminant level is one that “is economically and technologically feasible to ascertain the level of such contaminant”; if not feasible, the regulations must include “each [known] treatment technique . . . which leads to a [sufficient] reduction in the level of such contaminant.”³¹²

In identifying a contaminant for which a maximum level should be specified, the EPA must consider whether it may adversely affect human health, whether the contaminant is either known or substantially likely to “occur in public water systems with a frequency and at levels of public health concern,” and whether the contaminant’s “regulation . . . presents a meaningful opportunity for [human] health risk reduction.”³¹³ In addition, the SDWA regulations must provide for procedures and criteria to assure compliance with the promulgated maximum contaminant levels.³¹⁴

The 2015 amendments to the SDWA provided for consideration of the risk of algal toxins to public water systems. These amendments, adopted in the Water Infrastructure Improvements for the Nation Act, were enacted in response to the large Lake Erie HAB impacting the Toledo, Ohio water supply.³¹⁵ Among other provisions, this legislation provided for coordination of projects and actions related to HABs in the Great Lakes.³¹⁶

These amendments required the EPA to create a strategic plan concerning algal toxins in public water supplies.³¹⁷ In developing the plan, the EPA was required to analyze and assess risks to human health from algal toxins in public water systems and to create a list of algal toxins with potential human health risks.³¹⁸ For listed algal toxins, the statute requires the plan to include: their “known adverse human health effects”; factors

308. “Public water system” is defined in the SDWA as “a system for the provision to the public of water for human consumption through pipes or other constructed conveyances” that has a minimum of “fifteen service connections or regularly serves at least twenty-five individuals.” 42 U.S.C. § 300f(1)(D)(4)(A).

309. *Id.* § 300f(1)(B).

310. *Id.* § 300f(1)(C).

311. *Id.* § 300f(3).

312. *Id.* § 300f(1)(C)(i)–(ii).

313. *Id.* § 300g-1(b)(1)(A)(i)–(ii).

314. *Id.* § 300f(1)(D).

315. P.L. 114-45; Congressional Research Service, *Freshwater Harmful Algal Blooms: An Overview*, p. 1 (July 8, 2020, update), <https://crsreports.congress.gov/product/pdf/IF/IF10690>.

316. *Id.*

317. 42 U.S.C. § 300j-19(a)(1).

318. *Id.* § 300j-19(a)(1)(A)–(B).

associated with bloom growth and toxin release; need for public health advisories; guidance concerning quantifying and monitoring toxins in public water supplies; recommendations for feasible treatment options; mitigation of adverse public health effects; consideration of cooperative agreements; and technical assistance coordination with states and public water systems for risk management related to listed algal toxins.³¹⁹

For purposes of identifying maximum contaminant levels for listed toxins and for listing algal toxins, the term “feasible” is defined as “feasible with the use of the best technology, treatment techniques and other means which . . . after examination for efficacy under field conditions and not solely under laboratory conditions, are available (taking cost into consideration).”³²⁰ Both statutory processes also expressly provide for the use of science and reliable data in making decisions regarding contaminant levels and algal toxin listings.³²¹

The SDWA directs the EPA to issue health advisories concerning contaminants posing threats to public health, and EPA has done so for some algal toxins.³²² The SDWA also directs the EPA to act through a three-step process to assess and identify contaminants not previously regulated under the SDWA that may require regulation in the future.³²³ First, EPA issues Contaminant Candidate Lists (CCLs) every five years for contaminants that are not currently subject to federal drinking water regulations but “are known or anticipated to occur in public water systems.”³²⁴ Second, EPA must provide for monitoring of the CCL-listed contaminants by enacting an unregulated contaminant monitoring rule.³²⁵ Third, the EPA is required to determine whether to regulate CCL-listed contaminants.³²⁶ The determination, which must be made every five years (for at least five unregulated contaminants), is based on consideration of whether: the contaminant may adversely affect human health; the contaminant is known

319. *Id.* § 300j-19(a)(1)(C)(i)–(iii).

320. *Id.* §§ 300g-1(b)(4)(D), 300j-19(d) (the harmful algal bloom statute specifies that “feasible” for the harmful algal bloom provisions has the same meaning as in the general maximum contaminant level statute).

321. *Id.* § 300g-1(b)(3)(A)(i)–(ii).

322. Environmental Protection Agency, *EPA Drinking Water Health Advisories for Cyanotoxins*, <https://www.epa.gov/cyanohabs/epa-drinking-water-health-advisories-cyanotoxins> (last accessed Aug. 22, 2022) (for example, EPA issued health advisories for cyanotoxins, cylindrospermopsin, and microcystins in 2015).

323. Env't Prot. Agency, *Basic Information on the CCL and Regulatory Determination*, <https://www.epa.gov/ccl/basic-information-ccl-and-regulatory-determination> (last accessed Aug. 20, 2022).

324. *Id.*

325. *See, e.g.*, Environmental Protection Agency, *Revisions to the Unregulated Contaminant Monitoring Rule (UCMR 5) for Public Water Systems and Announcement of Public Meetings*, 86 Fed. Reg. 73131 (December 27, 2021); 40 C.F.R. §141.35 (2022); 40 C.F.R. §141.40 (2022).

326. *Id.* at 73136.

or substantially likely to occur in public water systems at the “frequency and at levels of public health concern”; and contaminant regulation “presents a meaningful opportunity for health risk reduction” for water system users.³²⁷ The EPA then documents its determinations and announces its intent to propose national primary drinking water regulations for unregulated contaminants satisfying these criteria.³²⁸

Even before the 2015 SDWA amendments added specific algal toxin requirements to the statute, the EPA identified some algal toxins as contaminants of concern for drinking water.³²⁹ EPA’s first CCL (CCL1), which was issued in 1998, included “[c]yanobacteria (blue-green algae), other freshwater algae, and their toxins” on the unregulated microbiological contaminants list.³³⁰ The CCL1 accorded priority to these algal toxins concerning their occurrence and for health, analytical methods, and treatment research.³³¹

In adding these algal toxins to the CCL1, the EPA noted its opinion that “algal control was best handled through good watershed management practices.”³³² However, as one reason for the toxins’ addition to the list, the EPA cited the agency’s recognition that “some data suggest that current treatment techniques may be particularly inadequate in controlling algal toxins.”³³³ The EPA also specified the listing would make these algal toxins “a priority for research to determine what triggers toxic algal growth in source water and the effectiveness of water treatment practices.”³³⁴ The EPA included cyanotoxins, individually or as a group, in CCL2, CCL3, and CCL4—which were issued in 2005, 2009, and 2016 respectively.³³⁵

As directed in the 2015 SDWA amendments, the EPA released an assessment and management strategic plan concerning algal toxins.³³⁶

327. *Id.*

328. *See, e.g.,* Environmental Protection Agency, *Announcement of Final Regulatory Determinations for Contaminants on the Fourth Drinking Water Contaminant Candidate List*, 86 Fed. Reg. 12272 (March 3, 2021) (this 2021 announcement is based on CCL4, which was published in 2016. Environmental Protection Agency, *Drinking Water Contaminant Candidate List 4—Final*, 81 Fed. Reg. 81099, 81107, 81112 (Nov. 17, 2016) [CCL4]).

329. *Announcement of the Drinking Water Contaminant Candidate List*, 63 Fed. Reg. 10274 (Mar. 2, 1998).

330. *Id.* at 10275.

331. *Id.* at 10286 (these toxins were listed second in the priorities lists for health and analytical research and third in the priorities lists for treatment research and occurrence considerations).

332. *Id.* at 10281.

333. Environmental Protection Agency, *Announcement of the Drinking Water Contaminant Candidate List; Notice*, 63 Fed. Reg. 10274, 10281 (Mar. 2, 1998).

334. *Id.*

335. *Drinking Water Contaminant Candidate List 3-Final*, 74 Fed. Reg. 51850, 51852, 51860 (Oct. 8, 2009); *Drinking Water Contaminant Candidate List 4-Final*, 81 Fed. Reg. 81099, 81107, 81112 (Nov. 17, 2016).

336. U.S. Env’t Prot. Agency, 810R04003, *Algal Toxin Risk Assessment and Management Strategic Plan for Drinking Water* (2015).

Among other considerations, this assessment addressed the existing “information gaps” concerning cyanotoxins and HABs:

The relationship among factors that promote algal bloom and subsequent toxin production are not well understood. Those factors include both environmental conditions such as water clarity, meteorological conditions, alteration of water flow, vertical mixing, temperature and water quality conditions such as pH changes, nutrient loading (principally in various forms of nitrogen and phosphorus) and trace metals. . . . More information is also needed to better understand how climate change will affect the geospatial and temporal distribution of HABs. For example, studies have shown that increases in temperature, altered rainfall patterns, and anthropogenic nutrient loading may lead to an increase in bloom frequency, intensity, duration and geographic distribution [citation omitted] Given the potential increase in cyanobacterial blooms due to both the direct and indirect effects of climate change, understanding the effects at a regional scale can help water systems prepare for potential blooms that could occur due to changes in regional climate.

A better understanding of risk communication in the context of risk management is also needed for cyanotoxins and HABs. . . . Although systems have been dealing with algal blooms for some time, additional training is needed regarding the cyanotoxin-producing blooms, on preventing the toxins from reaching finished water as well as training on how to handle communication situations as described above once cyanotoxins occur in finished water. PWS training can also help systems understand the impacts of the management cost consequences to the PWS for preparation and response measures to cyanotoxin occurrence.³³⁷

The draft 2021 CCL5 references this assessment and proposes to continue listing the cyanotoxin group as unregulated chemical contaminants.³³⁸

E. Agricultural Laws

The Soil and Water Resources Conservation Act (RCA) is a federal law that delegates to the USDA “broad natural resource strategic assessment and

³³⁷. *Id.*

³³⁸. Drinking Water Contaminant Candidate List 5-Draft, 86 Fed. Reg. 37948, 37953, 37962 (July 19, 2021).

planning authority.”³³⁹ As enacted in 1977 and through subsequent amendments, the RCA provides for “a coordinated appraisal and program framework” for the nation’s soil and water resources.³⁴⁰ The statutory findings address: the “growing [present and future] demand on the soil, water, and related resources”; the USDA’s ability to assist land owners regarding “conservation and use” of these resources; the need for appraisal, assessment, inventory, and evaluation of these resources and of resource conservation; and consideration of “alternative approaches” to natural resource conservation programs.³⁴¹

The RCA is not a water quality regulatory statute. In delegating authority for implementation of the RCA’s provisions, Congress directed the USDA to: develop and update “a program for furthering the conservation, protection, and enhancement of the soil, water, and related resources” in the United States; conduct continuing appraisals of these resources as part of the RCA program; and establish “cooperative arrangements” with state, tribal, and local governments “to the fullest extent practicable.”³⁴² The RCA program framework, therefore, is largely based on research, reporting, and technical assistance.

The statute’s requirements for USDA appraisals focus on data development on resource quantities and on their “capability and limitations . . . for meeting current and projected demands on the resource base.”³⁴³ The RCA directs the agency to include its appraisal data on the following: status and conditions changes for these resources; costs and benefits of alternative soil and water conservation practices; costs and benefits of alternative irrigation practices; and “conservation plans, conservation practices planned or implemented, environmental outcomes, economic costs, and related matters” for USDA-administered conservation programs.³⁴⁴ In developing these five-year appraisals, the USDA must provide for public participation; cooperate with state, tribal, and local resource conservation agencies; and “solicit and evaluate recommendations for improving the appraisal.”³⁴⁵ In addition, the USDA must use available information and data from these agencies as well as private organizations.³⁴⁶ The USDA must also coordinate

339. U.S.D.A., *RCA Appraisal: Soil and Water Resources Conservation Act*, vi, https://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb1044939.pdf (September 10, 2022); 16 U.S.C. § 2001.

340. 16 U.S.C. § 2001(4).

341. *Id.* § 2001(1)–(3).

342. *Id.* § 2003(a)–(c).

343. *Id.* § 2004(a)(2).

344. *Id.* § 2004(a).

345. *Id.* §§ 2004(c)-(d), 2004(e), 2006 (the current version of the statute requires the USDA to complete these periodic appraisals by December 31st of 2010, 2015, and 2022; the statute requires submission of these appraisals to Congress).

346. 16 U.S.C. § 2008.

actions with other federal agencies in an effort to “avoid unnecessary duplication and overlap of planning efforts.”³⁴⁷

Similar to the requirements for resource assessment, the USDA program development provisions require the USDA to continue to evaluate and improve its conservation programs in cooperation with federal, state, tribal, and local agencies.³⁴⁸ The long-term effect of the RCA’s program implementation and appraisal provisions are apparently quite limited, as they are currently scheduled to sunset on December 31, 2023.³⁴⁹ In soliciting comments for its program, the USDA recognizes the nonregulatory nature of its statutory mandates.³⁵⁰

While the RCA does not directly address agricultural nutrient pollution, some agricultural activities affecting water quality through nutrient pollution are regulated under federal water quality law. For example, the federal Clean Water Act requires NPDES permits for certain aquacultural facilities and concentrated animal feeding operations to address discharges from these facilities.³⁵¹ Under the Clean Water Act, the EPA has also issued a general NPDES discharge permit for pesticide use and application.³⁵² In addition, the CZMA addresses nonpoint source runoff (including nutrient pollution) by requiring coastal states with approved CZMA management programs to reduce polluted runoff via specific land-based measures.³⁵³

Another federal law with regulatory implications for agricultural operations is the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA), which governs pesticide registration, sale, distribution, and use in the United States and delegates regulatory authority to the EPA.³⁵⁴ Not limited to agricultural pesticide use, FIFRA statutory and regulatory provisions include requirements related to: pesticide registration and

347. *Id.*

348. *Id.* § 2005(a)–(c) (the program deadlines in the current version of the statute are a year after the assessment deadlines (i.e., December 31 of 2011, 2016, and 2023)).

349. *Id.* § 2009.

350. *See, e.g.*, Notices: Soil, Water, and Related Resources, 53 Fed. Reg. 10135, 10135 (U.S.D.A. Mar. 29, 1988) (quoting: “Although the national program does not propose or direct any specific Federal actions that would affect the human environment so as to require an analysis under section 102(2)(c) of the National Environmental Policy Act, 42 U.S.C. 4332(2)(c), an environmental assessment was conducted by the Department of Agriculture in the development of the program”).

351. 33 U.S.C. § 1362(14); 40 C.F.R. § 122.23 (Concentrated Animal Feeding Operations); 40 C.F.R. § 122.24 (Concentrated Aquatic Animal Production Facilities).

352. 33 U.S.C. § 1342.

353. *See id.* § 1451–1466 (other CZMA sections address nonpoint source pollution in non-mandatory ways). *See also* Eva Lipiec, CONG. RSCH. SERV., R45460, COASTAL ZONE MANAGEMENT ACT (CZMA): OVERVIEW AND ISSUES FOR CONGRESS 3 fn. 7 (2019) [https://crsreports.congress.gov/product/pdf/R/R45460#:~:text=Reauthorization%20Amendments%20Act%20\(%C2%A76127,through%20specific%20land%2Dbased%20measures](https://crsreports.congress.gov/product/pdf/R/R45460#:~:text=Reauthorization%20Amendments%20Act%20(%C2%A76127,through%20specific%20land%2Dbased%20measures) (acknowledging the lack of mandatory sections).

354. 7 U.S.C. § 136(a)–(w), (FIFRA regulation provides for pesticide regulation in a broad array of uses and is not limited to agricultural pesticide use).

labeling; worker protection standards; use of restricted pesticides or pesticides covered by experimental use permits; pesticide applicators; and pesticide storage, disposal, transportation, and recall.³⁵⁵ FIFRA provides for federal-state cooperation.³⁵⁶ The statute also authorizes EPA administrative actions and enforcement through criminal and civil penalties for FIFRA violations.³⁵⁷

FIFRA includes specific provisions concerning agricultural pesticide use. The statute authorizes “minor use programs” within both EPA and USDA and authorizes grants to support research concerning minor use pesticides.³⁵⁸ FIFRA also includes an exemption for some agricultural pesticide use under an experimental use permit. The law includes a process for issuing experimental use permits for pesticides not otherwise authorized for use under the statute. The statute specifies an experimental use permit for a pesticide may be issued “only if the [EPA] Administrator determines that the applicant needs such permit in order to accumulate information necessary to register a pesticide”; further, the authorized pesticide use must be under EPA supervision and subject to the permit’s time limit, terms, and conditions.³⁵⁹ In addition, this type of permit may be revoked if its “terms or conditions are being violated[] or . . . are inadequate to avoid unreasonable adverse effects on the environment.”³⁶⁰ FIFRA, however, has an exemption allowing issuance of experimental use permits, “[n]otwithstanding the foregoing provisions of” this permitting statute, to “any public or private agricultural research agency or educational institution which applies for such permit.”³⁶¹ These permits are limited to a one-year term and other permit conditions, and they are authorized only “for purposes of experimentation.”³⁶²

Other than the laws mentioned above, much of the federal approach to controlling agricultural nutrient pollution is based on policy and voluntary efforts. While other environmental laws include regulatory and enforcement authority concerning agricultural practices and operations, USDA’s role concerning nutrient pollution is based largely on policy, guidance, assistance, and voluntary, incentive-based actions rather than regulation and enforcement.³⁶³ The USDA describes its categories of policy-based

355. *Id.* §§ 136(a), 136(c), 136(i), 136(j), 136(l), 136(q).

356. *Id.* §§ 136(v), 136(w), 136(w)(1).

357. *Id.* § 136(c)–(d).

358. *Id.* § 136(II).

359. *Id.* § 136c(a).

360. *Id.* § 136c(e).

361. *Id.* § 136c(g).

362. *Id.*

363. *Landscape Conservation Initiatives*, U.S. DEP’T OF AGRIC., NAT. RES. CONSERVATION SERV., <https://www.nrcs.usda.gov/programs-initiatives/landscape-conservation-initiatives> (last visited Feb. 27, 2023).

environmental programs as: “involuntary measures that are, to varying degrees, coercive; voluntary measures providing varying amounts of financial incentive; and facilitative measures that rely primarily on information.”³⁶⁴

The USDA Natural Resources Conservation Service (NRCS) defines nutrient management as: “[m]anaging the right amount, right source, right placement, and right timing of the application of nutrients and soil amendments to ensure adequate soil fertility for plant production and to minimize the potential for environmental degradation, particularly air and water quality impairment.”³⁶⁵ The USDA’s approach to addressing nutrient pollution thus focuses on these “4Rs of Nutrient Management” (i.e., right rate, source, placement, and timing).³⁶⁶

NRCS develops and publishes Field Office Technical Guides to provide “technical information about the conservation of soil, water, air, and related plant and animal resources” with scientific information, criteria, and recommended practices.³⁶⁷ These guides are a compilation of NRCS publications providing conservation practice standards, information sheets, physical effects worksheets, and job sheets.³⁶⁸ Conservation practice standards, as described by the NRCS, are guidelines for “planning, designing, installing, operating and maintaining conservation practices.”³⁶⁹ These standards identify minimum criteria that may be less restrictive than those adopted by states.³⁷⁰

The NRCS’s conservation practice standard for nutrient management, based on the 4Rs, provides guidance to achieve effective nutrient management for stated purposes. One of those purposes is “minimiz[ing] agricultural nonpoint source pollution of surface and groundwater

364. *Policy Instruments for Protecting Environmental Quality*, U.S. DEP’T OF AGRIC., ECON. RSCH. SERV., <https://www.ers.usda.gov/topics/natural-resources-environment/environmental-quality/policy-instruments-for-protecting-environmental-quality/> (last visited Sept. 10, 2022).

365. U.S. DEP’T OF AGRIC., NAT. RES. CONSERVATION SERV., *National Nutrient Management Policy*, Title 190 of General Manual, Part 402, 402.1(3) (January 2012).

366. *Id.*

367. *Field Office Technical Guide*, U.S. DEP’T OF AGRIC., NAT. RES. CONSERVATION SERV., <https://www.nrcs.usda.gov/resources/guides-and-instructions/field-office-technical-guides> (last visited Feb. 27, 2023).

368. *Conservation Practice Standards Information*, U.S. DEP’T OF AGRIC., NAT. RES. CONSERVATION SERV., <https://www.nrcs.usda.gov/getting-assistance/conservation-practices> (last visited Feb. 28, 2023).

369. *Field Office Technical Guide*, U.S. DEP’T OF AGRIC., NAT. RES. CONSERVATION SERV., <https://www.nrcs.usda.gov/resources/guides-and-instructions/field-office-technical-guides> (last visited Feb. 27, 2023).

370. *Conservation Practice Standards*, U.S. DEP’T OF AGRIC., NAT. RES. CONSERVATION SERV., <https://www.nrcs.usda.gov/resources/guides-and-instructions/conservation-practice-standards> (last visited Feb. 28, 2023).

resources.”³⁷¹ Other purposes include proper use of “manure, municipal and industrial biosolids, and other organic by-products as plant nutrient sources” and maintenance or improvement of “the physical, chemical, and biological condition of soil.”³⁷² This standard’s general criteria provide for development of a “nutrient management plan for nitrogen, phosphorus, and potassium that considers the crop requirements and all potential sources of nutrients,” including both commercial fertilizer and animal manure.³⁷³

Some of the specific considerations related to nutrient sources, application, timing, and placement to address the impacts of agricultural nutrient pollution are described below:

- Select nutrient sources “compatible with the application timing, tillage and planting system, soil properties, crop, crop rotation, soil organic content, and local climate to minimize risk to the environment”;
- Determine the nutrient application, timing and placement “to correspond as closely as practical with nutrient uptake” and to “consider nutrient source, cropping system limitations, soil properties, weather conditions, drainage system, soil biology, and nutrient risk assessment results”,³⁷⁴
- Coordinate conservation practices to minimize nutrient transport “[w]hen there is a high risk of transport of nutrients . . . to avoid, control, or trap manure and nutrients before they can leave the field by surface or subsurface drainage”;
- Avoid surface nitrogen application during periods of soil saturation to avoid leaching before crop uptake;
- Use conservation practices with cover crops to test management options and assess nitrogen availability and impact on water quality;³⁷⁵
- Consider slow-release and controlled release fertilizers;

371. U.S. DEP’T OF AGRIC., NAT. RES. CONSERVATION SERV., *Conservation Practice Standard: Nutrient Management*, Code 590, 1 (Jan. 2012), <https://www.cayugacounty.us/DocumentCenter/View/1512/Natural-Resources-Conservation-Service-Conservation-Practice-Standard-Nutrient-Management-Code-PDF> (defining “nutrient management” as “[m]anaging the amount (rate), source, placement (method of application), and timing of plant nutrients and soil amendments”).

372. *Id.*

373. *Id.*

374. *Id.* at 3.

375. *Id.* at 4–5.

- Monitor fields with manure applications to identify excess phosphorus;
- Manage crop sequence and rotation to minimize the need for additional nitrogen; and
- Establish filter strips between agricultural crop land and sensitive areas (e.g., waterbodies or direct conduits to waterbodies).³⁷⁶

This standard is supplemented by the NRCS National Nutrient Management Policy and its “National Instruction” for policy interpretation, which are incorporated into the agency’s technical assistance and other efforts concerning nutrient management.³⁷⁷

The USDA’s conservation programs, as updated in the Agricultural Improvement Act of 2018, provide funding and technical assistance for conservation activities on natural resource lands related to water quality, soil health, and other environmental objectives.³⁷⁸ The agency administers numerous assistance programs, some of which are summarized below:

- The Conservation Reserve Program (CRP) provides for allocation among states of rental payments to landowners “who maintain cropland, marginal pasture, or grassland in grass or tree cover for 10–15 years.” The 2018 legislation increased the maximum acreage for this program to 27 million acres in fiscal year 2023 and incorporated the Conservation Reserve Enhancement Program (CREP) by statute. Additional CRP incentive payments may be available for “continuous signup” of lands into the program.³⁷⁹
- Payments to farmers are available under the Soil Health and Income Protection Pilot Program (SHIPP) for “establish[ing]

^{376.} *Id.* at 3.

^{377.} U.S. DEP’T OF AGRIC., NAT. RES. CONSERVATION SERV., *National Nutrient Management Policy*, Title 190 of General Manual, Part 402 (Jan. 2012).

^{378.} *Agriculture Improvement Act of 2018: Highlights and Implications, Conservation*, U.S. DEP’T OF AGRIC., ECON. RSCH. SERV., <https://www.ers.usda.gov/agriculture-improvement-act-of-2018-highlights-and-implications/conservation/> (last updated Aug. 20, 2019); *Agriculture Improvement Act of 2018: Highlights and Implications*, U.S. DEP’T OF AGRIC., ECON. RSCH. SERV., <https://www.ers.usda.gov/agriculture-improvement-act-of-2018-highlights-and-implications/> (last updated July 12, 2022).

^{379.} *Agriculture Improvement Act of 2018: Highlights and Implications, Conservation*, U.S. DEP’T OF AGRIC., ECON. RSCH. SERV., <https://www.ers.usda.gov/agriculture-improvement-act-of-2018-highlights-and-implications/conservation/> (last updated Aug. 20, 2019).

grass cover on less productive cropland for a period of 3–5 years.”³⁸⁰

- Under the Conservation Stewardship Program (CSP), agricultural producers may receive financial assistance for achieving specified “stewardship requirements on agricultural and forest lands” up to mandatory funding levels for different fiscal years. The 2018 legislation added a Grassland Conservation Initiative to provide assistance with protection of grazing and wildlife grasslands.³⁸¹
- The Environmental Quality Incentives Program (EQIP) is a financial assistance program to promote conservation practices’ implementation and maintenance on agricultural and forest lands. The 2018 legislation increased incentive payments for “highly beneficial practices,” created Conservation Incentive Contracts for annual and cost-sharing payments for “practices with broad resource benefits (e.g., cover crops, transition to resource conserving crop rotations),” and funding for Conservation Innovation grants to fund on-farm trials.³⁸²
- The Agricultural Conservation Easement Program (ACEP) funds long-term easements for wetlands restoration and protection on farmlands and protection against conversion of agricultural lands to other uses.
- The Regional Conservation Partnership Program (RCPP) provides financial assistance for funding problem solving “on a regional or watershed scale.” Under the 2018 Act, the USDA is required to “provide guidance on quantifying natural resource outcomes for projects” and allocates funding for “state and multistate projects” and for “projects centered on critical conservation areas.”³⁸³

As explained above, the USDA manages a variety of programs providing guidance, assistance, and funding to state agricultural programs and agricultural producers to promote the implementation of the standards,

380. *Id.*

381. *Id.*

382. *Id.*

383. *Id.*

criteria, and considerations in federal plans and programs. The National Agricultural Law Center tracks state legal approaches with three broad categories of regulated activities: nutrient management plans, application restrictions, and applicator certification.³⁸⁴ For purposes of identifying relevant state laws, the categories are described as follows:

The first category of “nutrient management plans” encompasses laws and regulations that mandate the development of written plans that manage the amount, source, placement and timing of plant nutrients and soil amendments. “Application restrictions” comprise the second category, which includes laws and regulations that place limitations on the physical application of agricultural nutrients to land. Our third category of “applicator certification” contains laws and regulations that establish minimum knowledge standards for the individuals who apply agricultural nutrients to land.³⁸⁵

Data current as of June 2020 shows that 48 states have adopted requirements for nutrient management plans, 16 states require certified fertilizer applicators for agricultural lands, and 33 states impose restrictions on fertilizer application.³⁸⁶ This data includes only 11 states that have adopted laws in all three categories, and 14 states had laws in two of those categories.³⁸⁷ The 16 states with laws in one category adopted nutrient management plan requirements rather than the fertilizer application laws or regulations.³⁸⁸

To address nutrient pollution from agricultural lands, states have also imposed these and other mandatory restrictions on agricultural operations as well as voluntary, incentive-based conservation measures.³⁸⁹ The approach to specific conservation measures may vary. For example, nutrient management plans have been used as both voluntary and mandatory measures.³⁹⁰ Other voluntary approaches include technical expertise, informational assistance, and economic incentives.³⁹¹ For example, some

384. Peggy Kirk Hall & Ellen Essman, *State Legal Approaches to Reducing Water Quality Impacts from the Use of Agricultural Nutrients on Farmland*, NAT'L AGRIC. L. CTR. 5 (May 2019), https://nationallawcenter.org/wp-content/uploads/assets/articles/agnutrient_report.pdf.

385. *Id.* at 4.

386. *Mandatory Legal Approaches to Agricultural Nutrient Management*, NAT'L AGRIC. L. CTR., <https://nationalaglawcenter.org/state-compilations/nutrientmanagement/> (last visited Sept. 10, 2022).

