Nos. 20-1530, 20-1531, 20-1778, 20-1780

IN THE
Supreme Court of the United States

WEST VIRGINIA, ET AL., *Petitioners*,
v.
ENVIRONMENTAL PROTECTION AGENCY, ET AL., *Respondents*,
THE NORTH AMERICAN COAL CORPORATION, *Petitioners*,
v.
ENVIRONMENTAL PROTECTION AGENCY, ET AL., *Respondents*,
WESTMORELAND MINING HOLDINGS LLC, *Petitioner*,
v.
ENVIRONMENTAL PROTECTION AGENCY, ET AL., *Respondents*,
NORTH DAKOTA, *Petitioner*,
v.
ENVIRONMENTAL PROTECTION AGENCY, ET AL., *Respondents*.

On Writs of Certiorari to the United States Court of Appeals for the District of Columbia Circuit

BRIEF FOR THE NATIONAL PARKS CONSERVATION ASSOCIATION AS *AMICUS CURIAE* IN SUPPORT OF RESPONDENTS

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INTERESTS OF AMICUS CURIAE[1]

The National Park Conservation Association (NPCA) has been the leading voice of U.S. national parks since 1919. With more than 1.6 million members and supporters, the NPCA is a nonpartisan organization dedicated to ensuring that our national parks are well protected. Because climate change and air pollution are the greatest threats to national parks, the NPCA works to mitigate unhealthy and climate-disrupting pollution. These cases directly impact the NPCA and its work to protect national parks and communities from the causes and detrimental effects of climate change.

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[1] Pursuant to Sup. Ct. R. 37.6, *amicus curiae* affirm that no counsel for a party has written this brief in whole or in part, and that no person or entity, other than amicus curiae, its members, or its counsel, has made a monetary contribution to the preparation or submission of this brief. This brief is filed pursuant to Sup. Ct. R. 37.3(a) and the blanket consents of the parties.

INTRODUCTION AND SUMMARY OF THE ARGUMENT

From the Everglades National Park to Glacier National Park to the Harriett Tubman Underground Railroad National Historic Park to the National Mall, the more than 400 national parks existing in the U.S. are integral to our country. Climate change presents an existential crisis to their continued survival.

The science is clear: greenhouse gases (GHGs) must be sharply reduced to stave off the worst of the climate crisis and doing so is the only way to safeguard the vitality of the national parks.[2] With power plants making up the second largest source of GHG pollution in the nation,[3] controlling their emissions is a critical tool needed to thwart the devastation to the National Park System's resources, visitors, and neighboring communities.

The Clean Air Act ("the Act") confers unmistakable authority to the EPA to regulate GHG emissions from power plants. Beyond the clear source category requirements of Section 7411 of the Act, the

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[2] *See* Patrick Gonzalez, *Climate Change Trends, Impacts, and Vulnerabilities in US National Parks*, in SCIENCE, CONSERVATION, AND NATIONAL PARKS (Beissinger et al. eds. 2017), https://perma.cc/ED7L-FFBN; INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE, CLIMATE CHANGE 2021: THE PHYSICAL SCIENCE BASIS (2021), https://www.ipcc.ch/report/ar6/wg1/downloads/report/IPCC_AR6_WGI_Full_Report.pdf.

[3] Alfredo Rivera et al., *Preliminary US Greenhouse Gas Emissions for 2021*, RHODIUM GROUP (Jan. 10, 2022), https://rhg.com/research/preliminary-us-emissions-2021/.

statute specifically bestows the EPA with responsibility to ensure the vitality of the National Park System.

Meaningful agency regulation plays a critical role not only in preserving national parks themselves from wildfire loss, diminished air quality, biodiversity loss, and other disastrous consequences, but also in mitigating harm to a national economy in which the national parks play a significant role. Impairment of national parks would also harm various stakeholders including the communities that depend on them.

As environmentalist John Sawhill offered: "In the end, our society will be defined not only by what we create, but also by what we refuse to destroy."[4]

ARGUMENT

I. The Clean Air Act's text unequivocally authorizes the EPA to regulate GHG emissions from power plants and protect the National Park System

As a preliminary matter, this proceeding lacks Article III jurisdiction as no current rule exists and the EPA has no intention of reviving the Clean Power Plan. Absent presentation of new agency rulemaking, there is no justiciable controversy. Even if this Court were to leave aside the lack of justiciability, the decision of the D.C. Circuit should be affirmed as the

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[4] THE OXFORD DICTIONARY OF AMERICAN QUOTATIONS 149 (Margaret Miner & Hugh Rawson ed., 2nd ed. 2006).