387. *Id.*

388. *Id.*

389. Peggy Kirk Hall & Ellen Essman, *State Legal Approaches to Reducing Water Quality Impacts from the Use of Agricultural Nutrients on Farmland*, NAT'L AGRIC. L. CTR. 21 (May 2019), https://nationalaglawcenter.org/wp-content/uploads/assets/articles/agnutrient_report.pdf

390. *Id.*

391. *Id.* at 4, 21.

states may provide financial incentives to encourage voluntary agricultural practices reducing agricultural nutrient pollution through land use buffers, conservation easements, ground cover on fertilized lands, and fertilizer (commercial and manure) application and timing.³⁹²

Some states have addressed nutrient pollution through laws concerning fertilizer composition and application. Most agricultural fertilizers include the primary nutrient components of nitrogen, phosphorus, and potassium.³⁹³ Excess fertilizer application can result in leaching or runoff of these components to ground and surface water bodies.³⁹⁴ Some states, like Michigan, that impose restrictions on phosphorus fertilizer application for other uses, exempt use of fertilizers on agricultural lands.³⁹⁵ States may also impose requirements for timing of fertilizer applications, cautions on fertilizer use, and land use restrictions, such as setbacks between agricultural lands where fertilizer may be applied near water bodies adjacent to those lands.³⁹⁶ For example, Minnesota restricts commercial nitrogen fertilizer (non-manure) applications during the fall and on frozen lands in areas that are vulnerable to groundwater contamination from nutrient pollution.³⁹⁷ Another approach is to adopt best practices for fertilizer or a model fertilizer ordinance prescribing requirements for fertilizer use or application. Pennsylvania law establishes fertilizer “best practices” for promoting effective fertilizer use and minimizing harm to water bodies from fertilizer use.³⁹⁸ As another example, Florida has implemented the model ordinance approach in state law.³⁹⁹

State laws may also require certification of fertilizer applicators. These laws may establish educational standards for persons authorized to apply nutrients to agricultural lands. For example, Ohio law requires certified applicators for fertilizer applications on more than 50 acres of agricultural

392. The National Agricultural Law Center, *Mandatory Legal Approaches to Agricultural Nutrient Management*, <https://nationalaglawcenter.org/state-compilations/nutrient> (last accessed Sept. 10, 2022) (italics added).

393. U.S. EPA, Agriculture Nutrient Management and Fertilizer, <https://www.epa.gov/agriculture/agriculture-nutrient-management-and-fertilizer>, (last accessed Feb. 14, 2023).

394. *Id.*

395. Michigan Department of Agriculture & Rural Development, *Use Phosphorous Free Fertilizer*, https://www.michigan.gov/-/media/Project/Websites/mdard/documents/pesticide-plant-pest/feedsafetyandfertilizer/phosphorus_flyer.pdf?rev=d41337e25cb440efb26351d36d5453fc; Kristen L. Miller, *State Laws Banning Phosphorous Fertilizer Use*, (Feb. 1, 2012) <https://www.cga.ct.gov/2012/rpt/2012-r-0076.htm>.

396. Kristen L. Miller, *State Laws Banning Phosphorous Fertilizer Use*, CGA (Feb. 1, 2012), <https://www.cga.ct.gov/2012/rpt/2012-r-0076.htm>.

397. Matthew Wilde, *Nitrogen Restrictions in Effect*, PROGRESSIVE FARMER (Jan. 1, 2021), <https://www.dmpf.com/agriculture/web/ag/news/article/2021/01/01/regulations-nitrogen-restrictions>.

398. S.B. 915, 2019-2020 Leg., Reg. Sess. (Pa. 2019).

399. Kristen L. Miller, *State Laws Banning Phosphorous Fertilizer Use*, CGA (Feb. 1, 2012), <https://www.cga.ct.gov/2012/rpt/2012-r-0076.htm>.

lands. The certification process includes training and testing for applicators (other than those previously certified) as certified crop advisers or certified livestock managers.⁴⁰⁰

Finally, states may establish program requirements or incentives concerning land use conservation practices and use restrictions to prevent or mitigate nutrient pollution from entering water bodies associated with agricultural lands. For example, Minnesota law includes nitrogen fertilizer restrictions and provides for buffer strips on agricultural lands.⁴⁰¹ Minnesota imposes, on average, 50 foot buffers for streams, lakes, and rivers on agricultural croplands and 16.5 foot buffers on agricultural ditches.⁴⁰² In addition, the Vermont Required Agricultural Practices rule imposes a buffer on ditches and surface water of 10 feet and 25 feet, respectively.⁴⁰³ The Vermont rule restricts fertilizer use to establishment and maintenance and bans the use of “manure or other agricultural waste” in these buffers, but the rule does allow harvesting within the buffers.⁴⁰⁴ Further, the Vermont’s Grassed Waterway and Filter Strip Program provides financing for up to 90% of implementation costs for filter strips (buffers) and an incentive payment for increasing buffer width.⁴⁰⁵

400. *Id.*; Nina Gage, *Don’t Forget Your Buffers*, State of Vermont, <https://agriculture.vermont.gov/don%E2%80%99t-forget-your-buffers> (last visited Feb. 14, 2023); Ohio Department of Agriculture, *Fertilizer: Agricultural Fertilizer Application Certificate*, <https://agri.ohio.gov/divisions/plant-health/licenses/fertilizer-licenses> (last visited Sept. 11, 2022); *A Summary of the Required Agricultural Practices*, Vt. Agency of Ag., Food & Markets (effective date Dec. 5, 2016).

401. *A Summary of the Required Agricultural Practices*, Vt. Agency of Ag., Food & Markets (effective date Dec. 5, 2016); Matthew Wilde, *Nitrogen Restrictions in Effect*, PROGRESSIVE FARMER (Jan. 1, 2021), <https://www.dtnpf.com/agriculture/web/ag/news/article/2021/01/01/regulations-nitrogen-restrictions>.

402. U.S. EPA, *Facts and Figures About the Great Lakes*, <https://www.epa.gov/greatlakes/facts-and-figures-about-great-lakes> (last visited Feb. 14, 2022).

403. Nina Gage, *Don’t Forget Your Buffers*, State of Vermont, <https://agriculture.vermont.gov/don%E2%80%99t-forget-your-buffers>, (last visited Feb. 14, 2023); *A Summary of the Required Agricultural Practices*, Vt. Agency of Ag., Food & Markets (effective date Dec. 5, 2016); *Required Agricultural Practices Rule for the Agricultural Nonpoint Source Pollution Control Program*, Vt. Agency of Ag., Food & Markets (effective date Nov. 23, 2018), https://agriculture.vermont.gov/sites/agriculture/files/documents/RAPFINALRULE12-21-2018_WEB.pdf.

404. *Id.*

405. Nina Gage, *Don’t Forget Your Buffers*, State of Vermont, <https://agriculture.vermont.gov/don%E2%80%99t-forget-your-buffers> (last visited Feb. 14, 2023); *A Summary of the Required Agricultural Practices*, Vt. Agency of Ag., Food & Markets (effective date Dec. 5, 2016); *Required Agricultural Practices Rule for the Agricultural Nonpoint Source Pollution Control Program*, Vt. Agency of Ag., Food & Markets (effective date Nov. 23, 2018), https://agriculture.vermont.gov/sites/agriculture/files/documents/RAPFINALRULE12-21-2018_WEB.pdf.

III. REGIONAL APPROACHES TO ADDRESSING HABs

There are several regional frameworks for initiatives and actions related to addressing the problem of HABs. States bordering, or with relation to, the Great Lakes, Chesapeake Bay, and Mississippi River have joined in cooperative efforts regarding actions to respond and work to mitigate and prevent HAB occurrences. Among other issues, the member states in these three regional networks are addressing the impacts of agricultural nutrient pollution on HAB proliferation and consequences. Similar to federal efforts, regional initiatives concerning HABs, and the contribution of agricultural nutrient pollution on HABs, are focused primarily on voluntary, incentive-based approaches rather than regulatory actions.

A. Great Lakes

The Great Lakes region is “one of the world’s largest surface freshwater ecosystems.”⁴⁰⁶ This region includes fresh surface water resources covering more than 750 miles and reflecting 84% of the continent’s supply and approximately 21% of the world’s supply.⁴⁰⁷ This region is home to more than 30 million people in the United States and Canada, reflecting 10% of the United States population and 30% of the Canadian population.⁴⁰⁸ Further, the Great Lakes region includes a substantial amount of agricultural production lands for both countries: approximately 25% for Canada and 7% for the United States.⁴⁰⁹

Water quality in the Great Lakes region has been a focus for national and international cooperation for nearly 70 years. In 1972, the United States and Canada executed a cooperative agreement to promote restoration, management, and protection of water quality for the Great Lakes (Superior, Michigan, Huron, Erie, and Ontario).⁴¹⁰ As amended several times since initial enactment, the 2012 Canada–United States Great Lakes Water Quality Agreement (GLWQA) includes provisions concerning water quality in two Canadian provinces and eight states with shoreline in the Great Lakes

406. *Facts and Figures about the Great Lakes*, U.S. ENV’T PROT. AGENCY, <https://www.epa.gov/greatlakes/facts-and-figures-about-great-lakes> (last accessed Sept. 11, 2022); *see also Great Lakes Protection Overview*, Government of Canada (Jan. 27, 2022), <https://www.canada.ca/en/environment-climate-change/services/great-lakes-protection/overview.html>.

407. *Facts and Figures about the Great Lakes*, U.S. ENV’T PROT. AGENCY, *supra* note 406.

408. *Id.*

409. *Id.*

410. *Id.*; Great Lakes Water Quality Agreement, Canada-U.S., art. 3 (b), Feb. 12, 2023; *see also Great Lakes Protection Overview*, Government of Canada (Jan. 27, 2022), <https://www.canada.ca/en/environment-climate-change/services/great-lakes-protection/overview.html>.

region.⁴¹¹ The GLWQA establishes a framework for cooperation in addressing priority water quality areas, including lake-wide management, chemicals, aquatic invasive species, vessel discharge, groundwater, habitat and species, and nutrient pollution.⁴¹²

As originally enacted, the GLWQA created a structure for efforts to restore and manage water quality in the Great Lakes.⁴¹³ The GLWQA identifies priorities and assesses progress on a regular basis. Article 5, § 2(c) of the GLWQA requires development of “binational priorities” for both science and action on a biennial basis to address present and future water quality threats in the Great Lakes.⁴¹⁴ In 2016, the United States and Canada agreed to an “annual load target” for total phosphorus in Lake Erie’s western and central basins in an effort to reduce phosphorus loads by 40% from the countries’ 2008 contribution levels. Recognizing phosphorus as a “major driver of the algae bloom in the western basin of Lake Erie,” the countries established target annual reductions for Lake Erie phosphorus loads of 212 tons and 3,316 tons for Canada and the United States, respectively.⁴¹⁵ The GLWQA 2020–22 action priorities identified for nutrients reflect the continuing need for action and progress; the report listed the following priority actions:

- Implement phosphorus reduction initiatives through the established binational and domestic strategies and plans;
- Monitor phosphorus concentrations in Lake Erie and report progress on achieving established phosphorus reduction targets; and
- Evaluate research to determine the feasibility of establishing Lake Erie targets for reducing phosphorus load.⁴¹⁶

411. Great Lakes Water Quality Agreement, Canada-U.S., annex 2 B. 7, Feb. 12, 2013; Pennsylvania Department of Environmental Protection, *Great Lakes Water Quality Agreement*, <https://www.dep.pa.gov/Business/Water/Compacts%20and%20Commissions/Great%20Lakes%20Program/Pages/Great-Lakes-Water-Quality-Agreement.aspx> (last accessed September 7, 2022).

412. *Id.*

413. Pennsylvania Department of Environmental Protection, *Great Lakes Water Quality Agreement*, <https://www.dep.pa.gov/Business/Water/Compacts%20and%20Commissions/Great%20Lakes%20Program/Pages/Great-Lakes-Water-Quality-Agreement.aspx> (last accessed September 7, 2022).

414. 2022 Progress Report of the Parties Pursuant to the 2012 Canada-U.S. Great Lakes Water Quality Agreement, ix, ix ISSN 2816-7783, EPA 905R22003.

415. *Id.* at 39.

416. *The Governments of Canada and the United States agree on 2020–2022 Great Lakes Binational Priorities for Science and Action*, BINATIONAL.NET, (Mar. 2, 2021) <https://binational.net/2021/03/02/bpsa-pbas-2020-2022/>.

The corresponding science priorities for nutrients during this period include: future climate impacts on Lake Erie’s nutrient conditions, nitrogen and other factors affecting toxicity of HABs, phosphorus sources and inter-lake phosphorus transport, and research and monitoring to assess interim phosphorus concentration and loading targets.⁴¹⁷

The 2022 GLWQA progress report recognized improvements made but concluded that more work on phosphorus loading in Lake Erie was needed.⁴¹⁸ This report identified factors impeding the countries’ ability to achieve the agreed 40% reduction target. The factors identified include: extended algae growing seasons promoted by temperature increases, increased intensity and duration of summer blooms facilitated through phosphorus contributions from “more frequent high intensity precipitation during the spring,” and increases in fall fertilizer application and other land management changes impacting phosphorus loading.⁴¹⁹ Despite some success, the report concluded that the countries were not able to achieve the phosphorus target.

Since 2018, Canada and the U.S., along with their partners, have enhanced their support for on-the-ground actions to reduce sources of phosphorus to Lake Erie as identified in their respective Domestic Action Plans. These actions are slowing phosphorus inputs that cause algae blooms in the lake. Since 2015, the U.S. has reduced phosphorus loading from agricultural and municipal sources to the watershed by over 3 million pounds (1,361 tons) per year. In Canada, edge-of-field studies indicate a 20-tonne annual reduction in phosphorus loads since 2020. These reductions are early indications that *actions being taken by the U.S. and Canada are on the right track, but the Parties are still a long way from meeting the 40% reduction target.*

Modeling suggests that at least 50% of the agricultural landscape in Canada and the U.S. will need to have conservation practices implemented to achieve the targets and reduce harmful algal blooms and hypoxia in Lake Erie. To date, *there is no evidence of a declining trend in phosphorus loads*, as shown in the figure below. Across the basin, progress has been highly variable with some tributaries showing improvement and yet others remain stable or are degrading.⁴²⁰

417. *Id.*

418. 2022 Progress Report of the Parties Pursuant to the 2012 Canada-U.S. Great Lakes Water Quality Agreement, *supra* note 414 at 39.

419. *Id.*

420. *Id.* (emphasis added).

While a major initiative to address water quality in the Great Lakes, the GLWQA was not the first multi-governmental effort to respond to the water quality problems in this region. The GLWQA was preceded by a multi-state Great Lakes effort initiated nearly 20 years earlier, when the Great Lakes Basin Compact was approved.⁴²¹ The Great Lakes Commission, which originated from the GLWQA, currently includes Illinois, Indiana, Michigan, Minnesota, New York, Ohio, Pennsylvania, and Wisconsin.⁴²² The 2017 Strategic Plan for the Great Lakes Commission identified rural and urban water quality as challenges and specified “strategic actions,” including: water quality projects to “reduce sediment and nutrient loads”; funding to address “sediment and nutrient runoff”; and action on “innovative approaches to manage sediment and nutrient loading” in priority watersheds.⁴²³ This plan included other strategic actions, such as creation of the HABs Collaborative and participation in GLWQA priority actions. Further, this plan identified a need for advocacy “for refinements to U.S. federal policy and legislation to protect and improve water quality, including the U.S. Clean Water Act, the U.S. Safe Drinking Water Act, the U.S. Water Resources Development Act, and the U.S. Farm Bill.”⁴²⁴

The Great Lakes Commission established the HABs Collaborative in 2015 to facilitate HAB science, policy, and information communications. The goal was to create a “common knowledge basis of current science and science needs, strategies for transmitting key science to managers, and opportunities [for] getting management feedback on science-based decision support needs.”⁴²⁵ Further, the Great Lakes Commission manages the Great Lakes Sediment and Nutrient Reduction Program, a federal-state partnership established in 1988, to provide grant funding for sediment and nutrient erosion and control projects implemented within the Great Lakes region by state and local governments and by nonprofit organizations. The Great Lakes Commission reported that this program has addressed nutrient pollution by helping to “prevent millions of pounds of phosphorus and tons of sediment

421. Great Lakes Commission des Grands Lacs, *Governing Documents*, <https://www.glc.org/about/documents> (last visited Feb. 14, 2023).

422. *Id.* (New York, Ohio, and Pennsylvania signed the Great Lakes Basin Compact after the initial five signatories. *Id.* After the states’ ratifications, Congress granted consent to the Great Lakes Basin Compact in 1968).

423. Great Lakes Commission des Grands Lacs, *Strategic Plan for the Great Lakes Commission 2017-2022*, 4 (adopted Jan. 2017), https://www.glc.org/wp-content/uploads/2013/07/GLC-strategic-plan_Final_Adopted-Jan-13-2017.pdf; Great Lakes Commission des Grands Lacs, *About the HABs Collaborative*, <https://www.glc.org/work/habs> (last visited Sep. 11, 2022) (priority watersheds were identified as Lower Fox/Green Bay, Saginaw River/Bay, and Maumee river/Western Lake Erie Basin).

424. *Strategic Plan for the Great Lakes Commission 2017-2022*, *supra* note 423 at 4.

425. Great Lakes Commission des Grands Lacs, *About the HABs Collaborative*, <https://www.glc.org/work/habs> (last visited Sep. 11, 2022).

from reaching the Great Lakes by funding innovative practices to address these issues.”⁴²⁶

The Great Lakes Commission also created a mechanism for member states to report water quality actions and results. The “Blue Accounting” information service “tracks the region’s efforts to tackle critical issues facing the Great Lakes.”⁴²⁷ Nutrients contributing to Lake Erie HABs are one of the issues tracked by Blue Accounting. States’ efforts are considered from the perspective of agreements within the scope of the GLWQA.⁴²⁸

B. Chesapeake Bay

The Chesapeake Bay is the largest estuary in the United States and, like the Great Lakes region, is a water body that has been plagued with water quality issues for many years. The Chesapeake Bay is a 64,000-square-mile watershed that includes “more than 18 million people and 3,000 species of plants and animals” in six states and the District of Columbia.⁴²⁹ In 2009, President Obama formally recognized the need for a “renewed effort to restore and protect” this “national treasure” in the Chesapeake Bay Protection and Restoration Executive Order.⁴³⁰ The Executive Order described the state of water quality in the Chesapeake Bay at that time:

Despite significant efforts by Federal, State, and local governments and other interested parties, water pollution in the Chesapeake Bay prevents the attainment of existing State water quality standards and the “fishable and swimmable” goals of the Clean Water Act. At the current level and scope of pollution control within the Chesapeake Bay’s watershed, restoration of the Chesapeake Bay is not expected for many years. *The pollutants that are largely responsible for pollution of the Chesapeake Bay are nutrients, in the form of nitrogen and phosphorus, and sediment.* These pollutants come from many sources, including sewage treatment plants, city streets, development sites, agricultural operations, and deposition from the

426. *Id.*

427. Great Lakes Commission des Grands Lacs, *About Blue Accounting*, <https://www.blueaccounting.org/about/> (last visited Sep. 11, 2022). Other issues tracked by Blue Accounting aquatic invasive species and drinking water quality.

428. *Id.*

429. Chesapeake Bay Foundation, *Our Mission: Saving a National Treasure*, <https://www.cbf.org/about-cbf/our-mission/> (last visited Sep. 11, 2022).

430. Exec. Order No. 13508, *Chesapeake Bay Protection and Restoration*, Preamble (2009), https://obamawhitehouse.archives.gov/realitycheck/the_press_office/Executive-Order-Chesapeake-Bay-Protection-and-Restoration.

air onto the waters of the Chesapeake Bay and the lands of the watershed.⁴³¹

The Executive Order established a federal, multi-agency committee “to oversee the development and coordination of programs and activities” for “protection and restoration of the Chesapeake Bay.”⁴³² In addition, the Executive Order required the committee to develop a strategy to define environmental goals and progress milestones concerning: environmental conditions; environmental changes; “specific programs and strategies to be implemented”; mechanisms assuring coordinating and effectiveness of activities; and an implementation process for “adaptive management principles” toward goal attainment.⁴³³ Further, the Executive Order required the federal agencies to coordinate their programs and activities with the Chesapeake Bay states.⁴³⁴

States created their own organizations to address water quality issues in the Chesapeake Bay. The Chesapeake Bay Foundation was created in 1996 with a mission to provide “education, advocacy, litigation, and restoration to turn the tide and leave a legacy of clean water” in this region.⁴³⁵ The region includes parts of Maryland, Delaware, New York, Pennsylvania, Virginia, West Virginia, and the District of Columbia.⁴³⁶

The Chesapeake Bay Foundation has focused on various sources of water quality challenges in the Chesapeake Bay region. Some of the areas of focus and measures to address them are runoff pollution, climate change, aquatic dead zones, fisheries, land use, and habitat loss.⁴³⁷ Despite the stated benefits from agricultural lands, the Foundation recognizes that “agricultural lands also contribute nitrogen, phosphorus, and sediment pollution to our rivers and streams.”⁴³⁸ The Foundation also identifies largely voluntary, incentive-based approaches to resolving nutrient pollution from agricultural operations.⁴³⁹ For example, the Foundation supports “programs and policies that slow the loss of farmland and prevent sprawl” to preserve the natural

431. *Id.* (italics added).

432. *Id.* at § 201 (member agencies included the EPA, the Departments of Agriculture, Commerce, Defense, Homeland Security, the Interior, Transportation, and “such other agencies as determined by the Committee”).

433. *Id.*

434. *Id.*

435. Chesapeake Bay Foundation, *Our Mission: Saving a National Treasure*, <https://www.cbf.org/about-cbf/our-mission/> (last visited Sep. 11, 2022).

436. *Id.*

437. Chesapeake Bay Foundation, *The Issues*, <https://www.cbf.org/issues/> (last viewed Sep. 11, 2022).

438. Chesapeake Bay Foundation, *Agriculture—Farmers Play a Critical Role in Keeping Our Waters Clean*, <https://www.cbf.org/issues/agriculture/> (last visited Sep. 11, 2022).

439. *Id.*

water filters provided by farmland and open space.⁴⁴⁰ The Foundation also advocates “for conservation programs and projects “that limit polluting runoff: stream buffers, cover crops, rotational grazing, and other best management practices.”⁴⁴¹ Those best management practices include:

- Streamside forest buffers and/or fencing;
- Conservation tillage (continuing no-till practice);
- Conservation crop rotation (planned crop rotation sequence);
- Rotational grazing practices;
- Planting of trees on grazing land (silvopasture);
- Conversion of cropland to pasture;
- Use of cover crops; and
- Implementation of nutrient management plans.⁴⁴²

The Foundation’s support notes that “widespread use of these practices on Bay region farms could reduce the amount of nitrogen pollution flowing into the Bay from nonpoint sources by as much as 60 percent.”⁴⁴³ The Foundation also notes that, through implementation of these best management practices, the Chesapeake Bay region “could achieve almost two-thirds of the nitrogen and phosphorus reductions necessary to restore the Chesapeake Bay, at only 13 percent of the total cost of Bay restoration.”⁴⁴⁴

The Chesapeake Bay Clean Water Blueprint governs plans and targets to achieve, by 2025, the identified pollution limits specified in the 2010 Chesapeake Bay total maximum daily load (TMDL). This Blueprint and the TMDL, which resulted from a 2010 settlement of litigation brought by the EPA, required the six states and the District of Columbia (with membership in the Chesapeake Bay Foundation) to develop individual plans to achieve specified water quality milestones.⁴⁴⁵ Those individual plans and milestones collectively created the Chesapeake Bay Clean Water Blueprint.⁴⁴⁶

440. *Id.*

441. *Id.*

442. Chesapeake Bay Foundation, *Regenerative Agriculture's Top Eight Conservation Practices*, <https://www.cbf.org/issues/agriculture/eight-key-conservation-practices-used-in-regenerative-agriculture.html> (last visited Sep. 11, 2022).

443. Chesapeake Bay Foundation, *Agriculture—Farmers Play a Critical Role in Keeping Our Waters Clean*, *supra* note 443.

444. *Id.*

445. Chesapeake Bay Foundation, *What is the Chesapeake Clean Water Blueprint?*, <https://www.cbf.org/how-we-save-the-bay/chesapeake-clean-water-blueprint/what-is-the-chesapeake-clean-water-blueprint.html> (last accessed Sep. 11, 2022).

446. *Id.*

How well have efforts by those states worked to achieve their plan goals and milestones? The 2021 State of the Blueprint report's description of the progress of three Chesapeake Bay Foundation states (Pennsylvania, Maryland, and Virginia) provides some results.⁴⁴⁷ The report identifies the status of these states' efforts based on three levels of achievement of projected load targets: (1) on track ("less than 10% off target"); (2) in danger of being off track ("within 10–25% of target"); and (3) off track ("more than 25% off target or pollution is increasing").⁴⁴⁸ The results in the 2021 report demonstrate that the efforts of these three states to achieve their agricultural nutrient pollution targets had not been successful to that point.

Pennsylvania: According to the report, agriculture is the means by which Pennsylvania plans "to achieve more than 90 percent of its remaining nitrogen-pollution reductions."⁴⁴⁹ This plan is based on significant estimated nutrient pollution reductions (more than two million pounds) from agricultural conservation practices. The report reflects that, as of 2021, the state "remains significantly behind, and a major acceleration of financial and technical assistance is essential to help farmers establish the conservation practices needed to reach Pennsylvania's commitment."⁴⁵⁰

The report concluded Pennsylvania was "off track" in achieving two of its agricultural objectives. First, assisting farmers with implementation of "crop- and soil-management practices [e.g., nutrient management plan implementation and conservation practices] that improve long-term soil health." Second, establishing a "comprehensive communication/outreach strategy to engage farmers/landowners in planting and maintaining riparian forest buffers and technical assistance and funding sources to achieve 95,000 acres of forested buffers by 2025."⁴⁵¹ The report also noted Pennsylvania was "in danger of being off track" in developing a strategy for compliance and enforcement for farm inspections and verification of nutrient pollution reduction plans.⁴⁵²

The report noted that some steps in achieving objectives had been taken. These steps included: state funding for riparian forest buffers through existing grant programs to build capacity for tree planting and care; a cost-share program for developing nutrient pollution reduction plans; plan verification for more than 11,000 farms during the period 2016–20; and

447. Chesapeake Bay Foundation, *2021 Chesapeake Bay State of the Blueprint: Pennsylvania, Maryland, and Virginia*, <https://www.cbf.org/document-library/cbf-reports/2021-state-of-the-blueprint-report.pdf>.

448. *Id.*

449. *Id.*

450. *Id.*

451. *Id.*

452. *Id.*

establishment of approximately 25% of the buffers projected by 2021.⁴⁵³ Based on these findings, the report identified “steps needed” to achieve plan objectives, including: completion of inspections for more than half of the state’s farms; legislation to create a program and funding for agricultural conservation assistance to implement the necessary conservation practices; financial and technical assistance to farmers for implementation of the plans’ practices; legislation to create a “dedicated, stable, state agricultural cost-share program” for investments in conservation practices; and funding and technical assistance to complete the remaining 75% of the buffers planned by 2021.⁴⁵⁴

Maryland: According to the report, as of 2021, Maryland was on track for achieving its objective to fully “implement Maryland’s phosphorus management program” and in danger of being off track for increasing “natural filters and healthy soil cover on agricultural land.”⁴⁵⁵ Despite progress in agricultural conservation practices, including voluntary actions to manage phosphorus from fertilizers, as well as in technical assistance and funding for filters and soil cover, the report concluded the state’s “broad strategies alone are not enough to put Maryland on pace to meet its targets for agriculture by the Blueprint’s 2025 deadline.”⁴⁵⁶ Necessary steps indicated in the report include: best practices for phosphorus management; “timely reporting” of soil phosphorus levels and farm practices to reduce excess phosphorus; increasing targets and improving timing for implementation of natural filters; prioritizing enhanced incentives for “diverse, year-round crop or pasture cover”; maximizing enrollment in the federal Conservation Reserve Enhancement Program (CREP); and standardizing natural filter restoration for conservation easement lands.⁴⁵⁷

Virginia: As of 2021, Virginia was in danger of being off track for implementing its nitrogen and phosphorus goals for agriculture related to: (1) “changes in cost-share practices to increase incentives for forested buffer implantation”;⁴⁵⁸ and (2) “legislation to track and require livestock exclusion and nutrient management.”⁴⁵⁹ The report noted that substantial work remained for the agricultural objectives, concluding that “[a]griculture represents nearly 70 percent of the remaining pollution reductions Virginia must make to meet its Blueprint targets.”⁴⁶⁰ Further, the report stated that “without finding ways to massively accelerate the adoption of conservation

453. *Id.*

454. *Id.*

455. *Id.* at 8.

456. *Id.*

457. *Id.*

458. *Id.* at 11.

459. *Id.*

460. *Id.*

practices on farms, [Virginia] will not meet its targets for agriculture by the 2025 deadline.”⁴⁶¹

For the first objective—cost-share practices—the report described the technical committee’s recommendation to create a cost-share program for streamside forested buffers during the first three years of creation and the need for state agency approval of the program.⁴⁶² Virginia reported 257 acres of forested buffers were planted in 2020. The report also identified the need for annual planting of “more than 6,000 acres of buffers”⁴⁶³ to achieve the 48,000 acres projected for 2025. Regarding legislation for tracking and requiring livestock exclusion and nutrient management, the report described 2020 legislation concerning cattle fencing for streams by 2026 if agricultural nutrient reduction targets could not be achieved within the Blueprint timeline. The report also noted Virginia conducted pilot studies that “evaluate[d] progress and established an approach to evaluate the remaining work.”⁴⁶⁴ Finally, the report identified the need for “[l]ivestock exclusion and nutrient management” in the state’s watershed plan and funding for the cost-share program.⁴⁶⁵

IV. ANALYSIS OF CURRENT APPROACHES AND PROPOSALS FOR FUTURE ACTION

*“You cannot escape the responsibility of tomorrow
by evading it today.”*

- Abraham Lincoln⁴⁶⁶

The time for action is now on the agricultural problem of nutrient pollution and its effect on the growth and proliferation of HABs. The causes and significant damaging impacts of HABs have been well known for a long time. The current strategies to address this national and international problem have been the subject of working groups, task forces, and research. A substantial body of studies, research, reports, and recommendations have been produced through these initiatives. Legislation, policy recommendations, incentives, funding, and technical assistance have produced scientific research, information, and recommendations about methods to detect and mitigate the effect of HABs and actions to prevent or

461. *Id.*

462. *Id.* at 11.

463. *Id.*

464. *Id.* at 12.

465. *Id.*

466. BRAINY, ABRAHAM LINCOLN, https://www.brainyquote.com/search_results?q=Abraham+Lincoln (last visited Aug. 12, 2022).

deter their occurrence. These efforts have also identified ways to reduce the impact of agricultural operations’ contribution to the HAB problem.

The products of the long period of studying agricultural nutrient pollution’s impact on HABs have not, however, led to real action. Despite the time, effort, and funds spent to study, assess, and make recommendations regarding the problem, there has been little in the way of legislation, regulation, policy, or other actions to actually effect change. Instead, federal and regional initiatives have largely taken a voluntary, incentive-based approach to agricultural nutrient pollution instead of a regulatory framework to mitigate and control the problem. Given the extensive knowledge of this issue as well as some potential solutions, legislators and regulators now need to take action to implement methods to reduce, mitigate, and prevent further impacts from agricultural nutrient pollution.

A. Federal

HABHCRA: The Harmful Algal Bloom and Hypoxia Research and Control Act (HABHCRA) was enacted more than 20 years ago. HABHCRA’s provisions have initiated an extensive body of research, assessment, and recommendations for effectively addressing nutrient pollution from agricultural operations. The significant resources, planning, and funding dedicated to development of this knowledge base have not been effectively utilized and should be applied now as the basis for action to implement solutions to the agricultural nutrient pollution problem. This need has already been identified by the Government Accountability Office (GAO), and recommendations to address this deficiency already have been presented to Congress.⁴⁶⁷

The GAO recently issued a report that evaluated the status of HABHCRA actions and issued findings regarding needed action and recommendations for managing HAB risks under federal law. Importantly, the GAO found the HABHCRA Task Force (i.e., the Interagency Working Group) failed to implement the national HAB and hypoxia program as required by the statute.⁴⁶⁸ The GAO finding states in relevant part:

We found that the working group has taken some actions to fulfill its responsibilities called for by the [A]ct, such as developing required plans and reports, but the group has not yet implemented a national HAB and hypoxia program under the act. The [A]ct calls for NOAA

467. GOVERNMENTAL ACCOUNTABILITY OFFICE, GAO-22-104449, WATER QUALITY, AGENCIES SHOULD TAKE MORE ACTIONS TO MANAGE RISKS FROM HARMFUL ALGAL BLOOMS AND HYPOXIA (2022).

468. *Id.* at 12.

and EPA, acting through the working group, to maintain and enhance a national HAB and hypoxia program, which is to include a statement of objectives, including to understand, detect, predict, control, mitigate, and respond to marine and freshwater HAB and hypoxia events. As part of this program, the [A]ct called for the development of a comprehensive research plan and action strategy to address marine and freshwater HABs and hypoxia.⁴⁶⁹

The report notes actions the working group has completed, including: a comprehensive research plan and action strategy in 2016; a 2018 progress report on implementation of the 2016 plan and action strategy; a Great Lakes regional plan for HAB reduction, mitigation, and control; and a 2021 coordination planning document to identify agencies' roles and duties.⁴⁷⁰ While noting these efforts, the GAO emphasized that the working group had not achieved the required program implementation:

The working group has not implemented a national HAB and hypoxia program under the [A]ct, according to the NOAA and EPA co-chairs. The co-chairs told [the GAO] that they have had conversations about the potential staffing and resources that would be required to run a national HAB and hypoxia program, but the working group has not formally defined what such a program would look like or identified a preferred approach.

According to the NOAA and EPA co-chairs, the working group has not implemented a national HAB and hypoxia program because of resource constraints and because the group has focused on other responsibilities, such as developing statutorily mandated reports. The [A]ct calls for the working group to, among other things, support the development of institutional mechanisms and financial instruments to further the objectives and activities of a national HAB and hypoxia program. However, the officials raised the concern that neither NOAA nor EPA has received funding specific to implementing such a program, and they stated that the agencies would need resources for additional staff to expand upon the existing coordination role of the working group. According to the officials, neither NOAA nor EPA, as co-chairs of the working group, has the resources or staff needed to implement a national program to address marine and freshwater HABs and hypoxia.⁴⁷¹

469. *Id.*

470. *Id.*

471. *Id.* at 14–15.

The GAO further reported that the working group has failed to “develop performance measures that would allow it to assess the results of federal efforts to manage the risks of HABs and hypoxia.”⁴⁷² A primary area of concern is the failure to “assess[] progress toward achieving the recommended goals” from the working group’s 2016 plan and strategy.⁴⁷³ The GAO cautioned that “failing to use performance measures and performance information to track progress toward outcomes can increase the risks of interagency efforts not achieving their outcomes.”⁴⁷⁴ Absent identified performance measures, the GAO concluded the working group’s co-chairs “cannot assess the results of federal agencies’ efforts to manage the risks of HABs and hypoxia, including the extent to which the [2016 plan and strategy’s] recommended goals . . . have been achieved.”⁴⁷⁵

An obvious immediate action, therefore, would be implementation of the national program called for by HABHCRA. After all the time and process that has occurred since HABHCRA’s enactment, the working group co-chairs’ admission that the group has not yet defined the national program’s parameters or the implementation approach is very concerning. Determining the components of the national program and the approach for program implementation must be identified as a priority and an urgent action item.

As part of that effort, Congress and the federal agencies should assess the time, legislative and regulatory requirements, and human and financial resources needed to effectively implement the national program. Various federal laws may be appropriate mechanisms to implement the new program’s requirements. For example, HABHCRA could be amended to provide new, substantive authorities for HAB and hypoxia management and control. Amendments to existing statutory programs such as the Clean Water Act, Safe Drinking Water Act, Coastal Zone Management Act, and National Environmental Policy Act, could create new requirements, permitting programs, and enforcement provisions to assure effective and accountable water quality actions to address HABs and hypoxia. Because of these statutory programs’ significance to both HABs and hypoxia, these legislative amendments should include specific provisions to reduce agricultural nutrients from polluting waterbodies and mitigate the effects of agricultural nutrient pollution.

Clean Water Act Regulation and Enforcement: As the nation’s primary legal framework for water quality, the Clean Water Act would seemingly be the natural choice as the vehicle for specific, direct regulation of nutrient pollution. Congress could reconsider the exemptions from pollutant and point

472. *Id.* at 16.

473. *Id.*

474. *Id.*

475. *Id.* at 18.

source definitions to include agricultural activities that contribute to nutrient pollution. Even if the exemptions were maintained, the Clean Water Act could be amended to include specific requirements for reducing agricultural nutrient discharges.

The failure to regulate agricultural nutrient discharges as a pollutant is a significant obstacle to effectively addressing nutrient pollution from agricultural operations.⁴⁷⁶ Agricultural activities could be directly regulated as point sources with specified criteria and permit conditions. Given the information known about the nature of agricultural discharges, the NPDES permitting approach could regulate agricultural nutrient discharges as either a point source or nonpoint source.⁴⁷⁷ If nonpoint, the program could be developed in a manner similar to the concentrated animal feeding operation permit program.

Nutrient discharges could be regulated through permitting of commercial fertilizer use, manure applications, or both. For these applications, NPDES permit conditions might be based on quantitative limits for specific nutrients or qualitative conditions based on best management practices. Even if the NPDES permit conditions are not based on specific numeric conditions, providing for permitting of nutrient discharges would provide some basis for restrictions on nutrient discharges.⁴⁷⁸ NPDES permit conditions would also assist planning and review of nutrient discharges impacts on water quality in agricultural areas.

Of course, significant change in the scope of the Clean Water Act's regulated activities, permitting requirements, and enforcement regarding nutrient discharges would require the political will to act and the initiative and resources to increase compliance. Environmental laws in general can be controversial topics for legislative action, and considering changes to the Clean Water Act would no doubt be a substantial challenge. The history of the Clean Water Act and its implementing regulations show that statutory changes to incorporate a robust regulatory structure for agricultural nutrient pollution could be very difficult to achieve.⁴⁷⁹

However, there is another option within the existing Clean Water Act framework to act on agricultural nutrient pollution. Compliance with numeric nutrient standards for total nitrogen and total phosphorus in state water quality standards is already within the scope of the statute and implementing regulations.⁴⁸⁰ Increased federal enforcement of states' compliance with development of these standards would increase focus on this problem. Under

476. *See infra* text accompanying notes 236–244.

477. *Id.*

478. *Id.*

479. *See infra* Part II(B).

480. *Id.*

the Clean Water Act, the EPA is responsible for ensuring compliance with the statute’s water quality standards directives and is authorized to develop criteria and standards for states that fail to do so.⁴⁸¹

Although the EPA has demonstrated reluctance to do so in the past, and has even been compelled by litigation to take action,⁴⁸² public attention and/or legislative direction may prompt an EPA response to the need for action. To date, no states have adopted a complete set of nitrogen and phosphorus criteria for all water types.⁴⁸³ Only eight states have adopted both nitrogen and phosphorus criteria for one or more water types; further, half of the states have failed to adopt any nitrogen, phosphorus, or chlorophyll-a criteria.⁴⁸⁴ Based on this poor record of compliance and the demonstrated lack of real progress, action by the EPA to enforce compliance—or to adopt criteria for noncompliant states—would create a real benefit.

Conservation Programs: The USDA has a variety of programs and policies to address agriculture’s environmental impacts. Several voluntary programs (e.g., Conservation Reserve Program, Conservation Stewardship Program, and Environmental Quality Incentives Program) provide payments and incentives to promote conservation actions, best management practices, and conservation measures on agricultural lands.⁴⁸⁵ While not limited to actions that promote reduction of nutrient pollution, these programs and other USDA conservation programs can induce positive change by increasing use of conservation practices known to mitigate nutrient pollution, such as buffers, filter strips, cover crops, and crop rotation.⁴⁸⁶

Given the substantial funding provided for land conservation and conservation practices on natural resources programs, evaluation and accountability for results is appropriate. For example, in 2017, approximately \$6 billion in federal funding was allocated to the five major programs for land retirement and conservation practices.⁴⁸⁷ Like the recommendations for HABHCRA, establishing performance measures and accountability for achieving those measures would allow the USDA and federal agencies to assess the value of the programs in addressing agricultural nutrient pollution. The data would be beneficial for determining the efficacy of established practices and priorities for funding.

481. *Id.*

482. *Id.*

483. *State Progress Toward Adopting Numeric Nutrient Water Quality Criteria for Nitrogen and Phosphorus*, Env’t Prot. Agency, <https://www.epa.gov/nutrient-policy-data/state-progress-toward-developing-numeric-nutrient-water-quality-criteria#tbl> (last accessed Feb. 11, 2023).

484. *Id.*

485. *See infra* text accompanying notes 378–383.

486. *Id.*

487. UNITED STATES DEPARTMENT OF AGRICULTURE, AGRICULTURAL RESOURCES AND ENVIRONMENTAL INDICATORS 2 (2019).

Federal Fertilizer Regulations: The federal approach to fertilizer application on agricultural lands is focused on the 4Rs: right amount, right source, right placement, and right timing. Research has shown that attention to the 4Rs can reduce the nutrient runoff or leaching that may occur from commercial fertilizer or manure application.⁴⁸⁸ The USDA has expressed its support for management practices that specifically address fertilizer application rate, timing, or method in their standards.⁴⁸⁹ Without a regulatory structure for the 4Rs, however, compliance with this approach is based on voluntary cooperation or incentives.

Regulation of fertilizer composition and application practices could promote reduction of agricultural nutrient pollution. Use of products and technologies that facilitate efficient fertilizer use (e.g., slow-release fertilizer and precision application technology) could be regulated under federal water quality or agricultural laws. Fertilizer composition could also be regulated under federal law to promote use of products that minimize impacts from nutrient leaching and runoff. Further, conditions requiring efficient fertilizers and best management practices to minimize nutrient pollution could be incorporated into any federal permitting or funding authorizations for agricultural lands. Additionally, federal law could require states receiving federal funding or exercising federally delegated permitting authority (e.g., Clean Water Act permits) to require use of agricultural best management practices, fertilizer composition and application restrictions and conditions, and conservation land use practices.

B. Regional

The Great Lakes Commission and Chesapeake Bay Foundation demonstrate an approach to information sharing and collaboration that may serve as a model for other states to follow, pertinent to agricultural nutrient pollution. The research and assessment initiatives and information exchange facilitated by those groups can leverage members' resources in seeking solutions to HAB-related problems.⁴⁹⁰ For areas in which research and data is not current or adequate, the collaborative nature of these groups may provide a great benefit.

As demonstrated by the experiences of the Great Lakes and Chesapeake Bay groups, however, these are not perfect models. Similar to the HABHCRA working group, the Great Lakes Commission and Chesapeake Bay Foundation have developed research, assessments, and reporting during

488. *See infra* text accompanying notes 365–377.

489. UNITED STATES DEPARTMENT OF AGRICULTURE, ERR-127, NITROGEN IN AGRICULTURAL SYSTEMS: IMPLICATIONS FOR CONSERVATION POLICY, 27 (2011).

490. *See infra* Part III(B)

the many years in which they have existed.⁴⁹¹ Unlike HABCRA, there has been some effort at the regional level to define benchmarks for progress. The progress reports issued by the Chesapeake Bay Foundation, for example, document member states’ progress in achieving those benchmarks and actions needed to improve performance in meeting the benchmarks.⁴⁹²

These regional groups do not have authority to mandate that member states enact specific legislation concerning agricultural nutrient pollution.⁴⁹³ However, they could collaborate on legislative proposals and commit to proposing legislation to accomplish their agreed objectives. Examples of legislative proposals that may be considered include: fertilizer composition and application restrictions; certified fertilizer applicator certifications; land use practices (e.g., buffers and use of cover crops) to reduce agricultural nutrient discharges; and conditions on state permitting or funding to promote agricultural nutrient best management practices and minimization of discharges. Similarly, federal funding for these regional groups could include conditions incorporating these legislative proposals as well as other actions to promote reduction of agricultural nutrient discharges.

CONCLUSION

“When we forget that we are embedded in the natural world, we also forget that what we do to our surroundings we are doing to ourselves.”
- David Suzuki⁴⁹⁴

The issues and options associated with agricultural nutrient pollution have been known for many years. Significant research conducted at the federal, regional, and state levels has provided extensive information about the causes, impacts, and methods to combat agricultural nutrient discharges. Research on agricultural nutrient pollution as well as assessments, planning, and reporting have demonstrated the needed understanding that this problem exists. However, the motivation—or political will—to act and implement specific, concrete steps to address the problem does not appear to exist. A sense of urgency is needed to motivate legislators, policymakers, and the public to prioritize the HAB problem generally and to address the impacts of agricultural nutrient pollution specifically. Given what we know about the problem and the consequences of delay, failure to act is not an option.

491. *Id.*

492. *Id.*

493. *Id.*

494. DAVID SUZUKI FOUNDATION ONE NATURE, DAVID SUZUKI, <https://david Suzuki.org/expert/david-suzuki/> (last visited Aug. 12, 2022).

RESOLVING THE PUBLIC LAND PARADOX: EXPOSING LANDLOCKED SCHOOL TRUST LANDS AS A BREACH OF TRUST

*Kevin Frazier**

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INTRODUCTION

The Public Land Paradox: if land is public and the public cannot access it, is it public land? The public land paradox applies to 6.35 million acres of state lands in the Western United States.¹ In Montana, 1.56 million acres are

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1. See THEODORE ROOSEVELT CONSERVATION P'SHIP, INACCESSIBLE STATE LANDS IN THE WEST 2, 5 (2019), https://www.trecp.org/wp-content/uploads/2019/11/2019-onX-TRCP-Report_for_web.pdf (defining the Western United States as Washington, Oregon, California, Idaho, Arizona, Utah, Arizona, New Mexico, Colorado, Wyoming, and Montana).

“landlocked”²—land that is “entirely landlocked by private lands, [thus] preventing legal access for outdoor recreation without permission from a neighboring landowner.”³ The vast majority of these lands are school trust land grants—the remainder are state forests, wildlife management areas, and state parks.⁴ The Montana Constitution requires that these lands “be held in trust for the people” (the Trust).⁵ An exploration of the purpose and terms of the Trust reveal that the State of Montana is currently in breach of its duties as trustee of these school trust lands.

Though courts, bureaucrats, and legislators have advanced two different conceptions of the purpose of the Trust, under either purpose the state has an obligation to unlock “landlocked” school trust lands and provide recreational access to those lands. The terms of the Trust explicitly provide the state with the means necessary to consolidate isolated parcels of land into accessible and more valuable larger blocks of school trust lands.⁶ If the state fails to make reasonable efforts to use those means, the state will be in breach of its duties. This article resolves a sizable part of the public land paradox by showing that school trust lands in Montana (as well as in states who joined the Union under the same or earlier enabling acts as Montana) must be made accessible to the public for recreational uses per the terms and purpose of the Trust in Montana.

The resolution of this paradox could not be timelier: Montana has sold less than 10% of the more than 5 million acres of school lands originally granted to the State.⁷ This means that any changes to how the State manages school trust lands will have wide-reaching effects on pristine parts of Montana. And, Montana’s lands are under increasing and immediate threat from increased wildfires,⁸ pressure to develop,⁹ and demand for outdoor

2. *Id.* at 6.

3. *Id.* at 1.

4. *See id.* at 2 (noting that of the 6.5 million acres of landlocked state lands in Western states, 95% are school trust lands).

5. MONT. CONST. art. X, § 11(1).

6. *See infra* Section II.

7. PATRICK H. BEDDOW, SCHOOL TRUST LANDS-MONTANA AND LAND BOARD COMMISSIONERS (Dec. 2020); Amelia Pak-Harvey, *Opportunity Lost: Nevada Began with Millions of Acres of School Trust Land to Help Pay for Public Education. What Happened to them?*, Las Vegas Rev. J. Local Educ. (Dec. 21, 2019), <https://www.reviewjournal.com/local/education/opportunity-lost-nevadas-school-trust-lands-sold-off-over-150-years-1905104/#:~:text=Opportunity%20lost%3A%20Nevada's%20school%20trust,public%20education%20is%20now%20gone.>

8. Kimiko Barrett, *Montana Wildfire Risk is Widespread and Growing*, HEADWATERS ECON., (Oct. 26, 2020), <https://headwaterseconomics.org/natural-hazards/montana-wildfire-risk-widespread>.

9. *See, e.g.*, Todd Wilkinson, *Is High-Flying Bozeman, Montana Losing the Nature of Its Place?*, MOUNTAIN J. (Nov. 24, 2020), <https://mountainjournal.org/will-human-population-growth-destroy-the-american-serengeti> (providing an example of developmental pressures in Montana).

recreation.¹⁰ The State's aversion to selling school trust lands has not prevented Montana from amassing significant savings for schools. The permanent fund, comprised of revenue generated by the school lands, has a current balance of \$700 million.¹¹

This article argues that the purpose of the Trust is two-fold: to maximize revenue (as suggested by the U.S. Supreme Court in a case inapplicable to Montana) or to "secure the largest measure of legitimate and reasonable advantage to the state" (as specified by statute and supported by the Montana Constitution, the intent of the drafters of the Montana Constitution, and the text of the 1889 Enabling Act). The State must unlock "landlocked" state trust lands to realize either purpose. The terms of the Trust explicitly allow for the State to fulfill that mandate. As long as the State neglects to use legal means to unlock these lands, Montana is in breach of its duties as trustee.

Part I of the article explains the origin of landlocked school trust lands. Part II examines how the State of Montana has organized itself to fulfill its duties as trustee of the State's school trust lands. Part III explores two different theories for the purpose of the Trust. Part IV details the terms of the Trust—the tools at the disposal of the State to realize the purpose of the Trust. Part V specifies that under either purpose of the Trust, the State has an obligation to unlock "landlocked" school trust lands.

I. ORIGIN OF LANDLOCKED SCHOOL TRUST LANDS IN MONTANA AND THE WEST

The checkerboard pattern of land distribution, which started in the 18th century, facilitated public lands being eventually enclosed by private lands—landlocked. In passing the General Land Ordinance of 1785, Congress funded a massive surveying effort—the surveyed land was then placed into the grid system. The General Land Ordinance also provided for the sale of western lands and the development of a land grant program intended to eventually support the public school system in western states.¹² The Northwest Ordinance of 1787 set the terms for when western territories could pursue statehood and, upon fulfillment of various procedural and substantive

10. See, e.g., Megan Lawson, *The Outdoor Recreation Economy by State*, HEADWATERS ECON. (Nov. 18, 2021), <https://headwaterseconomics.org/economic-development/trends-performance/outdoor-recreation-economy-by-state/> (reporting that 4.3% of Montana's GDP in 2020 came from outdoor recreation—the highest percentage of any state); see also Liz Rose, *40% of Most Important Colorado Elk Habitat is Affected by Trail Use*, THEODORE ROOSEVELT CONSERVATION P'SHIP. (Sept. 27, 2022), <https://www.trcp.org/2022/09/27/40-important-colorado-elk-habitat-affected-trail-use/> (reporting that in nearby Colorado the presence of recreational trails and the use of them has left nearly 40% of high-priority elk habitat at risk of being abandoned).

11. BEDDOW, *supra* note 7, at 2.

12. *Id.* at 1.

requirements, join the Union.¹³ Congress passing an enabling act marked the final step on a territory's path to statehood and the rights and obligations that came with that recognition.¹⁴

The Enabling Act of 1889 brought Montana, North Dakota, South Dakota, and Washington State into the Union. The Act made state-specific grants of federal lands for the purpose of financially supporting public schools. Specifically, the Act granted the sixteenth and thirty-sixth section of each township in the state.¹⁵ Montana received a grant of more than 5 million acres of school trust lands.¹⁶ No federal lands existed when the first 16 states entered the Union. States that subsequently joined the Union, however, had a comparatively diminished tax base because the federal government owned large portions of land within their respective borders.¹⁷ Revenue from leasing, selling, and otherwise managing school lands was meant to make up for that disadvantage by financially supporting “worthy objects helpful to the well-being of the people of [Montana] as provided in The Enabling Act.”¹⁸

However, lands were not always distributed in an orderly fashion. Around the 1850s, the federal government launched a process of claiming and enforcing legal title to westward lands.¹⁹ This process included making grants of specific sections of the aforementioned grid system to railroad companies and homesteaders.²⁰ The government distributed lands in a hurried pace to populate the frontier as quickly as possible and to establish property rights over western lands.²¹ One manifestation of this rush was the occasional unavailability of the designated township sections—sixteen and thirty-six—for school lands. The Secretary of Interior would approve the granting of alternative lands to make up for the shortage.²²

The general absence of planning left unanswered questions about how the resulting land distribution among private and public owners would affect

13. NW. ORDINANCE, ch. 8, 1 Stat. 51 (1787).

14. *Id.*

15. Enabling Act, ch. 180, § 11, 25 Stat. 676 (1889), amended by Act of May 7, 1932, 47 Stat. 150 (1932), amended by Act of October 16, 1970, 84 Stat. 987 (1970); Montanans for the Responsible Use of the Sch. Tr. v. State *ex rel.* Bd. of Land Comm'rs, 296 Mont. 402, 407 (1999).

16. *State Land Income Must Continue To Aid Schools, Says Mrs. Colburg*, TRIB. CAP. BUREAU (Jan. 28, 1972), <http://www.umt.edu/media/law/library/MontanaConstitution/brown/Const.%20Conv.%20newspaper%20clippings%20ocr.pdf> (reporting that 5.8 million acres had been granted); *see also* JON A. SOUDER & SALLY K. FAIRFAX, STATE TRUST LANDS: HISTORY, MANAGEMENT, AND SUSTAINABLE USE 20-21 (Univ. Press of Kan. 1996) (reporting that 5.1 million acres had been granted).

17. SOUDER & FAIRFAX, *supra* note 16, at 19.

18. MONT. CODE ANN. § 77-1-202 (2021).

19. Douglas W. Allen, *Establishing Economic Property Rights by Giving Away an Empire*, 62 J. L. & ECON. 251, 252 (2019).

20. *Id.*

21. *Id.*

22. BEDDOW, *supra* note 7, at 2.

access and development.²³ The federal government assumed that many grants to private landowners would eventually return to public hands, but that assumption failed as private landowners found ways to perpetually hold onto their grants.²⁴ It is relatively easy to see why the government did not intend for school trust lands to become surrounded by private lands. Isolated lands are less valuable, so a grant of isolated lands would not align with the grant's purpose of financial support for schools. Despite the government's hopes and plans, the overall scheme of land distribution "created a complex patchwork of interlocking and overlapping federal, state, and private land ownership patterns" and millions of acres of landlocked public lands in Montana and the rest of the West—most of which was, and is, school trust lands.²⁵

II. THE STATE OF MONTANA AS TRUSTEE OF SCHOOL TRUST LANDS

Though the 1889 Enabling Act made no mention of the respective states serving as trustees over the granted land,²⁶ Article X § 11 of the Montana Constitution established a trust relationship, with the State as trustee and the land as the Trust corpus.²⁷ Only the 1910 Enabling Act, applicable to New Mexico and Arizona, designated the respective state governments as trustees—a trust relationship grounded in federal law, rather than state law.²⁸

Montana statutory provisions establish the parts of the state government responsible for serving as trustee. For instance, the State assigned the Land Board (also referred to as "Board") the task of fulfilling the State's obligations as trustee.²⁹ The Department of Natural Resources and Conservation (DNRC) helps the Land Board fulfill its duties by implementing the decisions made by the Board.³⁰ Both the Land Board and the DNRC receive guidance on the proper interpretation of these statutes

23. Allen, *supra* note 19, at 252–53.

24. Robert S. Henry, *The Railroad Land Grant Legend in American History Texts*, 32 MISS. VALLEY HIST. REV. 171, 171–94 (1945), reprinted in *THE PUBLIC LANDS: STUDIES IN THE HISTORY OF THE PUBLIC DOMAIN* 121–44 (Vernon Carstensen ed., 2nd prt. 1968).

25. Charles L. Kaiser & Charles A. Breer, *Legal Issues Presented by Checkerboard, Inholding, and Split Estate Lands*, 40A ROCKY MTN. MIN. L. INST. 9, Introduction (1995); see THEODORE ROOSEVELT CONSERVATION P'SHIP, *supra* note 1, at 2 (noting that 95% of the 6.35 million acres of landlocked Western state lands are school trust lands).

26. Enabling Act, ch. 180, § 11, 25 Stat. 676 (1889), amended by Act of May 7, 1932, 47 Stat. 150 (1932), amended by Act of October 16, 1970, 84 Stat. 987 (1970).

27. MONT. CONST. art. X, § 11(2).

28. Sean E. O'Day, *School Trust Lands: The Land Manager's Dilemma Between Educational Funding and Environmental Conservation, a Hobson's Choice?*, 8 N.Y.U. ENV'T L.J. 163, 185 (1999).

29. MONT. CODE ANN. § 77-1-202 (2021).

30. Alex Sienkiewicz, *A Battle of Public Goods: Montana's Clean and Healthful Environment Provision and the School Trust Land*, 67 MONT. L. REV. 65, 69 (2006); See MONT. CODE ANN. § 77-1-301 (2021) (defining how the DNRC is to implement Board decisions).

from other government actors.³¹ If the Land Board does not properly interpret those statutes, then it may fail to perform its trustee duties.³²

The Montana Supreme Court has analyzed the Trust and contributed to the establishment of its terms and purpose. Beyond the constitutional and statutory obligation imposed on the Land Board as trustee, the court in *Montanans for Responsible Use of School Trust v. State ex rel. Board of Land Commissioners* (MONTRUST I) determined that the Board must also comply with the traditional duties of a trustee.³³ The lower court in MONTRUST I explained that the Montana Trust Code contains a full list of those duties which include, but are not limited to: absolute fidelity to the trust; undivided loyalty toward the beneficiary; prudence, diligence, and independent judgment in managing trust assets; duty to make the trust financially productive; and accountability to the beneficiary.³⁴ The Montana Supreme Court determined the Board and DNRC had discretionary power to manage the trust. However, this power was not without its limitations. The Court held that the Land Board and DNRC must comply with the terms and purpose of the trust, in addition to applicable constitutional provisions.³⁵

However, the court has occasionally muddied the waters as to what law—federal, state, or both—should guide the State when it attempts to discern what it must do to fulfill its duties as trustee. The MONTRUST I Court concluded that the “federal government’s grant of [the sixteenth and thirty-sixth sections of each township] to Montana constitutes a trust.”³⁶ The Court reached this conclusion without citation. If the Court had looked at the text of the 1889 Enabling Act, and seen the absence of any “trust” language in that Act, the Court may have clarified that state law (not federal law) assigns the State the responsibility of managing the lands granted by the federal government as a trust.³⁷ This lack of clarity may explain why the State has been confused as to the purpose of the Trust. The 1910 Enabling Act,

31. See, e.g., Memorandum from Todd Everts, Env’t Quality Council on Legal Analysis Regarding State Land Board and DNRC Authority in Relation to HJR 57 to EQC Members 1 (Mar. 6, 2008).

32. See *id.* at 3 (misstating the Montana Constitution as permitting the board to dispose of trust land only at full market value); MONT. CONST. art. X, § 11(2).

33. *Montanans for the Responsible Use of the Sch. Tr. v. State ex rel. Bd. of Land Comm’rs*, 989 P.2d 800, 805 (Mont. 1999); *Wild West Motors, Inc. v. Lingle*, 728 P.2d 412, 415 (Mont. 1986) (specifying that the Board has an undivided loyalty to the trust).

34. See *Montanans for Resp. Sch. Trust v. State*, 1998 Mont. Dist. LEXIS 730, *5-6 (noting also that the Montana Trust Code “generally applies to all trusts and invokes the common law of trusts”).

35. *State ex rel. Evans v. Stewart*, 161 P. 309, 312 (Mont. 1916); *Toomey v. State Bd. of Land Comm’rs*, 81 P.2d 407, 415 (Mont. 1938); *State ex rel. Thompson v. Babcock*, 147 P.2d 46, 409 P.2d 808 (1966).

36. *Montanans for the Responsible Use of the Sch. Tr.*, 989 P.2d at 805.

37. Cf. *Enabling Act*, ch. 180, § 11, 25 Stat. 676 (1889), *amended by Act of May 7, 1932*, 47 Stat. 150 (1932), *amended by Act of October 16, 1970*, 84 Stat. 987 (1970).

applicable only to New Mexico and Arizona, sets forth a different purpose than the corresponding text in the Montana Constitution. The Court, however, clearly identified the Montana Constitution and the 1889 Enabling Act as the source of the terms of the trust in Montana.³⁸

The ratification of the 1972 Montana Constitution did not technically alter those terms.³⁹ However, reviewing the Constitutional Convention's transcripts is necessary to understand how the delegates (the Framers of the Constitution) interpreted the trust's terms and purpose. When interpreting constitutional provisions, such as the terms of the school land trust, the Montana Supreme Court has prioritized the intent of the Framers—even when that intent does not entirely match the unambiguous text of the provision.⁴⁰ Though the Court acknowledges the importance of the plain meaning of the text, the Court has held that even in the context of clear and unambiguous language they must consider: the historical and surrounding circumstances under which the Framers drafted the Constitution; the nature of the subject matter under consideration; and the objectives of their actions.⁴¹

The Framers of the 1972 Montana Constitution intended to take significant and concrete steps to protect Montana's environment.⁴² In fact, the Framers set out to provide preventative language and protections relating to the State's pristine environment.⁴³ The Constitutional Convention delegates manifested that intent in several ways. For instance, they created an inalienable right "to a clean and healthful environment."⁴⁴ When debating the purpose and terms of the school trust lands, delegates noted that the State had long ago veered from what the federal government likely intended the state to do with the lands—sell them.⁴⁵ Several delegates viewed this variance in a favorable light because the delay in selling the land meant that the State retained more of the school trust lands.⁴⁶ In the words of Delegate

38. Montanans for the Responsible Use of the Sch. Tr., 989 P.2d at 803.

39. See Everts, *supra* note 31, at 3 (concluding that that 1972 Montana Constitution continued the prior terms of the trust).

40. See *Nelson v. City of Billings*, 412 P.3d 1058, 1064 (Mont. 2018) (explaining that the Framers' intent controls the court's interpretation).

41. *Id.*

42. See, e.g., Mont. Const. Convention Proc. Verbatim Transcript, Vol. V, Mont. Legis. & Legis. Council 1217, 1240 (Mar. 9, 1972) (urging Framers to aggressively approach environmental protections).

43. See *Montana Env't Info. Ctr. v. Env't Quality*, 988 P.2d 1236, 1248–49 (Mont. 1999) (reviewing and summarizing constitutional convention transcripts).

44. MONT. CONST. art. II, § 3.

45. Mont. Const. Convention Editing and Publ'g Comm., Mont. Leg., Montana Constitutional Convention, Verbatim Transcript, March 9, 1972–March 16, 1972, Volume V 1825, 1995-96 (1981), https://courts.mt.gov/external/library/mt_cons_convention/vol3.pdf.

46. See *id.* at 1995 (containing remarks delivered by Delegate Cate in favor of continuing not to sell state lands).

Cate, these trust lands are “the greatest single asset” in the entire state.⁴⁷ Many delegates also recognized that the trust lands would need to continue to be protected to account for an increase in demand for recreational lands as more people moved into Montana.⁴⁸ And, delegates wanted to afford the Land Board the discretion necessary to select the means best suited to the realization of these goals.⁴⁹

Delegates explicitly wanted the Land Board to have the discretion necessary to deal with landlocked parcels of school trust lands.⁵⁰ The delegates reasoned that this discretion was necessary because of the variable value of landlocked lands, which may require the State quickly dispose or exchange the lands in order to accumulate larger-consolidated blocks-of-land.⁵¹ The delegates also lamented that isolated parcels of school trust lands are “absolutely impossible to manage.”⁵² Isolated parcels have diminished value because accessing such land requires a resource-intensive process of seeking the requisite easements and rights-of-way.⁵³

The importance of access to the outdoors explicitly and implicitly influenced how delegates discussed management of school trust lands. Some delegates openly encouraged selling trust lands to local governments intent on turning those lands into parks.⁵⁴ Other delegates advocated for the Board to continue to hang onto the land for as long as possible.⁵⁵ Still, other delegates noted that leasing the land—and thereby subjecting it to some sort of extractive use—may expose the State to undue risks. These risks include: the lessee being unable to pay rent;⁵⁶ the lease terms disproportionately favoring the lessee;⁵⁷ and out-of-state corporations becoming the lessee and having little regard for the value of the land and its importance to the state.⁵⁸

In debates, not directly concerning school lands but related to the outdoors, delegates expressed grave concerns about policies that may hinder access to public lands. One delegate warned of the “wealthy Californians and wealthy Easterners [who had come to Montana] and bought up huge chunks of . . . Montana land along [the] rivers” with the intent of denying Montanans

47. *See id.* (containing remarks delivered by Delegate Blaylock that supports the preservation of state lands).

48. *Id.* at 1996–97.

49. *Id.* at 1996.

50. *Id.*

51. *Id.* at 1996–97.

52. *See id.* at 2001 (detailing an exchange between delegates about the need for flexibility when managing isolated state trust lands).

53. *See id.* (describing the innate drawbacks of isolated versus non-isolated parcels).

54. *Id.* at 1997.

55. *See, e.g., id.* at 1996 (comparing the volatility of money to that of real property over long term).

56. *Id.* at 2001.

57. *Id.* at 1996.

58. *Id.* at 1995.

recreational use of those lands.⁵⁹ Another delegate pointed out that the State's recreational lands contributed substantial economic benefits due to use by "thousands and thousands of people in Montana and visitors" who would be "very much upset" if access to those lands were hindered.⁶⁰ The Constitutional Convention also allocated substantial time to weigh how best to protect recreational use of the State's waterways.⁶¹ These conversations demonstrate that the delegates actively intended to rid the Constitution of any potential barriers to public access to public lands.

This general concern also permeated the delegates' conversation that the Trust might have a broader purpose than generating as much revenue as possible. Many delegates applauded the Land Board for having adhered to that broader purpose. Delegate Wilson, for instance, described the purpose of the Trust as taking actions "beneficial to the educational system in Montana."⁶² Delegate Davis, after considering the Land Board's environmental considerations when managing the trust, described the Board as a "great guardian of this [T]rust."⁶³ Delegate Drum favored giving the Board the discretion to trade isolated land for more recreational land.⁶⁴ The Montana Supreme Court must consider these delegates' views when interpreting whether the Land Board has complied with the terms and purpose of the trust.⁶⁵

III. PURPOSE OF THE TRUST IN MONTANA

The Montana Constitution says that the school trust lands "shall be held in trust for the people . . . for the respective purposes for which [the lands] have been or may be granted, donated or devised."⁶⁶ The 1889 Enabling Act clarified that the federal government granted the lands for "educational purposes" and that funds arising from land transactions should be expended in support of schools.⁶⁷

By statute, support of education and the "attainment of other worthy objects helpful to the well-being of the people of this state as provided in

59. MONT. LEG., MONT. CONST. CONVENTION, VERBATIM TRANSCRIPT, MARCH 1, 1972–MARCH 9, 1972: VOLUME V, at 1304 (1981).

60. *Id.* at 1307.

61. *See, e.g., id.* at 1320–21 (providing an example of one discussion at the Convention concerning how best to preserve the State's recreational waterways).

62. MONT. LEG., MONT. CONST. CONVENTION, VERBATIM TRANSCRIPT, MARCH 9, 1972–MARCH 16, 1972: VOLUME VI, at 1997 (1981).

63. *Id.*

64. *Id.* at 2001.

65. *See Nelson v. City of Billings*, 412 P.3d 1058, 1064 (Mont. 2018) (quoting: "The intent of the Framers controls the Court's interpretation of a constitutional provision.").

66. MONT. CONST. art. X, § 11(1).

67. Enabling Act of 1889, ch. 180, § 11, 25 Stat. 676 (1889).

[t]he [1889] Enabling Act” serves as the guiding administrative principles of the Trust.⁶⁸ Notably, the Montana State Legislature has not specified that revenue maximization must serve as the overriding priority of the Board. Instead, the Legislature has required the Board to “secure the largest measure of legitimate and reasonable advantage to the state” and “provide for the long-term financial support of education.”⁶⁹ This purpose may be realized even where land is used “for less than all of the resources.”⁷⁰

The Montana Supreme Court has sent mixed signals regarding whether the Trust’s purpose involves resource maximization. On the one hand, there is the “Reasonable Advantage” purpose. The Court has held that maximizing income is not paramount; instead income constitutes just *a consideration* that must be evaluated alongside other factors affecting the land, such as environmental factors.⁷¹ This holding aligns with statutory guidance that the purpose of the Trust is to “secure the largest measure of legitimate and reasonable advantage to the state”⁷² The Court’s holding also aligns with the broad purpose set forth by the 1889 Enabling Act to support “school purposes”—an act that the Montana Supreme Court has said must be liberally construed.⁷³ Finally, this interpretation clearly aligns with the intent of the Framers of the 1972 Montana Constitution, who frequently recited their desire to safeguard school trust lands in a way that enabled recreational access and sustained the value of the land over the long term.⁷⁴

On the other hand, there is the “Revenue Maximization” purpose. The Montana Supreme Court has fallen into a trap set by the U.S. Supreme Court: assuming that the Supreme Court’s interpretation of the New Mexico-Arizona Enabling Act bound interpretations of the New Mexico-Arizona Enabling Act and Montana Constitution.⁷⁵ Unfortunately, the Montana Supreme Court is not alone in erroneously interpreting the Montana Enabling Act. Many Western state courts have yoked their interpretation of their school trust to that of the U.S. Supreme Court with respect to the 1910 Enabling Act.⁷⁶ Fortunately, this means that if Montana corrects its

68. MONT. CODE ANN. § 77-1-202(1) (2021).

69. *Id.* § 77-1-202(1)(a-b).

70. *Id.* § 77-1-203(1)(a).

71. Ravalli Cnty. Fish & Game Ass’n. v. Mont. Dep’t of State Lands, 903 P.2d 1362, 1370 (Mont. 1995).

72. § 77-1-202(1).

73. State *ex rel.* Morgan v. State Bd. of Exam’rs, 309 P.2d 336, 338 (1957).

74. See *supra* notes 42–49 and accompanying text.

75. Lassen v. Ariz. *ex rel.* Ariz. Highway Dep’t, 385 U.S. 458, 461 (1967); New Mexico-Arizona Enabling Act, Pub. L. No. 61-219, 36 Stat. 557 (1910).

76. See O’Day, *supra* note 28, at 234 (noting other western state courts have also adopted the Supreme Court opinion to maximize revenue).

interpretation, other states may soon recognize their own incorrect interpretation.

In *Lassen v. Arizona ex rel Ariz. Highway Dep't*, the Supreme Court reviewed whether the State of Arizona could build a highway through State trust land without complying with the public sale requirements set forth in the New Mexico-Arizona Enabling Act of 1910.⁷⁷ Arizona made a practice to simply grant state and county highway departments rights-of-way over state trust lands at no cost.⁷⁸ The State Highway Department sued when the State's Land Commissioner attempted to reverse that practice by requiring the Department to pay the appraised value of the right-of-way in question.⁷⁹

The U.S. Supreme Court accepted the case with the intent to render a ruling applicable to all states that had received such lands from the Federal Government.⁸⁰ The Court made this ruling⁸¹ despite the fact that the enabling act in question only applied to New Mexico and Arizona. Unlike prior enabling acts, the Court included an explicit reference to the formation of a trust over the lands.⁸² The Court upheld the Land Commissioner's decision to force highway departments to compensate the State based on the Court's conception of the trust obligation created by the 1910 New Mexico-Arizona Enabling Act.⁸³ Based on the language and structure of the 1910 Act, the Court concluded that "all these restrictions in combination indicate Congress's concern both that the grants provide the most substantial support possible to the beneficiaries and that only those beneficiaries profit from the trust."⁸⁴ In other words, the *Lassen* Court "interjected into the law of school land trusts the mandate that school lands be managed to the maximum value possible for the exclusive benefit of the public schools."⁸⁵

With the exception of California and (much later) Colorado, the courts of all western states adopted the *Lassen* holding—interpreting their own enabling acts and constitutions to create trusts over school land with the

77. *Lassen*, 385 U.S. at 461.

78. *See State ex rel. Ariz. Highway Dep't v. Lassen*, 407 P.2d 747, 747 (Ariz. 1965) (detailing that for several decades "the state and county highway departments of Arizona have obtained rights of way and material sites without compensation over and on lands granted to the State of Arizona by the federal government.").

79. *Lassen*, 385 U.S. at 459.

80. *See id.* at 461 (explaining that the Court granted certiorari because "of the importance of the issues presented both to the United States and to the States which have received such lands.").

81. *Id.*

82. *See Jessica Wiles, Montana's State School Trust Land*, 38 PUB. LAND & RES. L. REV. 150, 158 (2017) (discussing how Supreme Court's analysis in *Lassen* standardized definition of trust responsibility which was embraced by New Mexico and Arizona despite the already existing definition found in the New Mexico-Arizona Enabling Act).

83. *Lassen v. Ariz. ex rel. Ariz. Highway Dep't*, 385 U.S. 458, 467 (1967).

84. *Id.*

85. O'Day, *supra* note 28, at 191.

exclusive purpose of revenue generation.⁸⁶ The Montana Supreme Court cited *Lassen's* mandate in *In re Powder River Drainage Area* to support the conclusion that the State must obtain “full value” when leasing school land.⁸⁷ Despite acknowledging that the Montana Constitution set specific terms (as detailed further below) to guide the State as trustee over school lands,⁸⁸ the State’s highest court implicitly adopted the sweeping mandate that the U.S. Supreme Court intentionally imposed on the states—regardless of their respective enabling acts.⁸⁹

Other parts of the Montana state government have adopted the Montana Supreme Court’s incorrect interpretation or recited similarly flawed interpretations of the 1889 Enabling Act and the Montana Constitution. The DNRC has stated the purpose of the Trust as: “produc[ing] revenues for the trust beneficiaries”⁹⁰ Other executive officials have repeated that error. A legal staff member of the Environmental Quality Council interpreted the Montana Constitution and Enabling Act as requiring the Land Board to obtain the full market value for any school trust land being transferred, leased, exchanged, or sold.⁹¹ No source of the terms nor purpose of the Trust set such a specific and narrow mandate.

IV. TERMS OF THE TRUST IN MONTANA

A. The Terms of the Trust Explicitly Allow for the Land Board to Sell, Exchange, and Lease School Trust Lands to Further Recreational Access and Conservation

The Montana Constitution identifies two situations in which school trust lands can be disposed: (1) pursuant to the general laws allowing for such disposition and (2) upon the payment or security of the full market value of the land.⁹² The Board can lease,⁹³ sell,⁹⁴ or exchange the land so long as the exchanged land is equal in value and as equal as possible with respect to

86. *Id.* at 191 n.170.

87. *In re Powder River Drainage Area*, 702 P.2d 948, 953 (Mont. 1985).

88. *Id.* at 951.

89. *Id.* at 953.

90. TR. LANDS MGMT. DIV., MONT. DEP’T OF NAT. RES. & CONSERVATION, ANNUAL REPORT FISCAL YEAR 2021 AT MISSION (2021), <http://dnrc.mt.gov/divisions/trust/docs/annual-report/fy-2021-trust-lands-annual-report.pdf>.

91. Everts, *supra* note 31, at 2.

92. MONT. CONST. art. X, § 11(2).

93. Enabling Act, ch. 180, § 11, 25 Stat. 676 (1889), *amended by* Act of May 7, 1932, 47 Stat. 150 (1932), *amended by* Act of October 16, 1970, 84 Stat. 987 (1970).

94. MONT. CONST. art. X, § 11(2).

area.⁹⁵ The sale of any land must be done in public, after sufficient notice, and only above certain prices.⁹⁶ The Board can lease land for up to 99 years, with the exception of leases for extractive purposes.⁹⁷ For example, a lease for conservation uses can last for the full 99 years.⁹⁸ Note that the Board has previously granted such leases.⁹⁹

The Board may grant easements and rights in any of the lands, so long as those interests adhere to any terms set by the State.¹⁰⁰ The State may only grant easements to the Department of Fish, Wildlife, and Parks and to nonprofits for “conservation purposes”—but only in very specific areas.¹⁰¹ Conservation purposes include prohibiting certain uses on a specific property. But the trust land administration statutes do not define what constitutes an easement for conservation purposes.¹⁰² The Board is also unclear on if it has complied with this state restriction on conservation easements because the Board has granted numerous easements with conservation measures on state trust lands.¹⁰³ This practice may evidence that the statute purportedly limiting conservation easements are overridden by the terms and purpose of the trust set forth by the Montana Constitution. Further evidence of the Board’s implied authority to grant easements with conservation measures extends from the fact that the Board is required by state law to grant conservation easements for cabin sites and town lots for sale.¹⁰⁴ Likewise, the Board has the explicit authority to grant an easement for the establishment of natural areas.¹⁰⁵ These natural areas include land with “an important or rare ecological or geological feature or other rare or significant natural feature worthy of preservation for scientific, educational, or ecological purposes.”¹⁰⁶ Finally, the Board may be able to justify most easements done with the public’s interest in mind given that § 77-2-101(1)(f) of the Montana Code Annotated (MCA) allows the Board to grant an easement for “other public uses.”

95. MONT. CONST. art. X, § 11(4); *see* MONT. CODE ANN. §§ 77-2-201, -203 (2021) (limiting when the Board may exchange land).

96. Enabling Act, ch. 180, § 11, 25 Stat. 676 (1889), *amended by* Act of May 7, 1932, 47 Stat. 150 (1932), *amended by* Act of Oct. 16, 1970, 84 Stat. 987 (1970).

97. MONT. CODE ANN. § 77-1-204 (2021).

98. *Id.*

99. Everts, *supra* note 31, at 12.

100. Enabling Act, ch. 180, § 11, 25 Stat. 676 (1889), *amended by* Act of May 7, 1932, 47 Stat. 150 (1932), *amended by* Act of October 16, 1970, 84 Stat. 987 (1970).

101. MONT. CODE ANN. § 77-2-101(e) (2021).

102. Everts, *supra* note 31, at 8–10 (noting that “conservation easement” is defined in the Montana Open-Space Land and Voluntary Conservation Easement Act).

103. *Id.*

104. MONT. CODE ANN. § 77-2-318 (2021).

105. *Id.* §§ 76-12-107, -108.

106. *Id.* § 76-12-104(3)(b).

The Montana State Legislature has also set terms regarding management of the Trust and the public's access to trust lands. The Board must comply with the Legislature's recognition that the people are entitled to generally recreate on state lands, so long as the Trust is compensated for the value of that recreation.¹⁰⁷ Similarly, the Board shall use a "multiple-use management concept" when managing trust lands.¹⁰⁸ This management approach requires the Board to use trust lands so that:

- (a) they are utilized in that combination best meeting the needs of the people and the beneficiaries of the trust, making the most judicious use of the land for some or all of those resources or related services over areas large enough to provide sufficient latitude for periodic adjustments in use to conform to changing needs and conditions and realizing that some land may be used for less than all of the resources; and
- (b) harmonious and coordinated management of the various resources, each with the other, will result without impairment of the productivity of the land, with consideration being given to the relative values of the various resources.¹⁰⁹

Within these two provisions are a number of specific terms. Specifically, the Board must first identify the needs of the people and the trust beneficiaries. Second, the Board must manage large enough blocks of land to evaluate the extent to which the current combination of uses is meeting the aforementioned needs. Third, the Board needs to adjust the combination of uses after regularly performing evaluations of the needs and conditions of the people. Finally, the Board must ensure that no use or combination of uses will impair the productivity of the land. Additional terms govern: how the Board leases land;¹¹⁰ what rights the Board can sell and to which entities;¹¹¹ and what land the Board can exchange and with which entities.¹¹² Additionally, when attempting to realize the purpose of the trust, the State also requires the Board to weigh "environmental factors and [the protection of] the future income-generating capacity of the land."¹¹³

107. *Id.* § 77-1-202(2).

108. *Id.* § 77-1-203(1).

109. *Id.*

110. *See, e.g., id.* § 77-1-204 (explaining the Board's power to lease certain state trust lands).

111. *See id.* §§ 77-1-301, -304 (defining which rights the Board may sell and to whom those rights may be sold).

112. *See, e.g., id.* §§ 77-2-201, -203, -205, -217 (defining how and with whom the Board may exchange land).

113. TR. LANDS MGMT. DIV., MONT. DEP'T OF NAT. RES. & CONSERVATION, *supra* note 90.

These terms provide the Land Board with several means to effectuate the purpose of the Trust.¹¹⁴ The Board has broad discretion to select among those various means.¹¹⁵ However, the terms also enable the public and beneficiaries to contest Board action.¹¹⁶ The terms lay out specific examinations and duties the Board, as trustee, must conduct when reviewing potential transactions.¹¹⁷ The terms also entitle the public to recreational use of school trust lands—an entitlement the public can seek to enforce.¹¹⁸ Where the public identifies faulty or omitted examinations, the public may have a means to contest a proposed Land Board transaction, especially one that conflicts with the State’s mandate to maintain and improve a “clean and healthful environment.”¹¹⁹ Furthermore, the public can inquire into why the State has not effectively used a program, such as the Land Banking program, which is specifically designed to consolidate land to increase access to and the value of school trust lands.

B. The Land Banking Program Demonstrates How the Land Board has Used the Terms of the Trust to Further Recreational Use and Conservation

The Land Board has previously endorsed efforts to consolidate school trust lands with the intent of increasing access. In 2003, the Land Board unanimously supported HB 223, codified as §§ 77-2-361 et seq., MCA, which created the State Land Banking program (the program).¹²⁰ Under this program, managed by the DNRC,¹²¹ the State must route proceeds from the sale of entirely or almost entirely landlocked parcels of school trust lands to a special land banking account.¹²² Funds in that account then support the purchase of real estate interests (land, easements, or improvements) that allow for public access.¹²³ This purchasing mandate aligns with the goals of the program:

114. See *supra* notes 66-73 and accompanying text (notes related to sale, exchange, lease of lands).

115. See, e.g., MONT. CODE ANN. § 77-1-203(1) (2021) (giving the Land Board discretion to weigh various factors before selecting the appropriate use of land).

116. *Montanans for the Responsible Use of the Sch. Tr. v. State ex rel. Bd. of Land Comm'rs*, 1999 MT 263, ¶¶ 13-14 (1999).

117. *Id.* at ¶ 32.

118. MONT. CODE ANN. § 77-1-202(2) (2021).

119. MONT. CONST. art. IX, § 1.

120. DEP’T NAT. RES. & CONSERVATION, LAND BANKING REPORT: JANUARY 2023 (2023), https://dnrc.mt.gov/TrustLand/land-transactions-easements/LandBanking/January_2023_Land_Banking_Report-.pdf; see also MONT. CODE ANN. § 77-2-363 (2021) (ending program’s sunset provision and increasing maximum area of land permitted to be sold or disposed of in a land bank transaction from 100,000 to 250,000 acres).

121. See MONT. CODE ANN. § 77-1-301 (2021) (summarizing DNRC’s authority to manage the land banking program).

122. See *id.* § 77-2-363 (“Seventy-five percent of the acreage cumulatively sold must be isolated parcels that do not have a legal right of access by the public.”).

123. LAND BANKING REPORT, *supra* note 120.

[First], increasing public access to state trust land through strategic sales and acquisitions; [second,] improving the investment portfolio of the beneficiaries by diversifying land holdings; and [third,] enhancing management and stewardship activities with land consolidation.¹²⁴

These goals, especially the first goal, demonstrate that public access is a part of the historic and current purpose of the Trust. If that were not the case, then the Land Banking program could not survive a review under the State's Constitution because a trustee must not diverge from the Trust's purpose.¹²⁵ However, the Trust also has a purpose of financially supporting education, so revenue generated from the acquired land must generate at least as much revenue as the land sold.¹²⁶

Despite the State's authority to sell landlocked lands and a responsibility to secure the "largest measure of legitimate and reasonable advantage to the state and provide for the long-term financial support of education,"¹²⁷ the State has yet to meaningfully decrease the percentage of school lands inaccessible to the public. Only 23 acquisitions of publicly-accessible land have occurred through the Land Bank program since 2006, resulting in 98,732 acres of publicly-accessible land coming under State management.¹²⁸ Although nearly 100,000 acres of new publicly-accessible lands deserve celebration, it is a drop in an ocean of inaccessible lands—recall that the public cannot access approximately 1.5 million acres of school lands in Montana.¹²⁹

A couple barriers may explain why the State has not used this Land Banking program as frequently as the Trust mandates. First, insufficient recognition among beneficiaries (and the public) that recreational use is a

124. *Id.*

125. The State nor beneficiaries of the trust dispute that the State must demonstrate "absolute fidelity to the trust," among other responsibilities set forth in the Restatements of Trust. *See* *Montanans for Resp. Sch. Trust v. State*, 1998 Mont. Dist. LEXIS 730, *5-6 (citing RESTATEMENT (THIRD) OF TR.: DUTY OF LOYALTY § 78 (AM. L. INST. 2012) (noting also that the Montana Trust Code "applies generally to all trusts and invokes the common law of trusts[.]" The other responsibilities of a trustee include undivided loyalty toward the beneficiary; prudence, diligence, and independent judgment in managing trust assets; duty to make the trust financially productive; and, accountability to the beneficiary); RESTATEMENT (SECOND) OF TR.: DUTY OF LOYALTY § 170 (AM. L. INST. 1959).

126. LAND BANKING REPORT, *supra* note 120.

127. MONT. CODE ANN. § 77-1-202(1) (2021).

128. *See* LAND BANKING REPORT, *supra* note 120 (noting that not all of the land exchanged for this new State land was originally isolated. The DNRC reports that "[i]solated sales make up 76% of all acreage sold since the Land Banking program's inception . . .").

129. THEODORE ROOSEVELT CONSERVATION P'SHIP, *supra* note 1, at 6.

purpose of the Trust that the Land Board must advance.¹³⁰ Second, the inadequate consideration of the public lands' value remains undeveloped. The first barrier is relatively easy to overcome, for example: through information sessions for the Land Board and school districts. Therefore, this article will not spend much time evaluating this issue. The second barrier, however, requires more effort to surmount because the value of undeveloped public lands—i.e., those best suited for public access—has only recently become more apparent.

The Land Board must generate value for Montana's schools through its management of school lands, but one means of value creation is usually left off the table. The State has a mission to “produce revenues for the trust beneficiaries while considering environmental factors and protecting the future income generating capacity of the land.”¹³¹ This latter part of the mission—protecting the future income generating capacity of the land—has become more valuable over time.

Leasing public lands for grazing purposes may diminish the value of the land to a greater extent than currently acknowledged by the Land Board and DNRC. The State currently has 8,921 agricultural and grazing leases out on school lands.¹³² Additionally, Montana oversees 1,126 oil and gas leases, 31 coal leases, and has managed the harvesting of 64.1 million board feet of timber and the planting of 363,739 tree seedlings.¹³³ All of these actions produce short-term revenue to support Montana's schools. For instance, in fiscal year 2021, agricultural leasing on 541,000 acres of school lands brought in \$16.8 million for the trust.¹³⁴ However, the long-term costs of these actions may render such action incongruous with the mission of the Trust.

According to the Intergovernmental Panel on Climate Change (IPCC), “agriculture, forestry and other land use (AFOLU) is a significant net source of [greenhouse gas] emissions.”¹³⁵ In fact, these land uses contributed to nearly a quarter of anthropogenic emissions of carbon dioxide, methane, and nitrous oxide from 2007–2016.¹³⁶ Wood harvesting has a particularly negative impact on the environment given that wood harvesting accounts for

130. See Everts, *supra* note 31, at 6 (quoting MONT. CODE ANN. § 77-1-301(2005) “It is consistent with the powers and duties of the Board that ‘the people are entitled to general recreational use of state lands to the extent that the trusts are compensated for the value of the recreation.’”).

131. TR. LANDS MGMT. DIV., MONT. DEP'T OF NAT. RES. & CONSERVATION, *supra* note 90.

132. *Id.* at 3.

133. *Id.*

134. *Id.* at 7.

135. Gensuo Jia & Elena Shevliakova, et al., *Land-Climate Interactions* 133, in CLIMATE CHANGE AND LAND: AN IPCC SPECIAL REPORT ON CLIMATE CHANGE, DESERTIFICATION, LAND DEGRADATION, SUSTAINABLE LAND MANAGEMENT, FOOD SECURITY, AND GREENHOUSE GAS FLUXES IN TERRESTRIAL ECOSYSTEM 131, 133 (2019).

136. *Id.*

about 13% of total net anthropogenic emissions of carbon dioxide (CO₂).¹³⁷ Likewise, grazing negatively impacts the environment, accounting for more than a third of total anthropogenic nitrogen dioxide (N₂O) emissions.¹³⁸ More generally, changes in land conditions can increase the odds, severity, and duration of extreme weather events (such as droughts and excessive rain).¹³⁹

One way to significantly reduce land-use-based emissions is to not use the land for an intensive or extractive purpose. The IPCC reports that “[t]he largest potential for reducing AFOLU emissions [is] through reduced deforestation and forest degradation, . . . a shift towards plant-based diets, . . . and reduced food and agricultural waste.”¹⁴⁰ Steps short of non-use, such as planting bioenergy crops meant to sequester carbon, lack the efficacy and immediacy of simply setting the land aside for recreational use—especially in the case of forest land.¹⁴¹

The status quo approach to leasing school lands for a litany of purposes may be decreasing the value of those lands. The land-use-based emissions contribute to changes in Montana’s climate that have negatively affected public lands and drained the State’s coffers as Montana responds to climate emergencies.¹⁴² Between 1970–2015, the number of large fires on national forest lands in Montana increased to a greater extent than any other western state.¹⁴³ Between 2017–2019, Montana experienced two wildfires and one drought, each of which caused losses in excess of \$1 billion.¹⁴⁴ These types of disasters not only destroy public lands but also require large expenditures by the State.¹⁴⁵ Destroying public lands decreases, if not erases, the chance of those lands producing revenue to benefit the trust.¹⁴⁶ The large

137. *Id.* at 134.

138. *Id.*

139. *Id.* at 135.

140. *Id.* at 136.

141. *Id.*

142. Ctr. Am. Progress, *The Impacts of Climate Change and The Trump Administration’s Anti-Environmental Agenda in Montana* 1 (June 15, 2020), <https://www.americanprogress.org/article/impacts-climate-change-trump-administrations-anti-environmental-agenda-montana/>; see also Corin Cates-Carney, *FEMA Denies Montana Request For Fire Disaster Funding*, MONT. PUB. RADIO: MONT. NEWS (Jan. 10, 2018), <https://www.mtpr.org/montana-news/2018-01-10/fema-denies-montana-request-for-fire-disaster-funding> (noting that in 2017, “Montana spent its entire two-year \$60 million emergency fund for wildfire suppression in one year, and used it up even before last fire season ended.”).

143. Ctr. Am. Progress, *supra* note 142.

144. *Id.*

145. Though not every state has invested in climate change mitigation, states will nonetheless end up paying to address its effects. See, e.g., Press Release, Phil Scott, Governor, Vt., Governor Phil Scott Signs Historic State Budget Into Law (June 9, 2022), <https://governor.vermont.gov/press-release/governor-phil-scott-signs-historic-state-budget-law> (noting Vermont’s plan to spend \$225 million to combat climate change, including investments in weatherization meant to combat the day-to-day effects of climate change).

146. For instance, even a Montanan seeking to purchase land subject to a conservation easement

expenditures require the State to spend limit funds on disaster response and recovery.¹⁴⁷ Notably, the Montana Climate Solutions report urged lawmakers to quantify and reduce industrial, agricultural, and methane emissions.¹⁴⁸ Though, the report did not acknowledge the State's role in perpetuating these emissions through outdated leasing practices.¹⁴⁹

Lands negatively affected by climate change also generate less tax revenue. According to the Montana Wildlife Foundation: "droughts, fires, and floods associated with climate change" jeopardize 35,000 jobs and more than \$1 billion in labor earnings in Montana.¹⁵⁰ The Montana Wildlife Foundation forecasted that an average of 1,700 jobs will be lost per year in Montana due to climate change.¹⁵¹ The resulting loss in revenue will diminish the extent to which Montana can invest in schools and related spending. Moreover, climate change will cause the demand for AFOLU leases to decrease as those land uses become more resource intensive; by 2055, researchers anticipate a 20% drop in rangeland cattle production and a 25% drop in grain production.¹⁵²

Prioritizing school lands for recreational uses is more sustainable and still generates revenue for the Trust. Revenue from non-AFOLU uses comes from a number of reliable sources that have yet to be fully tapped. Trust beneficiaries receive \$10 for every license purchased by a member of the public for recreation on school lands and \$2 from the sale of each conservation license by the Department of Fish, Wildlife, and Parks.¹⁵³ In fiscal year 2021, these recreational licenses contributed \$1,395,294 in gross

(thereby protecting the land from any kind of land use) through a deal with the Land Board would likely pay less for that land if a forest fire had recently run through it. See Kyle M. Stetler et al., *The Effects of Wildfire and Environmental Amenities on Property Values in Northwest Montana, USA*, 69 *ECOLOGICAL ECON.* 2233, 2235, 2241(2010) (studying the effect of wildfires on property value in northwest Montana).

147. See, e.g., Press Release, Phil Scott, Governor, Vt., Governor Phil Scott Signs Historic State Budget Into Law (June 9, 2022), <https://governor.vermont.gov/press-release/governor-phil-scott-signs-historic-state-budget-law> (noting Vermont's plan to spend \$225 million to combat climate change, including investments in weatherization meant to combat the day-to-day effects of climate change).

148. MONTANA CLIMATE SOLUTIONS COUNCIL, MONTANA CLIMATE SOLUTIONS PLAN 46 (Aug. 2020), https://deq.mt.gov/files/DEQAdmin/Climate/2020-09-09_MontanaClimateSolutions_Final.pdf.

149. An argument could be made that the State allowing school lands to be used for purposes known to contribute to climate change is unconstitutional under Article II, Section 3, of the Montana Constitution. That argument is outside the scope this paper but is worthy of exploration.

150. THOMAS MICHAEL POWER & DONOVAN S. POWER, POWER CONSULTING INC., *THE IMPACT OF CLIMATE CHANGE ON MONTANA'S OUTDOOR ECONOMY* 57 (2015), <https://montanawildlife.org/wp-content/uploads/2015/12/Impact-of-Climate-Change-on-the-Montana-Outdoor-Economy-Dec-2015-Final-Report.pdf>.

151. *Id.* at 58 tbl.20.

152. Press Release, Montana Farmers Union, Montana Farmers Union Report: Climate Change Could Cost Montana Agriculture Industry Almost 25,000 Jobs and \$726 Million Over the Next 50 Years (Feb. 24, 2016), <https://montanafarmersunion.com/montana-farmers-union-report-climate-change-could-cost-montana-agriculture-industry-almost-25000-jobs-and-726-million-over-the-next-50-years/>.

153. TR. LANDS MGMT. DIV., MONT. DEP'T OF NAT. RES. & CONSERVATION, *supra* note 90, at 11.

revenue to the Trust.¹⁵⁴ An additional \$196,100 came in through special recreational use licenses for commercial or concentrated use.¹⁵⁵

Unlike AFOLU uses, demand for recreational uses has grown over time. The DNRC created a standalone program within the Trust Management Division to focus on generating revenue through recreation after the agency noted “increased use and demand for trust land for both dispersed and concentrated recreational uses.”¹⁵⁶ And, unlike AFOLU uses, school lands as recreational or public lands do not exacerbate the revenue-sapping effects of climate change. In fact, public lands can help reverse or, at a minimum, reduce those effects by acting as carbon sinks.¹⁵⁷ Notably, protected federal lands in Alaska store approximately 62% of the total carbon stored on U.S. federal lands.¹⁵⁸ Thus, states can play a meaningful role in reducing the costs of climate change by setting school trust lands aside for recreational uses.

Montana courts have acknowledged that changing conditions could alter how the State manages school lands in its role as trustee. In *State ex rel. Koch v. Barret*,¹⁵⁹ the Supreme Court of Montana noted that the enabling act granted the lands in view of “the conditions existing at the time, and other[s] which might arise.”¹⁶⁰ Furthermore, the Court declined to specify the means through which the State should sustain the Trust with respect to uses of the land. So long as the State created a permanent endowment and allocated funds to schools, the Court asserted that “it makes no difference what mode is adopted.”¹⁶¹ However, in dicta, the Court noted the importance of not impairing in any way the value of the land or diverting it to improper uses.¹⁶²

The Land Banking Program enables the Land Board to consolidate, environmentally protect, and increase the value of the school trust lands. Which raises the question: why have more transactions not occurred under the program? Whether this underuse constitutes a breach of the Land Board’s duties as trustee deserves more attention—attention given in the next part of this article.

154. *Id.*

155. *Id.*

156. *Id.*

157. See HOUSE SELECT COMM. ON THE CLIMATE CRISIS, 116TH CONG., SOLVING THE CLIMATE CRISIS 13 (2020) (calling on the government to limit oil and gas leasing on public lands).

158. *Id.* at 429.

159. *State ex rel. Koch v. Barret*, 66 P. 504 (1901).

160. *Id.* at 507.

161. *Id.*

162. *Id.* at 508.

V. EITHER PURPOSE OF THE TRUST MANDATES THAT THE STATE UNLOCK
SCHOOL TRUST LANDS

The three branches of the Montana state government vary in the extent to which they regard the purpose of the Trust as “revenue maximization” or securing a “reasonable advantage” to the State.¹⁶³ A trustee charged with advancing either purpose has an obligation to unlock “landlocked” parcels of school trust land and grant the public’s entitlement to recreate on those lands.

In comparison, isolated lands are less valuable than consolidated lands.¹⁶⁴ If the State allows school trust lands to remain isolated, then the State will be in breach of its duties as trustee because doing so neither maximizes revenue nor provides an advantage to the State.

Oil, gas, coal, and grazing leases threaten the long-term value of school trust lands. If the State persists in assigning such leases, the State will neither maximize the long-term revenue of the land nor secure an advantage to the State, especially given that those kinds of leases may impose other significant costs on the State.¹⁶⁵ The State should instead recognize that recreational use of such lands not only generates revenue, but also respects the legislative entitlement the people of Montana have to recreate on those lands. Recreational use of school trust lands already generates substantial revenue. Greater revenue is possible if the State opts to: (1) respond to the increase in demand for recreational lands by increasing the license cost to access those lands; (2) respond to that demand by increasing the number of acres of accessible school trust lands by consolidating landlocked parcels; or (3) both.

The Land Board has substantial discretion to realize each purpose and outcome required by those respective purposes—consolidating isolated lands and opening up those lands to the public.¹⁶⁶ The Board may initially choose to pursue those outcomes by effectively using the Land Banking Program. The Board can similarly exercise its discretion by declining any proposed leases for AFOLU uses of school trust lands. Finally, the Board can insist on any school land trust proposals meeting certain conservation thresholds.

However, the Board cannot continue with the status quo. The Board is bound by the duties of a trustee: absolute fidelity to the trust; undivided

163. See *supra* Part III (discussing how the State legislature has specified “reasonable advantage” and not “revenue maximization” as a priority, while the Montana Supreme Court has sent mixed signals).

164. See, e.g., Const. Convention Editing and Publ’g Comm., Mont. Leg., Montana Constitutional Convention, Verbatim Transcript, March 9, 1972–March 16, 1972, Vol. VI, 2001 (1981) (noting how management issues that pertain to isolated lands are absent in the management of consolidated lands).

165. Jia & Shevliakova, et al., *supra* note 135, at 133–35.

166. State *ex rel.* Evans v. Stewart, 161 P. 309, 312 (Mont. 1916); see generally Toomey v. State Board of Land Commissioners, 81 P.2d 407, 415 (Mont. 1938) (explaining that there is an emphasis on consolidating and obtainable by the public); State *ex rel.* Thompson v. Babcock, 409 P.2d 808, 810 (Mont. 1966).

loyalty toward the beneficiary; prudence, diligence, and independent judgment in managing trust assets; duty to make the trust financially productive; and accountability to the beneficiary.¹⁶⁷ The Board's duty to make the Trust financially productive is applicable to all generations of Montanans. As set forth above, the Board's current leasing strategy is threatening that productivity in an empirically verifiable and substantial way.¹⁶⁸ In exercising prudence, diligence, and independent judgment, the Board cannot ignore that empirical evidence. Furthermore, in remaining accountable to the public as beneficiaries, the Board must show how it is evaluating that evidence and using it to reach decisions. A failure of any of these duties provides the public with standing to seek a legal remedy and to ensure that Montana's "greatest asset" is unlocked, accessible, and preserved.¹⁶⁹

CONCLUSION

Montana's obligations as a trustee over school lands imposes a duty to preserve those lands over a long horizon. Whether the purpose of the trust is to maximize revenue (as is the case in New Mexico and Arizona, per the 1910 Enabling Act¹⁷⁰ and *Lassen v. Arizona*)¹⁷¹ or to advance the priorities set forth by the Framers of the 1972 Montana Constitution, permitting any lands to remain isolated and leasing school lands for purposes other than recreational or public use is a violation of the trustee's obligations.

A trustee preserving the natural resources and value of the corpus land would not constitute a breach of the trustee's fiduciary duty. Courts in other jurisdictions have specified that even a trustee charged with maximizing value of land need not pursue an absolute maximization of economic return. For example in *Oklahoma Educ. Ass'n v. Nigh*, the court noted that while a trustee has a duty to seek the maximum return from school lands that duty is subject to the necessary precautions to preserve the trust estate.¹⁷² Given that climate change has directly threatened the lands making up the corpus of school land trusts around the country, precautionary measures (such as

167. See *Montanans for Resp. Use Sch. Tr. v. State ex rel. Bd. Land Comm'rs*, 409 P.2d 800, 806 (Mont. 1999) (describing the Board's duties of prudence, loyalty, fidelity, productivity, and accountability).

168. See *supra* notes 127-149 and accompanying text (discussing how Montana has failed to increase accessibility of school lands, and continues to lease public lands for grazing, oil and gas).

169. See *supra* note 46 (discussing Delegate Cate's views on Montana's school trust lands being "the single greatest asset" in the entire state).

170. New Mexico-Arizona Enabling Act, Pub. L. No. 61-219, 36 Stat. 557 (1910).

171. *Lassen v. Ariz. ex rel. Ariz. Highway Dep't* 385 U.S. 458, 466 (1967).

172. *Oklahoma Educ. Ass'n v. Nigh*, 642 P.2d 230, 239 (Okla. 1892).

avoiding leases that will lead to emissions) may be more necessary than ever to ensure the long-term viability and value of the trust estate.

In *National Parks & Conservation Ass'n v. Board of State Lands*, the Utah Supreme Court acknowledged the maximization of income of school lands must be evaluated with the long-term in mind.¹⁷³ Accordingly, the Court concluded that: “[t]o the extent that preservation of non-economic values does not constitute a diversion of trust assets or resources, such an activity may be prudently undertaken.”¹⁷⁴ Moreover, even the Court sanctioned the protection of those values where “necessary for maximizing the economic value of the property.”¹⁷⁵ The Utah Court even set forth a duty for the State to exchange trust lands with non-economic value incompatible with the economic exploitation of that value—perhaps due to unique scenic value—with other lands.¹⁷⁶ The *National Parks* rationale would not apply if the State’s courts followed *Lassen* because Utah adopted a statute directing the State to maximize the use of natural resources consistent with multiple-use sustained yield principles.¹⁷⁷

To the extent the federal government has an obligation to use public lands for the public’s benefit—perhaps analogous to the public trust doctrine,¹⁷⁸ statutory mandates, or international agreements—the government needs to reexamine its public lands portfolio. “Fossil fuel extraction on public lands is responsible for nearly a quarter of total U.S. carbon dioxide emissions, making public lands a net-emitter of greenhouse gas pollution.”¹⁷⁹ The federal government is not only allowing such extraction, but subsidizing it—costing taxpayers money in the short- and long-run.¹⁸⁰

The bottom line is that landlocked public lands are indicative of mismanagement by the responsible trustee. Montana’s action to preserve the long-term value of school lands, by emphasizing and prioritizing recreational and public use, should set a precedent for all other states acting as trustees over school lands. A state cannot maximize revenue for long-term school benefits by leasing school lands for AFOLU purposes or allowing the continuation of landlocked public lands. This holds true regardless of whether the states follow the *Lassen* standard or the respective state governments.

173. *National Parks & Conservation Ass'n v. Board of State Lands*, 869 P.2d 909, 921 (Utah 1993).

174. *Id.* at 916.

175. *Id.*

176. *See id.* at 921 (declaring that the state had a duty to consider exchanging unique lands with non-economic value for other lands).

177. *See id.* at 916 n.4 (citing Administrative Rule 632-2-2).

178. *See, e.g.,* Jesse Reiblich & Dan Reineman, *Rhino Chasers and Rifles: Surfing Under the Public Trust Doctrine*, 34 J. LAND USE & ENV'T L. 36, 49-52 (2018) (examining the applicability of the public trust doctrine to the battle over public access to beaches in the state of California).

179. HOUSE SELECT COMM. ON CLIMATE CRISIS, *supra* note 157, at 14.

180. *Id.* at 491.

Montanans are well-suited to begin a nationwide effort to contest management practices of school trust lands, thanks to the Montana Constitution's protection of the environment and the clear intent of the Framers to ensure access to the outdoors. In particular, Montanans can challenge practices that deprive public access to those lands and hinder the long-term value of the land. Trustees of state trust lands must weigh changing conditions when evaluating how best to use what may be their state's greatest asset. Conditions have wildly changed. Access to and the preservation of lands set aside for recreational use by the public is becoming ever more important to fighting climate change and generating social and financial capital for states. Trustees have an obligation to take more efforts with recreation and non-use in mind. Trustees can start to fulfill that duty by unlocking their landlocked school trust lands via sales and exchanges that consolidate lands and provide recreational use of those lands.

SECTION 111 OF THE CLEAN AIR ACT AND BEYOND IN THE AFTERMATH OF *WEST VIRGINIA V. EPA*

Andres Restrepo and Joanne Spalding***

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In *West Virginia v. EPA*, the Supreme Court dealt a harsh blow to the Environmental Protection Agency's (EPA) ability to address climate change. The Court held that the Agency lacked authority under § 111 of the Clean Air Act to consider the availability of renewable energy in establishing greenhouse gas (GHG) emission limits for existing power plants. While this decision will have near-term ramifications for EPA as it revises the power plant standards, the deeper doctrinal implications of *West Virginia* are equally important. In this article, we address four aspects of the case that may resonate more broadly. First, we argue that *West Virginia*'s holding should only constrain EPA's § 111 rulemaking authority if all three of the following conditions are met: the rule imposes direct (rather than indirect) restraints on source operation; it applies to existing (rather than new or modified) sources; and it implicates the major questions doctrine (MQD). Second, we assert that *West Virginia*'s development of the MQD will require lower courts to formulate clear guardrails to avoid baseless rule challenges, which are already proliferating throughout the country. Third, we highlight critical

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errors in the Court's reasoning, which lower courts must avoid repeating even while adhering to the case's central holding. Finally, we emphasize aspects of *West Virginia* that solidify EPA's Clean Air Act authority.

INTRODUCTION

The Supreme Court's decision June 2022 in *West Virginia v. EPA* was the most significant climate-related case the country has seen in at least a decade.¹ It was also one of the most anticipated and analyzed Supreme Court opinions from the 2021–2022 term, garnering widespread coverage in both legal and mainstream publications across the country.² Much of the *West Virginia* commentary has focused on the holding's implications for U.S. efforts to reduce its GHG emissions and thus comply with its international climate obligations. Much discussion has also centered around the case's implications for administrative authority more broadly, asking whether and to what extent the decision could weaken federal agencies' power to safeguard public health, safety, and welfare.³ Observers have also noted industry and state litigants' swift efforts to wield *West Virginia* as a powerful deregulatory cudgel in the courtroom.⁴

1. *West Virginia v. EPA*, 142 S. Ct. 2587, 2587 (2022).

2. See, e.g., Kimberly Wehle, *The Supreme Court's Extreme Power Grab*, THE ATLANTIC (July 19, 2022), <https://www.theatlantic.com/ideas/archive/2022/07/west-virginia-v-epa-scotus-decision/670556/>; Bill McKibben, *The Supreme Court Tries to Overrule the Climate*, THE NEW YORKER (June 30, 2022); <https://www.newyorker.com/news/daily-comment/the-supreme-court-tries-to-overrule-the-climate>; David Wallace-Wells, *The Supreme Court's E.P.A. Decision Is More Gloom Than Doom*, N.Y. TIMES (July 1, 2022), <https://www.nytimes.com/2022/07/01/opinion/environment/supreme-court-climate-change-west-virginia-epa.html>; Ed Kilgore, *Supreme Court Ends Term by Sabotaging Fight Against Climate Change*, N.Y. MAG. (June 30, 2022), <https://nymag.com/intelligencer/2022/06/supreme-court-sabotages-epa-fight-against-climate-change.html>; Maxine Joselow, *The Supreme Court's EPA ruling was the beginning of something bigger*, WASH. POST (July 6, 2022), <https://www.washingtonpost.com/politics/2022/07/06/supreme-court-epa-ruling-was-beginning-something-bigger/>; Nicole Cantello, *After court ruling, administration must give EPA a modified plan to fight emissions*, THE HILL (July 17, 2022), <https://thehill.com/opinion/congress-blog/3563423-after-court-ruling-administration-must-give-epa-a-modified-plan-to-fight-emissions/>.

3. See, e.g., David Freeman Engstrom and John E. Priddy, *West Virginia v. EPA and the Future of the Administrative State*, STAN. L. SCH. BLOGS (July 6, 2022), <https://law.stanford.edu/2022/07/06/west-virginia-v-epa-and-the-future-of-the-administrative-state/>; Philip A. Wallace, *Will West Virginia v. EPA cripple regulators? Not if Congress steps up*, BROOKINGS (July 1, 2022), <https://www.brookings.edu/research/will-west-virginia-v-epa-cripple-regulators-not-if-congress-steps-up/>; *West Virginia v. EPA: What This Means for Federal Agency Rulemaking Going Forward*, BAKERHOSTETLER (Aug. 12, 2022), <https://www.bakerlaw.com/alerts/west-virginia-v-epa-what-this-means-federal-agency-rulemaking-going-forward>; Jennifer Danis et al., *Power to the Supreme Court: West Virginia v. EPA will have far-reaching consequences for administrative agencies*, NISKANEN CTR. (July 21, 2022), <https://www.niskanencenter.org/power-to-the-supreme-court-west-virginia-v-epa-will-have-far-reaching-consequences-for-administrative-agencies/>.

4. See, e.g., Ellie Borst, *Supreme Court climate ruling ignites deregulatory challenges*, GREENWIRE (Aug. 16, 2022) (noting the increase in court filings citing the MQD since *West Virginia*),

Each of these issues is of major interest to practitioners, regulators, and legal scholars who work on environmental and especially Clean Air Act matters, as well as to anyone who cares about preserving the ability of federal agencies to adequately protect the public. For decades, Sierra Club—whom we represent—has been at the forefront of litigation pushing for strong carbon dioxide (CO₂) standards for power plants.⁵ *West Virginia* delivered a bitter blow to our interests, as it significantly contracted the scope of EPA’s authority to reduce GHG emissions from fossil-fuel-fired power plants under § 111 of the Clean Air Act: the Agency’s primary regulatory vehicle for ensuring GHG reductions from large stationary sources of air pollution.⁶ As a result, it will be considerably more difficult—and more expensive—for EPA to meaningfully curb climate pollution from existing fossil-fuel-fired power plants.

Specifically, *West Virginia* eliminated from EPA’s § 111 toolkit the cheapest and most efficient means of achieving emission reductions at existing units: a grid-level shifting of electricity generation away from higher-emitting facilities, like coal plants, and toward lower- or zero-emitting resources, like wind and solar units. This approach originated years earlier with the Obama-era Clean Power Plan (CPP), issued in October 2015.⁷ The CPP was a complex § 111(d) regulation that established CO₂ standards for existing fossil-fuel-fired power plants.⁸ The rule’s emission reduction targets were premised largely on new renewable energy generators’ ability to displace electricity that would otherwise have been produced by existing coal and gas units.⁹ To achieve compliance, regulated coal and gas plants were obligated to acquire a certain quantity of tradeable credits reflecting new wind or solar generation.¹⁰ Alternatively, states were given the option of adopting statewide CO₂ emission caps for their entire fleet of existing fossil-fuel units and then allowing units to comply by buying and selling emission allowances with one another.¹¹

<https://subscriber.politicopro.com/article/eenews/2022/08/16/supreme-court-climate-ruling-ignites-deregulatory-challenges-00050786>.

5. Sierra Club’s efforts to secure CO₂ emission reductions from power plants vis section 111 standards date back to 2002, when we sent formal notice to the Department of Justice of our intent to sue EPA over a lack of such standards. The following year, we initiated the noticed action in *Save Our Children’s Earth Found. v. EPA*, No. 03-cv-00770-CW (N.D. Cal. Feb. 21, 2003).

6. 42 U.S.C. § 7411(d).

7. Carbon Pollution Emission Guidelines for Existing Stationary Sources: Electric Utility Generating Units, 80 Fed. Reg. 64,662 (Oct. 23, 2015).

8. *Id.*

9. *Id.* at 64,709, 64,803–11.

10. *Id.* at 64,709, 64,733–35.

11. *Id.* at 64,733. In this context, an “allowance” referred to an exchangeable accounting instrument that represents one unit of permissible CO₂ emissions in a specified period by the fossil plant that owns it. *See* 80 Fed. Reg. at 64,959. By contrast, an “emission rate credit” (or simply “credit”) referred

Industry parties and a coalition of state governments led by West Virginia brought suit as soon as the CPP was finalized. The parties argued (among many other things) that EPA's § 111(d) authority did not permit it to link the stringency of sources' emission reduction obligations to measures that cannot be applied to or at individual sources themselves.¹² According to this view, EPA could require coal and gas plants to produce electricity at a lower level of carbon intensity based on technology installed or actions taken at the units themselves; but EPA could not force them to subsidize other plants, like wind and solar units, to displace their own generation.¹³ While the D.C. Circuit rejected the petitioners' request for a stay of the rule pending litigation,¹⁴ the Supreme Court granted it in February 2016 on the so-called "shadow docket,"¹⁵ suspending the rule's legal effect.¹⁶ And although briefing and oral arguments proceeded at the D.C. Circuit in the months that followed, the court placed the litigation in abeyance in 2017 at the request of the newly installed Trump Administration without reaching a decision on the merits.¹⁷ After EPA issued a rule in 2019 repealing the CPP on the same legal theory advanced by industry and the West Virginia coalition,¹⁸ the court dismissed the litigation as moot.¹⁹

With the roles now swapped, many of the same parties who had defended the CPP in court—including Sierra Club—now initiated new litigation against EPA for its repeal of that regulation, which the Agency replaced with the toothless (and ironically titled) Affordable Clean Energy rule.²⁰ Unlike in the CPP litigation, the D.C. Circuit ruled on the merits of the repeal rule

to an exchangeable accounting instrument that represents one unit of non-emitting electricity produced by a new wind or solar resource. By acquiring a credit, a fossil plant could, on paper, reduce the rate at which it emitted CO₂ per each unit of electrical output. *Id.* at 64,960, 64,949. Although the plant's *actual* emission rate would have remained unchanged, the fact that it had to acquire renewable credits in order to achieve a mathematically adjusted emission rate was intended to drive further growth of renewable generation and, in turn, reduce fossil generation on the whole.

12. See, e.g., State Pet'rs' Mot. for a Stay and for Expedited Consideration of Pet. for Review, 6–12, State of W. Virginia v. EPA, No. 15-1363 and consolidated cases (D.C. Cir. Oct. 23, 2015).

13. *Id.*

14. Order, State of W. Virginia v. EPA, No. 15-1363 and consolidated cases (D.C. Cir. Jan 21, 2016).

15. The "shadow docket" refers to the Court's process for issuing expedited rulings outside of its normal proceedings, usually without full briefing, oral arguments, or written decisions.

16. Order in Pending Case, State of W. Virginia v. EPA, No. 15A773 (U.S. Feb. 9, 2016).

17. Order (*en banc*), State of W. Virginia v. EPA, No. 15-1363 and consolidated cases (D.C. Cir. Apr. 28, 2017).

18. Repeal of the Clean Power Plan; Emission Guidelines for Greenhouse Gas Emissions from Existing Electric Utility Generating Units; Revisions to Emission Guidelines Implementing Regulations, 84 Fed. Reg. 32,520 (July 8, 2019).

19. Order (*en banc*), State of W. Virginia v. EPA, No. 15-1363 and consolidated cases (D.C. Cir. Sept. 17, 2019).

20. See, e.g., Pet. for Review, Am. Lung Ass'n v. EPA, 985 F.3d 914 (D.C. Cir. 2021), *rev'd and remanded sub nom.* West Virginia v. EPA, 142 S. Ct. 2587 (2022).

before another change in administrations took place.²¹ The court held in a 2-to-1 decision that the Trump EPA had misinterpreted § 111(d) as allowing it only to consider emission reduction measures that could be implemented to or at individual sources.²² As such (the court reasoned), the statute did not categorically prohibit the generation-shifting approach EPA had adopted in the CPP.²³ The Supreme Court subsequently granted certiorari and reversed the D.C. Circuit panel, holding that “the [generation-shifting approach] identified by EPA in the CPP was [not] within the authority granted to the Agency in § 111(d) of the Clean Air Act.”²⁴

Much of the post-*West Virginia* commentary has focused on what options EPA has left for controlling CO₂ emissions from the electric power sector—the nation’s largest stationary source of GHG emissions and second-largest source overall after the transportation sector. As of this publication, the Agency is expected to issue a new § 111 proposal for power plants’ CO₂ emissions imminently. Many have speculated as to whether EPA will look to emission reduction measures such as carbon capture and sequestration, co-firing natural gas at coal plants, aggressive efficiency upgrades, or other strategies to serve as a foundation for a new rule.²⁵ These are undoubtedly crucial concerns, and how EPA resolves them could materially affect our nation’s progress towards achieving its ambitious GHG reduction goals.

In this article, however, we focus on the broader doctrinal implications of *West Virginia* rather than its immediate impact on EPA’s regulatory choices for existing power plants. The decision raises a host of critical questions: is the generation-shifting approach that the Court jettisoned in *West Virginia* so specific to the electric power sector that the decision has little implication for other source categories? Or will the decision affect EPA’s regulatory approaches in other sectors, like petroleum refineries, aluminum and glass production, and the oil and gas industry? Looking beyond § 111, will the Court’s decision—which, according to Justice Kagan’s dissent, “announce[d] the arrival of the ‘major questions doctrine,’”²⁶—open the floodgates for industry litigants to bring major questions challenges to public health, safety, and welfare regulations? If so, how might those efforts be opposed? Will lower courts repeat the serious

21. Am. Lung Ass’n, 985 F.3d at 958.

22. *Id.*

23. *Id.*

24. *West Virginia*, 142 S. Ct. at 2615–16.

25. See e.g., Dana Nuccitelli, *What’s Next After Supreme Court’s Climate Ruling?*, YALE CLIMATE CONNECTIONS (July 11, 2022), <https://yaleclimateconnections.org/2022/07/whats-next-after-supreme-courts-climate-ruling/>; Lesley Clark, *Supreme Court Restricts EPA’s Ability to Go Big on Climate*, E&E NEWS: CLIMATEWIRE (July 1, 2022), <https://www.eenews.net/articles/supreme-court-restricts-epas-ability-to-go-big-on-climate/> (depicting different options that EPA could pursue in the wake of *West Virginia*).

26. *West Virginia*, 142 S. Ct. 2633–34 (Kagan, J., dissenting).

flaws in *West Virginia*'s reasoning, or will they find ways to adhere to its core holding (as they must) while avoiding replication of its logical errors? Finally, does *West Virginia* carry any positive implications for the environment and public health?

While the full ramifications of *West Virginia v. EPA* will unfold over the course of years, an early post-decisional assessment of the case is nevertheless appropriate. This is particularly true given that opponents of strong agency authority are already working—aggressively—to weaponize *West Virginia* against public health, safety, and welfare regulations.²⁷ In response, we propose four principles that, both individually and together, provide a bulwark against the most damaging interpretations of the Court's decision:

1. *West Virginia's* holding should apply only to Clean Air Act rules that meet all three of the following conditions: the rule imposes direct (rather than indirect) restraints on source operation, it applies to existing (rather than new or modified) units, and implicates the MQD;
2. Clear doctrinal guardrails are necessary to prevent overly broad application of the MQD as described in *West Virginia*;
3. The Court's reasoning in *West Virginia* exhibits significant errors, which lower courts must avoid even while adhering to the case's central holding; and
4. Aspects of *West Virginia* reiterate or solidify EPA's Clean Air Act authority and should be emphasized where relevant.

As we elaborate on these points below, we hope to offer litigators, regulators, and scholars who work on these issues an effective framework for understanding *West Virginia*. Our rubric acknowledges the reality of the decision while at the same time preserving robust agency authority to safeguard the public interest against the many challenges we face as a society.

27. See *infra* Part II (discussing the increase in cases citing the MQD).

I. *WEST VIRGINIA* SHOULD BE UNDERSTOOD TO APPLY ONLY TO REGULATIONS THAT IMPOSE DIRECT RESTRAINTS ON UNIT OUTPUT, THAT AFFECT EXISTING SOURCES, AND THAT RAISE MAJOR QUESTIONS.

Many headlines on *West Virginia* announced that the Court limited EPA's authority to curtail power plant CO₂ emissions.²⁸ This is certainly true: as discussed above, the Court rejected the regulatory approach EPA adopted in the CPP,²⁹ which based CO₂ emission targets for existing coal and gas plants primarily on the ability of new renewable resources to displace a portion of electricity generated by fossil fuel plants.³⁰ However, as we argue in this section, *West Virginia* only concerned existing source regulations under § 111(d) and should not be interpreted to curtail EPA's authority under § 111(b) to set standards for new or modified sources. Nevertheless, proponents of deregulation will very likely seek to extend *West Virginia's* holding to the § 111(b) context and deploy it in fights against new source standards, especially those that reflect zero-emission technologies. A careful reading of the *West Virginia* opinion, the textual differences between § 111(b) and § 111(d), and long-standing precedent from lower courts all indicate that the Court's holding applies only to existing power plants. As such, *West Virginia* should not restrain EPA from using § 111(b) to phase out obsolete technologies in favor of new (and in some cases non-emitting) alternatives.

First, a quick review of the statute is in order. To reiterate, § 111 is the Clean Air Act program governing standards of performance for stationary sources of air pollution.³¹ *West Virginia* provides a fairly detailed history and description of this program,³² and we think it best to limit our discussion here to the provision's major points. First, for any listed source category, EPA must issue standards of performance—that is, limits on individual sources' emissions of air pollution—for all new and modified sources within the category.³³ Once EPA issues new source standards for a category, it must issue emission guidelines for existing sources within that category, but only as to pollutants (such as CO₂) not covered under § 110's national ambient air quality standards program or under § 112's hazardous air pollutants program.³⁴

28. *See supra* note 2.

29. Carbon Pollution Emission Guidelines for Existing Stationary Sources: Electric Utility Generating Units, 80 Fed. Reg. 64,661, 64,662 (Oct. 23, 2015).

30. *See id.* at 64,795–64,811 (explaining how the regulations target existing coal and gas plants by setting targets based on the ability of renewable energy to replace part of the electricity production generated by fossil fuel plants).

31. 42 U.S.C. § 7411.

32. *West Virginia v. EPA*, 142 S. Ct. 2587, 2600–02 (2022).

33. 42 U.S.C. § 7411(b)(1)(B).

34. *Id.* § 7411(d)(1).

Like its new source standards, EPA's existing source guidelines must establish emission limits for covered units. Unlike new source standards, however, which apply directly to affected sources, EPA's emission guidelines apply only indirectly. States are first given an opportunity to develop plans that translate the guidelines' emission reduction targets into performance standards enforceable against existing sources within their borders.³⁵ While EPA retains authority to disapprove of state plans it deems unsatisfactory,³⁶ the Agency may not enforce the emission guidelines themselves against sources. However, for sources in states that choose not to participate in the program, EPA will issue a federal plan establishing enforceable standards of performance.³⁷

Both EPA's new source performance standards and its emission guidelines must reflect "the degree of emission limitation achievable through the application of the best system of emission reduction [BSER] which (taking into account the cost of achieving such reduction and any non-air quality health and environmental impact and energy requirements) the Administrator determines has been adequately demonstrated."³⁸ As the Court noted in *West Virginia*, the numerical target for emission reductions, and thus the Agency's selection of the BSER, "may be different for new and existing plants."³⁹

In light of this statutory background, we now turn back to *West Virginia* itself. Notably, in deciding the case, the Court did not settle the primary statutory debate at issue both in the briefing before it and in the D.C. Circuit's decision: whether § 111 impliedly constrained EPA's selection of the BSER to measures that can be physically applied "at" and "to" each individual source.⁴⁰ In the context of power plant regulations, this debate was characterized as inside-the-fence vs. outside-the-fence pollution control measures. Inside-the-fence measures refer to bolt-on pollution controls, like scrubbers, as well as other on-site emission reduction measures. Outside-the-fence measures, by contrast, describe a CPP-style generation-shifting approach, which relied in some manner upon the interconnected nature of the power grid as a whole rather than pollution control methods that could be isolated to individual units.

35. *Id.*

36. *Id.* § 7411(d)(2)(A).

37. *Id.* § 7411(d)(2)(A)–(B).

38. *Id.* § 7411(a)(1).

39. *West Virginia v. EPA*, 142 S. Ct. 2587, 2599 (2022).

40. *See, e.g.*, Br. for Pet'rs, 31–44, *West Virginia*, 142 S. Ct. 2587 (2022); Br. for the Fed. Resp'ts, 1, 24–44, *West Virginia*, 142 S. Ct. 2587 (2022); Br. of Non-Gov. Org. and Trade Ass'n. Resp'ts, 32–41, *West Virginia*, 142 S. Ct. 2587 (2022) [hereinafter Br. of NGOs] (No. 20-1530); Am. Lung Ass'n. v. EPA, 985 F.3d 914, 945–46 (D.C. Cir. 2021).

Near the end of the majority opinion, Chief Justice Roberts takes pains to point out that the Court has “no occasion to decide whether the statutory phrase ‘system of emission reduction’ refers exclusively to measures that improve the pollution performance of individual sources, such that all other actions are ineligible to qualify as the BSER.”⁴¹ Rather, he asserts that “the only interpretive question before us . . . is more narrow: whether the [BSER] identified by EPA in the Clean Power Plan was within the authority granted to the Agency in § 111(d) of the Clean Air Act. For the reasons given, the answer is no.”⁴² This maneuver by the Court leads away from a broader interpretation of the text of § 111 and toward the peculiar details of the CPP. Based on those details, can we glean any more generalized principles as to the kinds of regulatory approaches that the Court would permit or not permit under § 111?

We can, in fact, do so by reviewing the precise language the Court used in reaching its decision. The Court describes “building blocks” 2 and 3 of the CPP—the two major components of the rule’s BSER—as “generation shifting from higher-emitting to lower-emitting producers of electricity.”⁴³ Plant operators could achieve this shift by any of three avenues: (1) “reducing the regulated plant’s own production of electricity”; (2) “build[ing] a new natural gas plant, wind farm, or solar installation, or invest[ing] in someone else’s existing facility and then increas[ing] generation there”; or (3) “purchas[ing] emission allowances or credits as part of a cap-and-trade regime.”⁴⁴ The Court opined that the CPP’s approach would allow EPA to set the cap “wherever the agency sees fit” based on its determination of a “reasonable” amount of shift.⁴⁵ By contrast, under other credit-trading schemes, the emission cap reflected “the application of particular controls”⁴⁶ and/or “some scientific, objective criterion.”⁴⁷ The court thus distinguished between (on the one hand) a CPP-style rule that “simply announce[s] what the market share of coal, natural gas, wind, and solar must be, and then requir[es] plants to reduce operations or subsidize their competitors to get there,” and (on the other) “a rule that may end up causing an *incidental* loss of coal’s market share.”⁴⁸

The clearest general directive we might derive from this discussion is this: EPA’s choice of the “best system” may not include measures requiring direct reductions in the operation of existing sources of pollution that are

41. West Virginia, 142 S. Ct. at 2615 (emphasis omitted).

42. *Id.* at 2615–16.

43. *Id.* at 2603 (quoting 80 Fed. Reg. 64,512 (Sept. 20, 2016)).

44. *Id.*

45. *Id.* at 2593.

46. *Id.* at 2610.

47. *Id.* at 2615.

48. *Id.* at 2613 n.4 (emphasis added).

premised on increased operation of cleaner competing sources. Two limiting factors in this holding quickly emerge. The first and clearest of these is the distinction between measures that directly limit affected sources' levels of production and those that do so "incidental[ly]." ⁴⁹ The *West Virginia* majority highlights this distinction in footnote 4, responding to the dissent's objection that "EPA is always controlling the mix of energy sources under [§] 111 because all of the Agency's rules impose some costs on regulated plants, and therefore (all else equal) cause those plants to lose some share of the electricity market."⁵⁰ *West Virginia* does not, then, restrict EPA from selecting BSER measures that damage the competitive standing of affected sources, so long as those measures are not direct restraints on the sources' output and otherwise satisfy § 111's factors.

Consider, for instance, a BSER measure that required major equipment upgrades at existing coal-fired power plants after a certain number of years, and that these upgrades entailed reasonable but non-trivial capital expenditures. Suppose, further, that most such units operated at very low profit margins and that even modest increases in capital costs made those plants uneconomic compared to other kinds of electricity generators, such that state utility regulators were unlikely to permit plant owners to recover those costs through increased electricity rates. As a result, EPA's regulation might force those units into retirement, not by directly mandating closure but by requiring control costs that pushed them into the red. Because those retirements were the incidental result of a measure geared toward cleaner source operation, nothing in *West Virginia* should be interpreted to proscribe this approach, or to limit EPA to issuing only minimally protective standards for facilities that are just teetering on the edge of economic viability due to competition from cleaner and cheaper facilities.

A second limiting principle apparent in *West Virginia* is that the decision only extends to existing source emission guidelines issued under § 111(d), and not new source performance standards issued under § 111(b). Of course, the CPP only concerned existing sources,⁵¹ and so the Court had no occasion to address new source standards in its decision. The very concept of generation shifting makes little sense outside the context of existing sources: the only units that can "shift" or "reduce" their generation are those that already exist. The regulatory impacts the Court cited—plants ceasing to generate electricity, units reducing their productive output compared to prior

49. *Id.*

50. *Id.*

51. Carbon Polluting Emission Guidelines for Existing Stationary Sources: Electric Utility Generating Units; Final Rule, 80 Fed. Reg. 64,661, 64,663 (Oct. 23, 2015) (the CPP "establish[es] . . . GHG emission guidelines for existing power plants").

operation, dozens of coal plants retiring⁵²—are things that can only happen at existing sources; units that do not yet exist cannot cease generating, reduce their generation relative to an earlier time, or retire. It is not surprising, then, that the Court mentions § 111(b) only three times in the majority opinion—and only when describing the basic mechanics of the statute—whereas it cites § 111(d) 21 times.⁵³ Nor is it surprising that the Court frequently refers to “existing” units when characterizing the rule and/or describing its legal infirmities, at times expressly contrasting the CPP with EPA’s GHG standards for new power plants.⁵⁴

This contrast between new and existing source standards is apparent in the language and structure of § 111 itself. The text of this provision reveals Congress’s particular concern with pollution from new sources and its assumption that such sources would be subject to more stringent controls than existing sources. First, § 111(b)(1)(B) requires EPA to issue new source standards within one year of listing a new source category,⁵⁵ whereas § 111(d) permits the Agency to regulate existing sources only in categories that are already subject to new source controls.⁵⁶ Second, § 111(b) does not limit the kinds of pollutants that EPA may or must address in new source standards,⁵⁷ while § 111(d) permits the Agency to issue existing source emission guidelines only for pollutants that are neither criteria pollutants (regulated under §§ 108–110) nor hazardous air pollutants (regulated under § 112).⁵⁸

Third, under the statute, EPA directly issues and administers standards of performance for new sources.⁵⁹ On the other hand, the Agency only indirectly regulates existing sources through its emission guidelines, which designate the BSER and the level of pollution control that the source must achieve.⁶⁰ States, not EPA, are primarily responsible for issuing and administering plans that include directly enforceable standards of

52. West Virginia, 142 S. Ct. at 2603–12.

53. See generally *id.* at 2599–2616 (noting that the Court only mentions § 111(b) when describing the function of the statute, whereas the Court mentions § 111(d) much more freely).

54. See, e.g., *id.* at 2602–03 (“The BSER that the Agency selected for existing coal-fired power plants, however, was quite different from the BSER it had chosen for new sources.”); *id.* at 2604 (The Clean Power Plan’s emission limits were “so strict that no existing coal plant would have been able to achieve them without engaging in” generation-shifting); *id.* (“Indeed, the emissions limit the Clean Power Plan established for existing power plants was actually stricter than the cap imposed by the simultaneously published standards for new plants.”); *id.* (“The point, after all, was to compel the transfer of power generating capacity from existing sources to wind and solar.”); *id.* at 2612 n.3 (“Section 111(d) empowers EPA to guide States in establishing standards of performance for existing sources, not to direct existing sources to effectively cease to exist.”).

55. 42 U.S.C. § 7411(b)(1)(B).

56. *Id.* § 7411(d)(1).

57. *Id.* § 7411(b)(1)(B).

58. *Id.* § 7411(d)(1).

59. *Id.* § 7411(b)(1)(B).

60. *Id.* § 7411(d)(1).

performance. Finally, in exercising oversight over those state plans, EPA must “permit the State in applying a standard of performance to any particular source under a plan . . . to take into consideration, among other factors, the remaining useful life of the existing source to which such standard applies.”⁶¹ Section 111(b) provides no such leeway for new source standards.

Congress recognized that new sources can generally control their emissions with greater facility and at a lower cost compared to existing sources and designed the § 111 program accordingly. Long-standing case law from the D.C. Circuit—which *West Virginia* did not question—bears this out. In *Portland Cement Association v. Ruckelshaus*, the court rejected an industry argument that “any [source] now in existence [must] be able to meet the proposed standards” for new sources.⁶² Instead, the court held that § 111(b) “looks toward what may fairly be projected for the regulated future, rather than the state of the art at present, since it is addressed to standards for new plants—old stationary source pollution being controlled through other regulatory authority.”⁶³ In fact, as the court in *Ruckelshaus* observed, the Senate Report accompanying the Clean Air Act Amendments establishing § 111 “made clear that [Congress] did not intend” that new source BSER technology already “be in actual routine use somewhere,” only that it be available for installation in new plants.⁶⁴

To extend the holding of *West Virginia* to the new source context would ignore these crucial distinctions. Nevertheless, proponents of deregulation may argue that even while *West Virginia* formally addressed § 111(d), the Court was fundamentally concerned with EPA’s efforts to overhaul an entire industrial sector. Under this view, *West Virginia* should be understood to prohibit EPA from “directing . . . [certain kinds of] sources to cease to exist,”⁶⁵ even prospectively through a new source rule. In other words, EPA may require that new units within a given source category operate as cleanly as possible going forward but cannot outright prohibit any fundamental method of production from a listed category. For instance, EPA could not set a CO₂ standard for new power plants that only units other than coal plants could achieve.

Once again, the language of the Clean Air Act forecloses this position. Although the statute does not include a specific definition for “best system

61. *Id.*

62. 486 F.2d 375, 391 (D.C. Cir. 1973).

63. *Portland Cement Ass’n. v. Ruckelshaus*, 486 F.2d 375, 391 (D.C. Cir. 1973); *see also* *Lignite Energy Council v. EPA*, 198 F.3d 930, 934 (D.C. Cir. 1999) (quoting *Portland Cement Association* on this point).

64. *Id.* (quoting S. Rep. No. 9-1196, 91st Cong., 2d Sess. 16 (1970)).

65. *West Virginia v. EPA*, 142 S. Ct. 2587, 2612 n.3 (2022).

of emission reduction,” § 111(a)(7) defines “technological system of continuous emission reduction”⁶⁶—a term that applies to EPA’s standards in certain specified circumstances and is narrower in scope than BSER,⁶⁷ as it includes additional qualifying terms.⁶⁸ The definition provides that this kind of “system” means, among other things, “a technological process for production or operation by any source which is inherently low-polluting or nonpolluting.”⁶⁹ There can be little doubt, then, that Congress contemplated § 111 standards for new sources that reflect certain industrial processes while banning others. *West Virginia* limited the extent to which EPA may rely on the availability of cleaner generation in determining the quantity of CO₂ emission reductions required from the fleet of existing fossil-fuel-fired power plants. Yet nothing in the decision forecloses EPA from effectively requiring the use of cleaner (or even non-emitting) processes for new sources going forward, and thus functionally prohibiting the use of older and higher-emitting processes to generate the same industrial output. Any argument to the contrary would be difficult to square with the Clean Air Act text quoted above.

On multiple occasions, the D.C. Circuit has upheld § 111(b) rules that functionally banned certain types of facilities or operational practices at new sources in favor of environmentally superior alternatives. In *Portland Cement Association v. EPA*, the court upheld nitrogen oxide (NO_x) standards for new Portland cement manufacturers that would have effectively prohibited the construction or modification of certain kinds of plants (long wet and long dry kilns) because of the increasing availability of an environmentally superior kind of plant (preheater/precalciner kilns).⁷⁰ And in *New York v. Reilly*, the court went further still, remanding EPA’s new source standards for municipal waste incinerators as arbitrary and capricious because the Agency had not properly considered an outright ban on the combustion of lead-acid vehicle batteries as a means of reducing emissions.⁷¹

Similarly, for decades, EPA’s sulfur dioxide (SO₂) standards for primary copper smelters have effectively banned the construction of new reverberatory copper smelting facilities in most circumstances in favor of

66. 42 U.S.C. § 7411(a)(7).

67. *See, e.g., id.* § 7411(h) (specifying that the best technological system of continuous emission governs EPA’s design, equipment, work practice, or operational standards when standards of performance are not feasible).

68. In her dissent, Justice Kagan argued that the term “best technological system of continuous emission reduction” includes “technological” limits that the term BSER does not. Specifically, the BSER does not include specific references to “technological” *See, e.g., West Virginia*, 142 S. Ct. at 2631–32 (Kagan, J., dissenting) (noting that although the majority opinion suggests that the BSER must be “technological” in nature under most circumstances, it does not definitively resolve this question).

69. 42 U.S.C. § 7411(a)(7)(A) (emphasis added).

70. *Portland Cement Ass’n v. EPA*, 665 F.3d 177, 190 (D.C. Cir. 2011).

71. *New York v. Reilly*, 969 F.2d 1147, 1153 (D.C. Cir. 1992).

lower-emitting flash and electric copper smelting processes.⁷² More recently, the Agency required the use of new zero-emitting pneumatic controllers at oil and gas processing plants, barring new gas-driven devices at these sites.⁷³ Both EPA and the courts have thus long understood that the Agency is not limited to controlling new source pollution through bolt-on technology to reduce stack emissions at industrial facilities. Rather, EPA may fundamentally prohibit certain types of facilities or practices altogether if superior methods exist and otherwise meet the statutory criteria. Thus, when the majority expresses doubt in *West Virginia's* footnote 3 that EPA might have authority to “simply require[e] coal plants to become natural gas plants,”⁷⁴ its skepticism should be read to extend no further than the nation’s fleet of existing power plants.

As a third limiting principle, *West Virginia's* restraints on EPA’s § 111 authority should apply only to regulations that implicate major questions concerns. Throughout the opinion, the Court insists repeatedly that “extraordinary cases . . . call for a different approach” to statutory interpretation,⁷⁵ requiring “clear congressional authorization” to uphold the power the Agency has asserted.⁷⁶ Yet merely “ordinary case[s]” merit no such heightened standard of review.⁷⁷ The Court’s analysis of CPP-style generation shifting simply has no bearing on rules that do not carry “vast economic and political significance”⁷⁸ or otherwise involve a “transformative expansion [of an agency’s] regulatory authority.”⁷⁹

Because the *West Virginia* majority considered the case before it to be “extraordinary,” its opinion ignored the intricate grammatical and technical arguments on the proper interpretation of § 111 that were presented in the briefing. It focused instead on the “narrow” question of whether clear congressional authorization existed for the CPP’s selection of generation shifting as an element of the BSER for existing power plants.⁸⁰ In the Court’s view, the rule carried tremendous economic and political ramifications and represented a transformative expansion of EPA’s power beyond its area of expertise, thus meriting a different and heightened standard of review.

72. Standards of Performance for New Primary Copper, Zinc, and Lead Smelters, 41 Fed. Reg. 2333–34 (Jan. 15, 1976); 40 C.F.R. § 60.163(a).

73. Oil and Natural Gas Sector: Emission Standards for New, Reconstructed, and Modified Sources, 81 Fed. Reg. 35,824, 35,849 (June 3, 2016); 40 C.F.R. § 60.5390a(b)(1).

74. *West Virginia v. EPA*, 142 S. Ct. 2587, 2612 n.3 (2022).

75. *Id.* at 2608 (cleaned up).

76. *Id.* at 2609 (citing *Util. Air Regul. Grp. v. EPA*, 573 U.S. 302, 324 (2014)).

77. *Id.* at 2605, 2608 (cleaned up).

78. *Id.* at 2605.

79. *Id.* at 2610 (cleaned up).

80. *Id.* at 2615–16.

A § 111(d) rule not having transformative consequences—even one requiring existing regulated entities to operate less frequently or to be replaced with cleaner alternatives—would require a different set of interpretive tools, which the Court explicitly avoided in *West Virginia*. For this reason, the Court declined to decide whether the “best system” under § 111(d) refers “*exclusively* to measures that improve the pollution performance of individual sources,” which the Court considered “an interpretive question that is not at issue” in the case.⁸¹ Accordingly, § 111(d) regulations not presenting a major question simply do not implicate the concerns raised in *West Virginia*, even if they directly restrain fundamental industrial processes or practices at existing sources.

II. CLEAR LIMITING PRINCIPLES ARE NECESSARY TO REIN IN THE MAJOR QUESTIONS DOCTRINE AND PREVENT ITS ABUSE.

Beyond its implications for § 111, *West Virginia* concerns a critical threshold issue: when should the MQD apply in the first instance? Here, we must set aside questions of whether the doctrine is justified in “replac[ing] normal text-in-context statutory interpretation with some tougher-to-satisfy set of rules,” as Justice Kagan notes in her scathing dissent.⁸² As Sierra Club attorneys, we certainly agree with Justice Kagan: we see no reasoned basis for courts to apply a heightened standard of review to agency actions that are “just too new and too big a deal.”⁸³ Doing so poses a sharply asymmetric risk of toppling agency actions that move in a pro-regulatory rather than deregulatory direction.⁸⁴ The MQD threatens the very concerns that are central to Sierra Club’s organizational mission, and the MQD’s emergence is one of the most troubling aspects of the Roberts Court’s recent tenure.

Nevertheless, the stark reality is that the MQD not only exists but is gaining significance—the Court having deployed it three times in the last term alone.⁸⁵ Nor can we put much stock in the proposal offered by Professors Michael Coenen and Seth Davis, which would make the MQD

81. *Id.* at 2615.

82. *Id.* at 2634 (Kagan, J., dissenting).

83. Thus far, eight Supreme Court cases have appeared to involve some permutation of the MQD: *West Virginia* itself, *MCI Telecommunications Corporation v. AT&T*, 512 U.S. 218 (1994), *FDA v. Brown & Williamson Tobacco Corporation*, 529 U.S. 120 (2000), *Gonzales v. Oregon*, 546 U.S. 243, 267 (2006), *Utility Air Regulatory Group v. EPA*, 573 U.S. 302 (2014), *King v. Burwell*, 576 U.S. 473 (2015), *Alabama Association of Realtors v. Department of Health and Human Services*, 141 S. Ct. 2485 (2021) (*per curiam*), and *National Federation of Independent Businesses v. OSHA*, 142 S. Ct. 661 (2022) (*per curiam*). Of these eight, only *MCI Telecommunications* involved a challenge to an agency action that increased rather than decreased regulation. As for the remaining seven cases, the Court struck down the challenged action, in whole or in part, in every one except *Burwell*.

84. *West Virginia*, 142 S. Ct. at 2628 (Kagan, J., dissenting).

85. *West Virginia*, 142 S. Ct. at 2587; *Ala. Ass’n. of Realtors*, 141 S. Ct. at 2485; *Nat’l Fed’n of Indep. Bus.*, 142 S. Ct. at 661.

“the exclusive province of the Supreme Court” while prohibiting its application by lower federal courts.⁸⁶ While this idea is certainly appealing in theory, it is unlikely that circuit judges who are skeptical of agency authority would decline to use this powerful jurisprudential tool that the Supreme Court has handed to them. For their part, circuit judges who are more sympathetic to agency power would be equally reluctant to disregard MQD claims raised in litigation, lest they unilaterally cede this field of law to their more conservative colleagues.⁸⁷

In any event, the MQD express has already departed the station with alarming dispatch. In the months since *West Virginia* was announced, industry lawyers have been papering federal court dockets with filings that assert outlandish MQD challenges against discretely targeted, garden-variety agency actions. The first month after the decision alone saw a flurry of such claims. For instance, on July 5, 2022, attorneys for a religious organization cited the case in a 28(j) letter to the 11th Circuit claiming that the MQD prohibited the Drug Enforcement Agency from making a factual inquiry into the sincerity of the group’s asserted sacramental interest in using the psychoactive brewed drink ayahuasca.⁸⁸ Attorneys representing the Racing Enthusiasts and Suppliers Coalition submitted a similar letter to the D.C. Circuit on July 12. That letter argued that EPA rules prohibiting owners from tampering with motor vehicle emission control systems ran afoul of the MQD insofar as it applied to cars that had been modified for amateur racing purposes.⁸⁹

On July 22, attorneys for various trade groups asserted in a D.C. Circuit reply brief that an EPA rule prohibiting the use of non-recyclable containers for hydrofluorocarbons involved a claim of “unheralded power” on EPA’s part and was thus barred under *West Virginia*.⁹⁰ And in a July 29 reply brief submitted to the Fifth Circuit, restaurant industry attorneys cited *West Virginia* in challenging a Department of Labor guidance document that restricted employers from claiming “tip credit” (and thus paying below the

86. Michael Coenen & Seth Davis, *Minor Courts, Major Questions*, 70 Vand. L. Rev. 777, 814–15, 820 (2017).

87. See Kent Barnetta & Christopher J. Walker III, *Short-Circuiting the New Major Questions Doctrine*, 70 VAND. L. REV. EN BANC 147, 154 (2017) (saluting the “creativity of Coenen and Davis’s proposal” but responding that “one should not so easily dismiss the benefits of further percolation [of the doctrine] in the lower courts,” as “[t]he circuit courts serve as jurisprudential laboratories for developing (or even jettisoning) legal rules and standards.”).

88. Notice of Supplemental Authority, *Soul Quest Church of Mother Earth v. Garland*, No. 20-13983 (11th Cir. July 5, 2022).

89. Notice of Supplemental Authority, *Racing Enthusiasts and Suppliers Coal. v. EPA*, No. 16-1447 (D.C. Cir. July 12, 2022). This case was dismissed on August 12 for lack of jurisdiction. Opinion, *Racing Enthusiasts and Suppliers Coal.*, No. 16-1447 (D.C. Cir. Aug. 12, 2022).

90. Pet’rs’ Final Reply Br. at 2, 4, 12, *Heating, Air-Conditioning, & Refrigeration Distrib. Int’l v. EPA*, No. 21-1251 (D.C. Cir. July 22, 2022).

federal minimum wage) for more than 20% of tipped employees' time spent on untipped activities.⁹¹ These four examples reveal a clear and deeply troubling pattern: opponents of public health and safety regulations are attempting to use the MQD as a bludgeon to attack any regulation that they see as burdening their clients in some manner, no matter how narrowly applicable the regulation might be or how squarely it might fit within the agency's field of expertise. Sturdy precedential barricades in the lower courts are badly needed to protect against this onslaught and limit the scope of the MQD to the greatest extent possible.

Unfortunately, the Court's uneven MQD jurisprudence complicates this task, as there is no clear throughline linking together all the Court's MQD cases. Certainly, *West Virginia* identifies various factors that have appeared in previous MQD cases, citing rules that: assert "extravagant statutory power over the national economy";⁹² reflect a "transformative expansion in [an agency's] regulatory authority"; rely on "long-extant" statutes or "ancillary provision[s]" of law; establish a "regulatory program that Congress had conspicuously and repeatedly declined to enact itself"; and have "been the subject of an earnest and profound debate across the country."⁹³ But these are merely descriptions of what the Court has done in different cases in the past, with no one factor dominating and no clear standard emerging.

Consider, for instance, *MCI Telecommunications v. AT&T*, in which the Court struck down a Federal Communications Commission regulation that removed tariff-filing obligations for nondominant telephone carriers.⁹⁴ The regulation was enacted pursuant to the Commission's authority under the Communications Act to "modify any requirement" for a regulated entity.⁹⁵ The Court subjected this regulation to MQD treatment (or at least a nascent form of it), even though it did not touch on issues of "profound" moral or political debate or concern a policy that Congress had "conspicuously" declined to enact.⁹⁶ In *FDA v. Brown & Williamson*, the Court invoked the MQD in rejecting the Food and Drug Administration's (FDA) authority to regulate tobacco products under the Food, Drug, and Cosmetics Act.⁹⁷ While that policy appeared to contradict a clear and affirmative legislative program enacted by Congress,⁹⁸ and would ostensibly have required the FDA to ban

91. Appellants' Reply Br. at 12–16, *Restaurant Law Ctr. v. U.S. Dep't of Lab.*, No. 22-50145 (5th Cir. July 29, 2022).

92. *West Virginia v. EPA*, 142 S. Ct. 2587, 2609 (2022) (citing *Util. Air Regul. Grp. v. EPA*, 573 U.S. 302, 324 (2014)).

93. *Id.* at 2610, 2614.

94. *MCI Telecomm. Corp. v. AT&T*, 512 U.S. 218, 227 (1994).

95. *Id.*

96. *West Virginia*, 142 S. Ct. at 2614.

97. *FDA v. Brown & Williamson Tobacco Corp.*, 529 U.S. 120, 160–61 (2000).

98. *Id.* at 137–39.

a product used daily by a large number of Americans,⁹⁹ the FDA did not seek authority in a merely ancillary or obscure statutory provision.¹⁰⁰

Gonzales v. Oregon, in turn, relied on the MQD to reject the Department of Justice's (DOJ) authority under the Controlled Substances Act to nullify state laws authorizing physician-assisted suicide.¹⁰¹ The DOJ's action certainly implicated a highly controversial political issue,¹⁰² but did not involve an attempt by the Department to gain "extravagant statutory power over the national economy" only one state's laws were implicated, and the action did not emerge from a "little-used [statutory] backwater."¹⁰³ And the Internal Revenue Service (IRS) regulations at issue in *King v. Burwell* addressed issues of major economic and political import,¹⁰⁴ but implemented a regulatory program—the Affordable Care Act—that Congress had conspicuously *intended*.

While the majority claims in *West Virginia* that "scholars and jurists have recognized the common threads between those decisions,"¹⁰⁵ many *more* legal scholars have noted "the incoherence resulting from the inconsistent application of the major questions doctrine."¹⁰⁶ As Justice Kagan laments in the dissent, the MQD's applicability prong is essentially "some panoply of factors"¹⁰⁷ pointing toward "a big new thing"¹⁰⁸ implemented by a federal agency. The majority opinion in *West Virginia* provides no further instruction as to how lower courts might extract a consistent, unifying principle from this jumble of indicia. Instead, it points toward what Justice Scalia once derided as "that test most beloved by a court unwilling to be held to rules

99. *Id.* at 137.

100. Under the Food, Drug, and Cosmetics Act, 21 U.S.C. §§ 301-399i, the FDA oversees more than 20,000 prescription drug products and over 6,700 different medical device product categories. FDA, *Fact Sheet: FDA at a Glance*, <https://www.fda.gov/media/143704/download> (last visited Feb. 16, 2023).

101. *Gonzales v. Oregon*, 546 U.S. 243, 267 (2006).

102. *Id.* at 249.

103. *West Virginia v. EPA*, 142 S. Ct. 2587, 2613 (2022).

104. *King v. Burwell*, 576 U.S. 473, 485–86 (2015).

105. *West Virginia*, 142 S. Ct. at 2609.

106. Shany Winder, *Extraordinary Policymaking Powers of the Executive Branch: A New Approach*, 37 VA. ENV'T L.J. 207, 240 (2019); see also Ilan Wurman, *The Specification Power*, 168 U. PA. L. REV. 689, 730 (2020) (referring to "the incoherence of the major questions cases"); Joshua S. Sellers, "Major Questions" Moderation, 87 GEO. WASH. L. REV. 930, 946 (2019) ("All told, the inconsistent application of the [MQD] undermines its legitimacy."); Marla D. Tortorice, *Nondelegation and the Major Questions Doctrine: Displacing Interpretive Power*, 67 BUFF. L. REV. 1075, 1104–05 (2019) (the MQD's "inconsistencies could signal that the major questions doctrine is merely a smokescreen for policy judgments by the Court, which necessarily results in an enhancement of the Court's own interpretive power.").

107. *West Virginia*, 142 S. Ct. at 2634 (Kagan, J., dissenting).

108. *Id.* at 2638.

(and most feared by litigants who want to know what to expect): th'ol' 'totality of the circumstances' test."¹⁰⁹

Without clear guardrails in place to avoid overapplication of the MQD, the doctrine threatens to kneecap federal administrative agencies and overextend judicial power beyond any reasonable limit. To avoid that outcome, we propose several limiting principles that resonate with many of the Court's prior MQD decisions—particularly the most recent ones. These principles would help curb the kind of grossly unrestrained MQD arguments that we have seen since *West Virginia* was decided. The points we discuss should by no means be thought of as an exhaustive list of limitations for the doctrine's application; indeed, strong arguments can and probably should be made for several others. Those we focus on here are simply ones that we consider particularly salient considering the arguments that have percolated in the courts of appeals in the immediate aftermath of *West Virginia*.

First, courts should not apply the MQD where an agency is operating within its core area of expertise. This does not mean that an agency's action is automatically lawful in such instances, nor that regulatory actions that extend beyond the agency's normal practice area necessarily *do* require an MQD analysis. But as a categorical matter, where an agency is operating within its fundamental sphere of competence, courts should review the action according to traditional rules of statutory interpretation, rather than the MQD's exacting demand for evidence of clear congressional intent. At the very least, courts should apply a strong presumption against MQD applicability under these circumstances.

This approach squares with previous MQD cases (including all three of those decided in 2022) in which the Court faulted agencies for veering sharply outside their traditional lanes. In *Alabama Association of Realtors v. DHHS*, the Court suggested that the Centers for Disease Control and Prevention was effectively performing the role of a national housing authority rather than a public health agency in issuing a nationwide eviction moratorium.¹¹⁰ In *National Federation of Independent Business v. Department of Labor*, the Court criticized the Occupational Safety and Health Administration for attempting to combat a general public health crisis rather than a workplace-specific issue.¹¹¹ And in *West Virginia*, the Court

109. *United States v. Mead Corp.*, 533 U.S. 218, 241 (2001) (Scalia, J., dissenting). Credit for this particular citation goes to Jay Duffy, Litigation Director of Clean Air Task Force.

110. *Ala. Ass'n of Realtors v. Dept. of Health and Hum. Servs.*, 141 S. Ct. 2485, 2489 (2021) ("It is hard to see what measures this interpretation would place outside the CDC's reach Could the CDC, for example, mandate free grocery delivery to the homes of the sick or vulnerable? Require manufacturers to provide free computers to enable people to work from home? Order telecommunications companies to provide free high-speed Internet service to facilitate remote work?").

111. *Nat'l Fed'n of Indep. Bus. v. OSHA*, 142 S. Ct. 661, 665–66 (2022).

(however questionably)¹¹² described EPA as taking on the role of a national energy czar rather than an environmental regulator.¹¹³ This fact also played a significant role in earlier cases such as *Gonzales* (which described the Attorney General as acting “beyond his expertise” in concluding that the use of drugs for physician-assisted suicide was not a “legitimate medical purpose”)¹¹⁴ and *Burwell* (which noted that the IRS “has no expertise in crafting health insurance policy of this sort” in deciding to apply MQD principles).¹¹⁵

The idea that the MQD should not apply when an agency is acting within its core competency also carries strong intuitive appeal. Courts have long recognized that “historical familiarity and policymaking expertise account in the first instance for the presumption that Congress delegates interpretive lawmaking power to the agency rather than to the reviewing court.”¹¹⁶ Under the familiar *Chevron* doctrine, courts are expected to *defer* to agencies’ reasonable interpretations of ambiguous statutory language,¹¹⁷ primarily because agencies have technical expertise on matters within their regulatory domain in a way that courts do not.¹¹⁸ Setting aside controversies regarding the future of *Chevron*, it should not be difficult to conclude that the MQD’s *heightened* standard of review is inappropriate where the agency possesses expertise over the subject matter at hand.

Second, courts should not apply the MQD merely because an agency has done something new and different from what it has previously done or has asserted regulatory authority over some activity for the first time. One of the primary reasons that Congress grants agencies rulemaking authority in the first place is their “ability . . . to respond flexibly to changing conditions.”¹¹⁹ As Judge Easterbrook has perceptively observed:

112. As discussed in the following section, the Clean Power Plan actually trailed far behind market forces in terms of achieving a grid-level shift of energy resources, to such a degree that the Trump Administration determined that the rule would have had *no* measurable impacts on electricity generation.

113. *West Virginia v. EPA*, 142 S. Ct. 2587, 2612 (2022) (“EPA itself admitted when requesting special funding [for the Clean Power Plan], ‘Understand[ing] and project[ing] system-wide . . . trends in areas such as electricity transmission, distribution, and storage’ requires ‘technical and policy expertise *not* traditionally needed in EPA regulatory development.”) (internal citation omitted) (emphasis in original).

114. *Gonzales v. Oregon*, 546 U.S. 253, 266–67 (2006).

115. *King v. Burwell*, 576 U.S. 473, 486 (2015).

116. *Martin v. OSHA*, 499 U.S. 144, 152–53 (1991).

117. *Chevron v. NRDC*, 467 U.S. 837, 842–45 (1984).

118. *Pension Ben. Guar. Corp. v. LTV Corp.*, 496 U.S. 633, 651–52 (1990) (“This practical agency expertise is one of the principal justifications behind *Chevron* deference.”) (emphasis added).

119. David Epstein & Sharyn O’Halloran, *The Nondelegation Doctrine and the Separation of Powers: A Political Science Approach*, 20 CARDOZO L. REV. 947, 954 (1999).

[o]ften statutes delegate comprehensive powers to agencies, and the meaning of the law is that agencies shall solve novel problems as they arise. Solutions may involve complex and unanticipated adjustments. Courts can be more confident that power has been delegated than that any particular exercise is “right.” Deference to the agency’s conclusion follows naturally from such a determination, for what Congress wanted to obtain is the judgment of the agency—Congress delegates precisely because it cannot foresee and resolve all problems.¹²⁰

To reflexively balk at an agency’s decision to regulate some previously unrestrained activity would thus contravene not just administrative agencies’ fundamental purpose, but also “the meaning of the law” itself in many cases.¹²¹ Again, this does not mean that courts must necessarily uphold the challenged agency action in such circumstances. In order to apply the MQD’s much more rigorous standard of review, however, courts should demand evidence of a truly dramatic and qualitative expansion of agency authority compared to anything it has ever claimed in the past. For example, the mere fact that EPA has endeavored to regulate non-recyclable hydrofluorocarbon containers for the first time should not qualify as “a sweeping expansion of EPA’s regulatory authority,” as refrigerant trade groups have recently argued.¹²²

On this point, it is helpful to compare *Massachusetts v. EPA* with *Utility Air Regulatory Group v. EPA (UARG)*,¹²³ both of which concerned EPA’s authority to control GHG pollution under the Clean Air Act. In *Massachusetts*, the Court held that the Act’s statute-wide definition of “air pollutant” in § 302(g)¹²⁴ encompasses GHGs such as CO₂, and that EPA had erred in determining otherwise when it declined to issue GHG standards for mobile sources under § 202(a)(1) of the statute.¹²⁵ This interpretation of the Act certainly required the Agency to do something new and different. Unlike the conventional air pollutants that EPA had previously regulated, GHGs do not jeopardize human health and welfare primarily through inhalation, but by trapping heat in the earth’s atmosphere and thus driving global climate change. But even while the Agency had never previously covered GHG emissions under the statute, the Court rejected MQD-style arguments based

120. *Chicago Mercantile Exch. v. SEC*, 883 F.2d 537, 547 (7th Cir. 1989).

121. *Id.*

122. Pet’rs’ Final Reply Br., *supra* note 90, at 3.

123. *Massachusetts v. EPA*, 549 U.S. 497, 497 (2007); *Util. Air Regul. Grp. v. EPA*, 573 U.S. 302, 307 (2014).

124. 42 U.S.C. 7602(g).

125. *Massachusetts*, 549 U.S. at 528–34.

on *Brown & Williamson* that EPA and its *amici* had asserted.¹²⁶ Instead, the Court held that:

while the Congresses that drafted § 202(a)(1) might not have appreciated the possibility that burning fossil fuels could lead to global warming, they did understand that without regulatory flexibility, changing circumstances and scientific developments would soon render the Clean Air Act obsolete. The broad language of § 202(a)(1) reflects an intentional effort to confer the flexibility necessary to forestall such obsolescence.¹²⁷

By contrast, *UARG* concerned EPA’s authority to regulate GHGs in the specific context of the Clean Air Act’s Prevention of Significant Deterioration (PSD) and Title V programs. PSD and Title V impose certain federal permitting obligations for new or modified “major” sources, defined as those emitting “any air pollutant” in quantities above 100 or 250 tons per year, depending on the source category (in the case of PSD), or 100 tons per year (in the case of Title V).¹²⁸ Unlike conventional pollutants such as NO_x or SO₂, for which 100 or 250 tons per year reflects a scientifically reasonable threshold for significance with respect to individual sources, emissions of CO₂ occur on a vastly greater scale. In 2021, for instance, a single coal-fired electric generating unit—General James M. Gavin Power Plant’s Unit 1—emitted more tons of CO₂ than the tons of NO_x emitted by all sources in the country combined for that year.¹²⁹

126. See, e.g., Br. for Fed. Resp’t, 21–28, *Massachusetts*, 549 U.S. at 497 (citing *FDA v. Brown & Williamson*, 529 U.S. 120, 160–61 (2000) extensively and referring to “the enormous potential economic and political consequences of regulating in this area”); Br. for *Amicus Curiae* Pacific Legal Found. in Support of the EPA, 10, *Massachusetts*, 549 U.S. at 497 (“It is highly unlikely, therefore, that Congress would have intended to leave an issue of such magnitude to a general provision of the Clean Air Act that was never designed to address global concerns and without an express statement that the provision should be so broadly applied.”).

127. *Massachusetts*, 549 U.S. at 532.

128. 42 U.S.C. §§ 7479(1) (defining “major emitting facility” in the PSD context as those emitting above 100 tons per year of any of 27 listed categories of “air pollutants” and above 250 tons per year for all other sources of any other air pollutant), 7661(2)(B) (linking the definition of “major stationary source” in the Title V context to “the one found “in section 7602 of this title”), and 7602(j) (defining “major stationary source” and “major emitting facility” as “any stationary facility or source of air pollutants which directly emits, or has the potential to emit, one hundred tons per year or more of any air pollutant.”).

129. Compare EPA, *Clean Air Markets Program Data*, <https://campd.epa.gov/data/custom-data-download> (last visited Sept. 19, 2022) (results of data query for 2021 power plant emissions showing 8,077,531 short tons of CO₂ emitted by General James M. Gavin unit 1) with EPA, *National Emissions Inventory—Air Pollutant Emissions Trends Data* (.xlsx file titled National Tier 1 CAPS Trends), https://www.epa.gov/sites/default/files/2021-03/national_tier1_caps.xlsx (last accessed Aug. 4, 2022) (showing 7,710,000 short tons of total NO_x emissions in the United States in 2021).

For PSD purposes, EPA interpreted “any air pollutant” to include GHGs based on the Court’s broad reading of “air pollutant” in *Massachusetts*. Had EPA required all new or modified sources of CO₂ that exceeded the statutory threshold to obtain PSD permits, the number of sources required to obtain preconstruction permits would have increased from 800 to nearly 82,000. With respect to Title V operating permits, the number of affected sources would have increased from fewer than 15,000 to over 6 million. For both programs, “the great majority” of these newly covered entities (including “retail stores, offices, apartment buildings, shopping centers, schools, and churches”) would have had no experience with air permitting of any kind.¹³⁰ Unsurprisingly, EPA had no intention of regulating the great majority of those sources. To avoid that outcome, the Agency finalized what it called the “Tailoring Rule,” which established emission thresholds of 75,000–100,000 tons per year of GHGs before a source triggered PSD and Title V obligations.¹³¹

On review, the Court rejected EPA’s interpretation of “any air pollutant” to include GHGs and struck down the Tailoring Rule as inconsistent with the Clean Air Act. The Court concluded that EPA had laid claim to a vastly expanded regulatory landscape, which it held to be impermissible despite the Agency’s efforts to voluntarily rein in its own authority. Finding that this “radical[] transform[ation]” of the PSD and Title V programs would “render them unworkable as written,” the Court rejected EPA’s interpretation under MQD principles.¹³² The Court *did*, however, uphold EPA’s authority to require GHG emission controls at sources already subject to PSD permitting requirements due to their emissions of other pollutants such as NO_x and SO₂.¹³³ This approach, the Court found, would not cause “such a dramatic expansion of agency authority” and was “not so disastrously unworkable . . . as to convince us that EPA’s interpretation is unreasonable,” in contrast to the Agency’s interpretation of the PSD and Title V triggering provisions.¹³⁴

Read in conjunction with *Massachusetts*, *UARG* suggests a very high tripwire for MQD consideration. The agency authority under review cannot merely be a “new and big” way of dealing with a “new and big problem[.]”¹³⁵ Instead, it must entail a kind of tectonic rupture in the agency’s operations and practices under the statute in question, one that threatens to be “disastrously unworkable,” “unadministrable,” or “unrecognizable to the

130. *Util. Air Regul. Grp. v. EPA*, 573 U.S. 322, 328 (2014).

131. Prevention of Significant Deterioration and Title V Greenhouse Gas Tailoring Rule, 75 Fed. Reg. 31,514 (June 3, 2010).

132. *Util. Air Regul. Grp.*, 573 U.S. at 320, 324.

133. *Id.* at 331.

134. *Id.* at 332.

135. *West Virginia v. EPA*, 142 S. Ct. 2587, 2628 (2022) (Kagan, J., dissenting).

Congress” that granted the agency its statutory power.¹³⁶ In the absence of an extra-statutory Tailoring Rule, a Clean Air Act interpretation imposing PSD and Title V permitting obligations on many thousands or millions of previously unregulated sources meets this threshold. Asserting *general* Clean Air Act authority to regulate GHGs in response to new information about the threat of climate change, or requiring GHG emission reductions at sources already subject to PSD obligations, does not.

Third, agency actions should not merit MQD consideration solely based on their regulatory price tag, on the fact that they apply to an entire industry, or because the regulated industry itself is big. In and of themselves, regulatory compliance costs say little to nothing about what a rule’s real-world impacts might be, and yet industry litigants frequently warn courts of dire consequences (if not outright societal collapse!) resulting from what in reality are standard-issue regulatory costs. Similarly, the size of the regulated industry and the percentage of affected firms within that industry have no inherent connection to the kinds of deep, wide-ranging disturbances to the social fabric that the Court has described (if not always correctly or cogently) in previous major questions cases. If these considerations were relevant to an MQD analysis, then agencies could only regulate minor industries, or only discrete segments of industries, without triggering the doctrine’s more demanding standard of review. Courts must require evidence of a far deeper disruption resulting from a regulation than its sticker price.

This is particularly important in light of the proliferation of MQD claims following in *West Virginia’s* wake, which rely heavily—if not entirely—on regulatory compliance costs. Consider the arguments made recently before the Fifth Circuit by industry attorneys in *Restaurant Law Center v. Department of Labor*.¹³⁷ In advancing MQD arguments, appellants characterized the Department of Labor’s revived “80/20” rule for tipped workers as:

a sweeping regulation that covers almost every business in the restaurant and foodservice industry, which is a major segment of the U.S. economy employing 14.7 million people (10% of the U.S. workforce). The Texas Restaurant Association alone represents members who operate in Texas’ \$70 billion restaurant and food service industry and employ 1.3 million people (12% of the state’s employment). No one, including the Department, disputes that private businesses will bear an enormous cost (\$186 million per year at a minimum) to comply with this new regulation. Indeed, the

136. *Util. Air Regul. Grp.*, 573 U.S. at 332, 312.

137. Appellants’ Reply Br., *supra* note 91, at 1–16.

requirements of the Final Rule are so onerous that many employers have reluctantly abandoned using the tip credit altogether, which has increased their labor costs and wiped out already-thin profit margins.¹³⁸

In other words, the 80/20 rule is “major”—and thus inherently suspect—because it will affect most companies operating in a large industry, raise their operating costs, and cut into their profit margins, perhaps rendering unprofitable some unspecified number of struggling companies. This breathless description could realistically apply to the vast majority of federal regulations. In *West Virginia*, the majority distinguished between “ordinary” cases, in which the traditional tools of statutory interpretation apply, and “extraordinary” cases, which merit MQD review.¹³⁹ While *West Virginia* may have offered little guidance toward drawing that crucial distinction, appellants’ claims in *Restaurant Law Center*, if accepted, would obliterate it altogether.

The specific facts of *Restaurant Law Center* underscore this very point. Appellants there cavil that the 80/20 rule would cost businesses approximately \$186 million per year.¹⁴⁰ This may sound “vast” from the standpoint of a single individual, family, or small business, but quite a bit less so given that the U.S. restaurant industry earned approximately \$800 billion in sales in 2021.¹⁴¹ Under no reasonable vision of the MQD can a regulation whose annual costs amount to 0.02% of the regulated industry’s annual revenues qualify as an assertion of “unheralded regulatory power over a significant portion of the American economy.”¹⁴²

Nor should compliance costs that extend even into the billions of dollars trigger the MQD without further evidence of societal disruption. In his *West Virginia* concurrence, Justice Gorsuch—joined only by Justice Alito—suggests that rules requiring “billions of dollars in spending by private persons or entities” should automatically trigger MQD analysis.¹⁴³ Yet against the backdrop of a nearly \$25 trillion U.S. gross domestic product (GDP),¹⁴⁴ regulatory costs on this scale often go unnoticed by consumers. For instance, EPA anticipates that its recent supplemental proposal to expand methane and volatile organic compound (VOC) standards for the oil and gas

138. *Id.* at 15–16.

139. *West Virginia*, 142 S. Ct. at 2608.

140. Appellants’ Reply Br., *supra* note 91, at 15.

141. *National Statistics*, NAT’L REST. ASS’N, <https://restaurant.org/research-and-media/research/industry-statistics/national-statistics/> (last visited Sept. 22, 2022).

142. *West Virginia*, 142 S. Ct. at 2608 (quoting *Util. Air Regul. Grp. v. EPA*, 573 U.S. 302, 324 (2014)).

143. *Id.* at 2621 (Gorsuch, J., concurring).

144. *Gross Domestic Product*, FEDERAL RESERVE BANK OF ST. LOUIS-FRED, <https://fred.stlouisfed.org/series/GDP> (last visited Sept. 22, 2022).

sector would impose net compliance costs on industry of approximately \$12–14 billion cumulatively through 2035.¹⁴⁵ Yet EPA projects that these costs would increase domestic oil prices by no more than 0–10 cents per barrel through 2035 and domestic natural gas prices by 0–7 cents per thousand cubic feet.¹⁴⁶ We estimate that this would raise a typical U.S. household’s direct spending on oil, natural gas, and electricity in a given year by as little as nothing and no more than approximately \$9–11, an increase of at most 0.1–0.2%.¹⁴⁷ And EPA’s projections do not even account for the substantial net benefits of this rule, which EPA projects will outstrip net compliance costs by a three- to fourfold factor solely on the basis of monetized climate benefits.¹⁴⁸

The proposed oil and gas rules demonstrate not only how inappropriate Justice Gorsuch’s bright-line, price-tag test would be for MQD applicability, but just how poorly equipped judges are in general to discern broad economic, political, and sociological impacts from hard regulatory statistics. This fact casts the MQD in a rather dim light, suggesting that it functions primarily as an “abstract exercise in political science detached from the ordinary role of courts as interpreters of controlling legal texts,” as one commenter aptly noted.¹⁴⁹ But while we cannot erase the doctrine itself at this point, the limiting principles we discuss above should go a long way toward filtering out many or most of the frivolous MQD challenges that opponents of regulations are guaranteed to bring in the future (and have already been asserting since *West Virginia*).

III. COURTS MUST AVOID REPEATING WEST VIRGINIA’S LOGICAL FLAWS EVEN WHILE ADHERING TO ITS CORE HOLDING.

Among the most frustrating aspects of *West Virginia* for those of us who supported EPA’s position in that case were the Court’s frequent lapses in

145. EPA, REGULATORY IMPACT ANALYSIS OF THE SUPPLEMENTAL PROPOSAL FOR THE STANDARDS OF PERFORMANCE FOR NEW, RECONSTRUCTED, AND MODIFIED SOURCES AND EMISSIONS GUIDELINES FOR EXISTING SOURCES: OIL AND NATURAL GAS SECTOR CLIMATE REVIEW, 14 (Nov. 2022), <https://www.epa.gov/system/files/documents/2022-12/Supplemental-proposal-ria-oil-and-gas-nsp-eg-climate-review-updated.pdf>. In this context, “net compliance costs” means the costs that owners and operators must expend to comply with the rule minus the additional revenues generated by sale of conserved gas.

146. *Id.* at 102.

147. This result is meant to reflect the oil and gas spending that directly affects typical households in a given year, including: oil and gas for home heating, hot water, and cooking; oil for gasoline consumed in light-duty vehicles; and gas used to generate electricity consumed by the residential sector. The full calculations are on file with the authors.

148. EPA, *supra* note 145, at 14.

149. Tom Merrill, *West Virginia v. EPA: An Advisory Opinion?*, THE VOLOKH CONSPIRACY (July 25, 2022), <https://reason.com/volokh/2022/07/25/west-virginia-v-epa-an-advisory-opinion/>.

reasoning—many of which Justice Kagan exposed in her dissent. At multiple junctures throughout the opinion, the Court disregarded its own precedent, failed to address counterarguments, cited incorrect facts, or simply ignored difficult points raised in the briefing. Furthermore, there remains a real risk that advocates of deregulation will transmogrify these errors into new legal principles in future cases in order to achieve their desired outcomes. The direct environmental outcome of *West Virginia*, as well as its aggressive application of MQD principles, are troubling enough; for litigants to further erode agency authority by way of the opinion’s shortcomings would compound the problem considerably.

Judges in future cases must avoid repeating these mistakes. Of course, we do not suggest that lower courts should somehow ignore or downplay *West Virginia* on account of these flaws; the case is binding law. There are, however, long-standing and sensible legal principles established in prior Supreme Court cases that remain good law and must therefore be applied.

Two concrete examples are instructive. The first concerns unenacted legislation as a factor in statutory interpretation. In *West Virginia*, the majority considered it relevant that “Congress . . . has consistently rejected proposals to amend the Clean Air Act to create such a program” as the CPP, citing the Waxman–Markey and Kerry–Boxer bills from 2009 as evidence.¹⁵⁰ It further claimed that Congress “declined to enact similar measures, such as a carbon tax,” by citing two Obama-era legislative proposals.¹⁵¹ The majority concluded that “the fact that the same basic scheme EPA adopted has been the subject of an earnest and profound debate across the country . . . makes the oblique form of the claimed delegation all the more suspect.”¹⁵²

Yet as Justice Kagan objected, the Court has “time and again” taken the exact opposite stance on the relevance of proposed (and more specifically failed) legislation to questions of statutory interpretation.¹⁵³ As early as 1947, the Court in *United States v. United Mine Workers of America* declined to interpret the Norris–LaGuardia Act in light of post-enactment legislative history, stating that “[w]e fail to see how the remarks of these Senators in 1943 can serve to change the legislative intent of Congress expressed in 1932.”¹⁵⁴ The Court frequently reiterated this point in the ensuing years, holding, for example in *United States v. Price* that “the views of a subsequent

150. *West Virginia v. EPA*, 142 S. Ct. 2587, 2614 (2022) (citing American Clean Energy and Security Act of 2009, H.R. 2454, 111th Cong., 1st Sess. (2009); Clean Energy Jobs and American Power Act, S. 1733, 111th Cong., 1st Sess. (2009)).

151. *West Virginia*, 142 S. Ct. at 2614 (citing Climate Protection Act of 2013, S. 332, 113th Cong., 1st Sess.; Save our Climate Act of 2011, H.R. 3242, 112th Cong., 1st Sess.).

152. *West Virginia*, 142 S. Ct. at 2614 (quoting *Gonzales v. Oregon*, 546 U.S. 243, 267–68 (2006)) (internal quotation marks omitted).

153. *West Virginia*, 142 S. Ct. at 2641 (Kagan J., dissenting).

154. *United States v. United Mine Workers of Am.*, 330 U.S. 258, 282 (1947).

Congress form a hazardous basis for inferring the intent of an earlier one.”¹⁵⁵ Similarly, in *Pension Benefit Guaranty Corporation v. LTV Corporation*, the Court noted that “[i]t is a particularly dangerous ground on which to rest an interpretation of a prior statute when it concerns, as it does here, a proposal that does not become law.”¹⁵⁶

As the Court further explained in *LTV*, “[c]ongressional inaction lacks ‘persuasive significance’ because ‘several equally tenable inferences’ may be drawn from such inaction, ‘including the inference that the existing legislation already incorporated the offered change.’”¹⁵⁷ As recently as 2020, a six-justice majority in *Bostock v. Clayton County* insisted that “speculation about why a later Congress declined to adopt new legislation offers a ‘particularly dangerous’ basis on which to rest an interpretation of an existing law a different and earlier Congress did adopt.”¹⁵⁸ *Bostock* further reiterated Justice Scalia’s admonition that “[a]rguments based on subsequent legislative history . . . should not be taken seriously, not even in a footnote.”¹⁵⁹ In relying on legislative proposals from 2009–2013 to interpret statutory language passed in 1970, the *West Virginia* majority simply ignored over seven decades of precedent.

There are a host of compelling reasons not to interpret statutes through the lens of post-enactment legislative history. As the Court noted in *LTV*, when Congress declines to enact a piece of proposed legislation, it is often difficult or impossible to identify a single clear reason as to why. More importantly, it is far from clear why the political actions of senators and representatives have any relevance to a proper interpretation of laws passed by entirely different Congresses convened years or even decades earlier (a point made in *United Mine Workers*).¹⁶⁰ Furthermore, different pieces of failed legislation may point in opposite directions. For instance, in 2016, Congress passed but failed to override a presidential veto of a bill repealing the CPP,¹⁶¹ while in 2019, a later Congress failed to enact a bill repealing the Trump Administration’s repeal of the CPP.¹⁶²

Federal judges have no particular expertise in weighing the similarities and differences between failed legislative proposals and regulatory programs implemented by agencies. *West Virginia* itself readily demonstrates this fact. The bills that the majority cites to support its assertion of the MQD were

155. *United States v. Price*, 361 U.S. 304, 313 (1960) (citations omitted).

156. *Pension Ben. Guar. Corp. v. LTV Corp.*, 496 U.S. 633, 650 (1990).

157. *Id.* (quoting *United States v. Wise*, 370 U.S. 405, 411 (1962)).

158. *Bostock v. Clayton Cnty.*, 140 S. Ct. 1731, 1747 (2020) (citations omitted).

159. *Id.* (citing *Sullivan v. Finkelstein*, 496 U.S. 617, 632 (1990) (Scalia, J., concurring)).

160. *United States v. United Mine Workers of Am.*, 330 U.S. 258, 282 (1947).

161. S.J. Res. 24, 114th Cong. (2015) (vetoed by president).

162. S.J. Res. 53, 116th Cong. (2019) (failed in Senate on vote of 41-53).

quite dissimilar from—and much broader in scope than—the CPP. While differing in important ways, each of these legislative proposals would have imposed either a limit or a per-ton fee on GHG emissions across the *entire* U.S. economy. The CPP, on the other hand, covered only existing coal- and gas-fired power plants above 25 megawatts in capacity, and in its primary rate-based form, established neither an absolute limit nor a specified monetary fee on emissions.¹⁶³

Moreover, each of the bills cited in *West Virginia* included additional programs beyond a cap-and-trade or carbon tax mechanism. For example, the Waxman–Markey legislation was a sprawling, 1,400-page bill that included five titles and close to 300 subsections.¹⁶⁴ Its provisions included (but were not nearly limited to): renewable energy and energy efficiency requirements;¹⁶⁵ a national strategy for carbon capture and sequestration;¹⁶⁶ a large-scale vehicle electrification program;¹⁶⁷ support for nuclear and advanced technologies;¹⁶⁸ revised targets for building efficiency;¹⁶⁹ lighting and appliance energy efficiency programs;¹⁷⁰ support for low-income energy efficiency projects;¹⁷¹ green job grants;¹⁷² energy refund provisions;¹⁷³ research directives to various federal agencies to help assess, predict, and respond to climate change;¹⁷⁴ an agricultural and forestry-related offset program;¹⁷⁵ and much more. The fact that this vast overhaul of our nation’s energy economy passed the House in 2009 but stalled in the Senate simply says nothing whatsoever about the proper interpretation of *one* provision of the 1970 Clean Air Act as it applies to *one* specific source category.

It is difficult not to conclude that the *West Virginia* majority simply got this issue wrong on both the law and the facts. Long-standing and recent precedent alike instruct that failed legislation should have no bearing on statutory interpretation, and the failed bills cited in *West Virginia* were not even analogous to the CPP. Even so, proponents of deregulation are likely to cite *West Virginia* in the future to argue that failed legislation on a particular regulatory topic casts doubt on corresponding federal agency authority on that topic. Of course, lower courts may not ignore *West Virginia* on the

163. Carbon Pollution Emission Guidelines for Existing Stationary Sources: Electric Utility Generating Units, 80 Fed. Reg. 64,716 (Oct. 23, 2015).

164. H.R. 2454, 111th Cong. (2009).

165. *Id.* § 101.

166. *Id.* § 111.

167. *Id.* § 122.

168. *Id.* §§ 181–190.

169. *Id.* § 201.

170. *Id.* §§ 211–219.

171. *Id.* § 264.

172. *Id.* §§ 421–424A.

173. *Id.* § 431.

174. *Id.* § 451.

175. *Id.* §§ 502–511.

grounds that the Court was mistaken. They can and should, however, continue to cite the *United Mine Workers–Price–LTV–Bostock* line of cases, which provide fulsome authority against citing post-enactment legislative history and remain good law.¹⁷⁶ Even if the Court erred in *West Virginia* on this point, lower courts need not repeat its mistake, and have ample support from the Court’s own decisional history to avoid doing so.

In another salient example of *West Virginia’s* flawed reasoning, the Court incorrectly focused on the legal status of the CPP itself when the actual rule under review was the Trump Administration’s rule *repealing* the CPP. In cataloging the allegedly “transform[ative]” aspects of the CPP, the Court referred to EPA’s projections in its 2015 regulatory impact analysis.¹⁷⁷ That document concluded that the rule would “entail billions of dollars in compliance costs (to be paid in the form of higher energy prices), require the retirement of dozens of coal-fired plants, and eliminate tens of thousands of jobs across various sectors.”¹⁷⁸ The Court further referred to an Energy Information Administration study that supposedly “reached similar conclusions, projecting that the rule would cause retail electricity prices to remain persistently 10% higher in many [s]tates, and would reduce GDP by at least a trillion 2009 dollars by 2040.”¹⁷⁹ Notably, this report was not included in the Joint Appendix for either *West Virginia* or *American Lung Association v. EPA* (as the case was captioned in the D.C. Circuit), and for good reason: it concerned the *proposed* CPP from 2014, which differed from the final rule in many key aspects.¹⁸⁰

The Court suggests that these ominous projections “were never tested, because the Clean Power Plan never went into effect.”¹⁸¹ On the contrary, these projections *were* tested—and proven startlingly incorrect—by the fact

176. Nor can there be any serious claim that *West Virginia* tacitly abrogated these cases, both in light of the recency of *Bostock* and the oft-cited principle that the Supreme Court “does not normally overturn, or so dramatically limit, earlier authority *sub silentio*.” *Shalala v. Ill. Council on Long Term Care, Inc.*, 529 U.S. 1, 18 (2000).

177. *West Virginia v. EPA*, 142 S. Ct. 2587, 2604 (2022).

178. *Id.* (citing EPA, REGULATORY IMPACT ANALYSIS FOR THE CLEAN POWER PLAN FINAL RULE, 3–22, 3–30, 3–33, 6–24, 6–25 (Oct. 23, 2015), https://www3.epa.gov/ttn/ecas/docs/ria/utilities_ria_final-clean-power-plan-existing-units_2015-08.pdf).

179. *West Virginia v. EPA*, 142 S. Ct. at 2604 (citing DEPT. OF ENERGY, ANALYSIS OF THE IMPACTS OF THE CLEAN POWER PLAN, 21, 63–64 (May 2015), <https://www.eia.gov/analysis/requests/powerplants/cleanplan/pdf/powerplant.pdf>).

180. To cite a few examples, whereas the final Clean Power Plan established nationally uniform, rate-based CO₂ emission limits applicable to individual power plants, the proposed rule’s emission rates applied to state-level generating fleets and differed from one state to the next. The final rule’s emission limits also distinguished between steam-generating plants (which usually fire coal) and combustion turbines (which usually fire gas), while the proposal offered a single combined rate for both technologies. Additionally, the proposed rule’s “best system” included a fourth “building block” based on energy efficiency, which the agency excised from the final Clean Power Plan.

181. *West Virginia*, 142 S. Ct. at 2604.

that the electric sector very quickly outpaced the CPP's emission reduction targets even in the rule's absence. Had the Court bothered to consider the findings included in the 2019 CPP repeal—the rule *actually under review*—it would have concluded that the Plan itself, if implemented from that point forward, was “not expected to produce reductions beyond the baseline in most scenarios, and thus . . . *has no costs or benefits.*”¹⁸² By the end of 2019, the U.S. electric sector's annual CO₂ emissions had fallen to 1,770 million short tons,¹⁸³ about 2% below the CPP's emission targets of 1,812–1,814 million metric tons for 2030.¹⁸⁴ In other words, despite EPA's triumphalist rhetoric in 2015 surrounding the CPP and its modeling outcomes, the picture in 2019 was such that “the most likely result of implementation of the CPP would be no change in emissions and therefore no cost savings or changes in health disbenefits relative to a world without the CPP.”¹⁸⁵ Far from the “trillion 2009 dollars” in depressed GDP by 2040, the CPP would have reduced GDP by exactly zero dollars.

How a rule with no discernible real-world impacts at all could be said to have “vast economic or political consequences” certainly strains reason. But rather than wrestle with this challenging question—which the environmental respondents' and EPA's briefs both addressed,¹⁸⁶ as did Justice Kagan's dissent¹⁸⁷—the Court chose to ignore it. Instead, it cited the outdated figures from the CPP without elaboration or explanation. Advocates of deregulation might interpret this as an indication that courts may look to the maximal *theoretical* consequences of a regulation when passing judgment on it, even when the actual administrative record before the court paints a decidedly different picture. Yet nowhere did the *West Virginia* majority suggest any new doctrine or any other coherent principle to justify the decision to support its holding with stale and debunked data.

No less in major questions cases than anywhere else, courts must continue to limit their review of agency actions to the best and most

182. EPA, REGULATORY IMPACT ANALYSIS FOR THE REPEAL OF THE CLEAN POWER PLAN, AND THE EMISSION GUIDELINES FOR GREENHOUSE GAS EMISSIONS FROM EXISTING ELECTRIC UTILITY GENERATING UNITS, 3-7 (2019) (emphasis added), https://www.epa.gov/sites/default/files/2019-06/documents/utilities_ria_final_cpp_repeal_and_ace_2019-06.pdf.

183. See EPA, INVENTORY OF U.S. GREENHOUSE GAS EMISSIONS AND SINKS: 1990-2020, Table 2-1 (Apr. 15, 2022), <https://www.epa.gov/system/files/documents/2022-04/us-ghg-inventory-2022-main-text.pdf> (noting the Inventory lists U.S. electric power sector emissions in 2020 at 1,606 million metric tons, which converts to 1,770 million short tons). A metric ton is defined as 1,000 kilograms, while a short (or imperial) ton is defined as 2,000 pounds. Because one kilogram corresponds to approximately 2.205 pounds, one metric ton equals approximately 1.102 short tons.

184. EPA, REGULATORY IMPACT ANALYSIS FOR THE CLEAN POWER PLAN FINAL RULE, Tables ES-2, ES-3 (Oct. 23, 2015), https://www3.epa.gov/ttnecas1/docs/ria/utilities_ria_final-clean-power-plan-existing-units_2015-08.pdf.

185. EPA, *supra* note 183, at 2-1.

186. Br. of NGOs, *supra* note 40, at 26; Br. for the Fed. Resp'ts, *supra* note 40, at 7.

187. *West Virginia v. EPA*, 142 S. Ct. 2587, 2638 (2022) (Kagan, J., dissenting).

representative data from the administrative record in the rule *actually before the court* and *actually relied on by the agency*. This is no controversial idea, but again one that stretches back at least 75 years. In the Truman-era *SEC v. Chenery Corporation*, the Court ruled that “a reviewing court, in dealing with a determination or judgment which an administrative agency alone is authorized to make, must judge the propriety of such action solely by the grounds invoked by the agency.”¹⁸⁸ It is not a court’s job to cherry-pick documents from the administrative record that support its decision while ignoring other, more authoritative documents that conflict with it. By adhering to their traditional, constrained role in record review cases, courts can avoid the temptation to make up their own minds as to what the consequences of a regulation might be or conduct their analysis on theoretical (or even disproven) outcomes rather than actual ones.

IV. ASPECTS OF WEST VIRGINIA ACTUALLY REITERATE OR SOLIDIFY EPA’S SECTION 111 AUTHORITY.

There is no getting around the fact that *West Virginia* was and remains a bitter pill to swallow for those who support strong agency authority to protect public health, safety, and welfare. The decision will make it decidedly tougher for EPA to achieve significant CO₂ emission reductions from the nation’s fleet of existing coal- and gas-fired power plants at a reasonable cost. No less dismaying, *West Virginia* signals the Supreme Court’s intention to crack down on the executive branch’s regulatory authority more vigorously than it has at any point since the 1930s.¹⁸⁹ The road toward a better society is now fraught with hazards that were not there even a few years ago.

There are nevertheless some positive aspects of *West Virginia* that deserve our attention. The most noteworthy of these pertains to the balance of power between EPA and state governments in establishing existing sources’ substantive emission reduction obligations under § 111(d) of the Clean Air Act.¹⁹⁰ A paradigmatic example of cooperative federalism, § 111(d) grants EPA the task of selecting the “best system of emission reduction” for eligible existing sources.¹⁹¹ The Agency then calculates the degree of emission associated with that system, which it publishes in an emission guideline document. States then issue plans, subject to EPA’s

188. *SEC v. Chenery Corp.*, 332 U.S. 194, 196 (1947).

189. *See e.g.*, *Panama Ref. Co. v. Ryan*, 293 U.S. 388 (1935) (holding that the executive may not issue regulations without a clear directive from Congress since otherwise an agency could act with uncontrolled legislative power).

190. 42 U.S.C. § 7411(d).

191. *Id.*

approval, that must be consistent with the Agency's guidelines and include standards of performance applicable to existing sources within their borders.

With the CPP, however, certain parties—particularly the state of North Dakota—began propounding the legal theory that EPA's role under § 111(d) is essentially procedural in nature. These parties further argued that the Agency's federal emission guidelines may not “dictate a minimum required level of emission reduction” for performance standards included in state plans.¹⁹² Under this vision of the statute, while EPA designates the “best system,” it “cannot transform [federal] guidelines into binding emission limitations that extinguish the States' authority to establish performance standards through their Section 111(d) plans.”¹⁹³

Thus (the theory goes), EPA lacks authority to approve or reject state plans based on their adherence to substantive emission reduction targets established in the Agency's guidelines. Instead, the Agency's oversight of state plans is essentially limited to procedural considerations. Under this interpretation of the law, EPA could reject a state plan if (for instance) it lacks properly enforceable standards for every affected source, but not based on the material adequacy of those standards in relation to the degree of pollution reduction required by EPA's emission guidelines. North Dakota asserted this position in litigation over both the CPP and its repeal.¹⁹⁴ Although the D.C. Circuit did not address the question in its *American Lung Association* decision, North Dakota nevertheless pressed forward with it in its briefs before the Supreme Court.¹⁹⁵ The State also recently advanced this theory in comments on EPA's proposed § 111(d) guidelines for methane emissions from existing oil and gas infrastructure.¹⁹⁶

Like the D.C. Circuit in *American Lung Association*, the Supreme Court in *West Virginia* did not directly address this issue (and properly so, since it played no role in EPA's repeal of the CPP in 2019). Yet the Court left no doubt as to the federal–state balance of authority under § 111(d):

Although the States set the actual rules governing existing power plants, EPA itself still retains the primary regulatory role in Section

192. Pet'r State of North Dakota's Mot. for Stay of EPA's Final Rule, 16, *West Virginia v. EPA*, No. 15-1363 and consolidated cases (D.C. Cir. Oct. 29, 2015).

193. Merits Br. of the Pet'r the State of North Dakota, 43, *West Virginia v. EPA*, 142 S. Ct. 2587 (2022).

194. *Id.*; Pet'r State of North Dakota's Mot. for Stay of EPA's Final Rule, *supra* note 192, at 15–18; Final Core Legal Issues Br. of the State of North Dakota at 15–18, *Am. Lung Ass'n v. EPA*, 985 F.3d 914 (D.C. Cir. 2021).

195. Merits Br. of the Pet'r the State of North Dakota, *supra* note 196, at 33–47.

196. State of North Dakota, Comments on Proposed Standards of Performance for New, Reconstructed, and Modified Sources and Emissions Guidelines for Existing Sources: Oil and Natural Gas Sector Climate Review, 7–10, EPA-HQ-OAR-2021-0317-0797 (Jan. 31, 2022), https://downloads.regulations.gov/EPA-HQ-OAR-2021-0317-0797/attachment_1.pdf.

111(d). The Agency, not the States, decides the amount of pollution reduction that must ultimately be achieved. It does so by again determining, as when setting the new source rules, “the best system of emission reduction . . . that has been adequately demonstrated for [existing covered] facilities.” The States then submit plans containing the emissions restrictions that they intend to adopt and enforce in order not to exceed the permissible level of pollution established by EPA.¹⁹⁷

This language effectively extinguishes North Dakota’s fringe theory of cooperative federalism, at least as it applies to § 111(d). EPA’s guidelines must establish binding pollution limits reflective of the “best system,” and states must adhere to those limits in the performance standards they issue for existing units within their borders. And while § 111(d) gives states the authority to grant individual sources variances from EPA’s guideline limits in certain source-specific contexts,¹⁹⁸ those limits are otherwise generally applicable and mandatory.

Another environmentally beneficial aspect of *West Virginia* is that it represents the third instance since *Massachusetts v. EPA* that the Court unquestioningly applied that case’s holding that the Clean Air Act’s statute-wide definition of “air pollutant” at § 7602(g) encompasses GHGs such as CO₂.¹⁹⁹ Although none of the parties to the case asked the Court to overturn *Massachusetts*, one cannot help but notice that by the time *West Virginia* was decided, only Justice Breyer remained from the *Massachusetts* majority. The current Court has telegraphed a willingness—even an eagerness—to overturn precedents that are inconsistent with its overarching legal philosophy,²⁰⁰ and

197. *West Virginia*, 142 S. Ct. at 2601–02 (internal citations omitted).

198. See 42 U.S.C. § 7411(d)(1) (stating “Regulations of the Administrator under this paragraph shall permit the State in applying a standard of performance to any particular source under a plan submitted under this paragraph to take into consideration, among other factors, the remaining useful life of the existing source to which such standard applies.”).

199. See *Am. Elec. Power Co. v. Connecticut*, 564 U.S. 410, 424 (2011) (quoting *Massachusetts v. EPA*, 549 U.S. 497, 528–29 (2007) (reiterating that the Clean Air Act “‘speaks directly’ to emissions of carbon dioxide from the defendants’ plants”)); *Util. Air Regul. Grp. v. EPA*, 573 U.S. 302, 331 (2014) (holding that EPA has authority to require “best available control technology” for greenhouse gas emissions at sources that whose conventional pollutant emissions trigger the statute’s Prevention of Significant Deterioration provisions).

200. See, e.g., *Dobbs v. Jackson Women’s Health Org.*, 142 S. Ct. 2228, 2242, 2261–64 (2022) (noting “*stare decisis* . . . does not compel unending adherence to [*Roe v. Wade*, 410 U.S. 113 (1973)]’s abuse of judicial authority” and that the Court “must be willing to reconsider and, if necessary, overrule constitutional decisions”); *Kennedy v. Bremerton Sch. Dist.*, 142 S. Ct. 2407, 2427 (2022) (overturning the test from *Lemon v. Kurtzman*, 403 U.S. 602, 602 (1971) to determine whether state action satisfies the First Amendment’s Establishment Clause); *Knick v. Twp. of Scott*, 139 S. Ct. 2162, 2167 (2019) (overturning *Williamson Cnty. Reg’l Planning Comm’n v. Hamilton Bank of Johnson City* and instead

several justices have urged the Court to act much more aggressively on that front.²⁰¹ Yet even Justices Thomas and Gorsuch, who submitted a concurring opinion in *West Virginia* advocating a much more expansive view of the MQD, said nothing to suggest an interest in revisiting *Massachusetts*. Furthermore, the Inflation Reduction Act of 2022 included numerous amendments to the Clean Air Act expressly referencing GHG emissions and defining them as “air pollutants.”²⁰² It seems safe to say, then, that *Massachusetts v. EPA* is and will remain secure, irrespective of the Court’s current makeup. *West Virginia* only cements that conclusion.

Lastly, the Court majority declined to ground its decision in either the federalism canon or the non-delegation doctrine, largely ignoring arguments on those topics asserted by the petitioners and their *amici*.²⁰³ While the majority opinion did note that the MQD reflects “separation of powers principles” in addition to “a practical understanding of legislative intent,” it otherwise did not appeal to constitutional considerations.²⁰⁴ The Court did not suggest, for instance—as Judge Walker did in his *American Lung Association* dissent²⁰⁵—that § 111(d) would have violated the non-delegation doctrine had it permitted (without necessarily requiring) a CPP-style generation-shifting approach. Furthermore, as noted previously, only Justice Thomas signed onto Justice Gorsuch’s concurrence, which extensively invoked constitutional principles, including the non-delegation doctrine.²⁰⁶

holding that property owners must assert state-level just compensation claims before bringing federal takings claims under 42 U.S.C. § 1983).

201. *See, e.g.*, Dobbs, 142 S. Ct. at 2301 (Thomas, J., concurring) (urging the Court to “reconsider all of [its] substantive due process precedents”); Berisha v. Lawson, 141 S. Ct. 2424, 2424–25 (2021) (Thomas, J., dissenting from the denial of certiorari) (urging the Court to reconsider the “actual malice” test in *New York Times v. Sullivan*, 376 U.S. 254, 280 (1964), for determining whether defamation claims asserted by public figures are permitted under the First Amendment); *Michigan v. EPA*, 576 U.S. 743, 761–64 (2015) (Thomas, J., concurring) (suggesting the Court should reconsider the level of deference they give to agencies under *Chevron v. NRDC*, 467 U.S. 837 (1984)); *Gutierrez-Brizuela v. Lynch*, 834 F.3d 1142, 1149–58 (10th Cir. 2016) (Gorsuch, J., concurring) (suggesting that the Supreme Court should reconsider *Chevron*’s deferential standard for reviewing agency interpretations of ambiguous statutory language).

202. *See* Inflation Reduction Act of 2022, Pub. L. No. 117–169 (2022), 75 Stat. 1818, §§ 60101–60108, 60111–60114, 60116, 60201, 60503, 60506 (defining greenhouse gases as air pollutants).

203. *See, e.g.*, Br. for Pet’rs, *supra* note 40, at 26–31 (raising federalism canon arguments); Br. of *Amicus Curiae* Americans for Prosperity Found. in Support of Pet’rs, 8, 10, *West Virginia v. EPA*, 142 S. Ct. 2587 (2022) (No. 20-1530) (raising extensive non-delegation arguments); Br. of *Amici Curiae* Doctors for Disaster Preparedness and Eagle Forum Educ. & Legal Def. Fund in Support of Pet’rs, 3, *West Virginia*, 142 S. Ct. at 2587 (asserting non-delegation arguments and decrying the “tyranny by edict of the administrative state”).

204. *West Virginia*, 142 S. Ct. at 2609.

205. *Am. Lung Ass’n*, 985 F.3d 914, 1002 (D.C. Cir. 2021) (Walker, J., concurring in part, concurring in the judgment in part, and dissenting in part).

206. *West Virginia*, 142 S. Ct. at 2616–17 (Gorsuch, J., concurring).

Some of the other justices in the majority may hold similar beliefs,²⁰⁷ and may be prepared to breathe new life into the non-delegation doctrine under certain circumstances.²⁰⁸ Yet the fact that they chose not to join Justice Gorsuch’s concurrence indicates that a majority of justices do not consider EPA’s Clean Air Act authority the right vehicle to achieve those ends.

CONCLUSION

It will be some time before the dust kicked up by *West Virginia v. EPA* fully settles. In the meantime, EPA continues pressing forward with the development of a revised § 111(d) rule for existing power plants. With generation-shifting and any form of direct reduced utilization off the table, the Agency must look to source-specific measures to achieve emission reductions that are commensurate with the scope of the climate crisis (or, perhaps more specifically, to the contribution of existing U.S. coal and gas plants to global climate change). It remains to be seen whether a § 111 rule that formally complies with *West Virginia*—one based on “measures that would reduce pollution by causing the regulated source[s] [themselves] to operate more cleanly”²⁰⁹—will nonetheless run into the buzzsaw of the major questions doctrine. Will the Court activate this interpretive methodology once again if EPA’s new rule imposes significant compliance costs on industry, or if it results in the closure or operational curtailment of too many fossil fuel units? Time will certainly tell. The principles we have laid out in this article, though, would impose a lofty threshold before a court could reject a regulation on those grounds. It is our hope that these concepts, and similar ones, begin to take root in legal decisions—both regarding § 111 and administrative law more broadly—in the months and years to come.

207. See *Nat’l Fed’n of Indep. Bus. v. OSHA*, 142 S. Ct. 661, 667–70 (2022) (in which Justices Alito and Thomas signed onto a concurrence authored by Justice Gorsuch that closely mirrored Gorsuch’s concurrence in *West Virginia*).

208. See, e.g., *Gundy v. United States*, 139 S. Ct. 2116, 2130–31 (2019) (Alito, J., concurring) (declining to strike down the specific provision at issue on non-delegation grounds but affirming that “[i]f a majority of this Court were willing to reconsider the approach [to non-delegation] we have taken for the past 84 years, I would support that effort”); *id.* at 2131 (Gorsuch, J., dissenting) (joined by Chief Justice Roberts and Justice Thomas, articulating a broad understanding of the non-delegation doctrine); *U.S. Telecomm. Ass’n v. FCC*, 855 F.3d 381, 417 (D.C. Cir. 2017) (Kavanaugh, J., dissenting from denial of *pets. for rehearing en banc*) (elaborating on the constitutional limits of congressional delegation in the context of the FCC’s net neutrality rule).

209. *West Virginia*, 142 S. Ct. at 2610.