Act unequivocally authorizes the EPA to regulate GHG emissions from power plants.

This authority of the EPA is critical to protecting the vitality of the National Park System, which the text of the Act identifies as one of its key objectives. In addition to various National Park System-specific provisions, the Act dictates EPA action to protect the public welfare in ways that are particularly pertinent to the national parks.

A. The EPA is unequivocally authorized to regulate GHG pollution from power plants

In passing Section 7411, Congress provided a critical tool for the EPA to effectuate the Clean Air Act's purpose to "protect and enhance the quality of the Nation's air resources" through "the prevention and control of air pollution." 42 U.S.C. § 7401. Section 7411 furthers this purpose by instructing the EPA to identify air pollutants from stationary sources which "may reasonably be anticipated to endanger public health or welfare," *id.* § 7411(f)(2)(B), including "carbon dioxide and other greenhouse gases," *Am. Elec. Power Co. v. Connecticut*, 564 U.S. 410, 416 (2011) (*AEP*). Then, the EPA Administrator is to list those "categor[ies] of sources" which "in [the Administrator's] judgment, . . . cause[], or contribute[] significantly to" the emission of those identified pollutants. 42 U.S.C. § 7411(b)(1)(A). Pursuant to Section 7411, power plants in fact have been on the list of categories of stationary sources that cause or contribute significantly to air pollution since the 1970s. 80 Fed. Reg. 64,510, 64,527 (Oct. 23, 2015).

Once a source category is established, the EPA is required to regulate both new and existing sources within that source category. For new sources, the Clean Air Act instructs the Administrator to establish federal "standards of performance" for new sources within that category, 42 U.S.C. § 7411(b)(1)(B), while for existing sources within that category the Administrator enjoys statutory discretion to accept or reject "standards of performance" submitted to them by each state, *id.* §§ 7411(d)(1), (d)(2). The Act directs the Administrator to establish emissions limits based on the *best* system of emission reduction, taking into account costs and any nonair quality health and environmental impact and energy requirements. *Id.* § 7411(a)(1). In short, the Act unmistakably authorizes the EPA to regulate power plant emissions of GHGs.

Clear textual support for the EPA's authority to regulate emissions from power plants has been endorsed by this very Court, which has determined that in passing Section 7411, Congress "sp[oke] directly" and delegated to the EPA the decision of "whether and how to regulate carbon-dioxide emissions from power plants." *AEP*, 564 U.S. at 424, 426. This Court also reinforced the EPA's expertise, asserting "[i]t is altogether fitting that Congress designated an expert agency, here, EPA, as best suited to serve as primary regulator of greenhouse gas emissions." *Id.* at 412.

B. The Clean Air Act entrusts the EPA to protect U.S. national parks

The Clean Air Act guards the unique values of national parks and establishes mechanisms for mitigating their vulnerabilities. For example, the Act declares a key purpose of the EPA-administered Prevention of Significant Deterioration (PSD) program is "to preserve, protect, and enhance the air quality in national parks, national wilderness areas, national monuments, national seashores, and other areas of special national or regional natural, recreational, scenic, or historic value," 42 U.S.C. § 7470(2). The Act also requires a higher degree of air quality protection for certain units of the National Park System, designated as mandatory Class I areas, requiring the prevention and reversal of visual impairment. *Id.* §§ 7472, 7474, 7491.

Furthermore, the Act directs the EPA to take regulatory action to mitigate pollution where emissions would endanger "public health and welfare."[5] The definition of "welfare" includes "effects on soils, water . . . vegetation . . . wildlife . . . weather,

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[5] Many Clean Air Act regulatory requirements are prompted by a finding that air pollution may endanger "public health and welfare." *See, e.g.*, 42 U.S.C. § 7408(a)(1)(A) (requiring regulation of dispersed pollutants "which may reasonably be anticipated to endanger public health or welfare"); 42 U.S.C. § 7521(a)(1) (requiring regulation of pollution from new motor vehicles and engines "which may reasonably be anticipated to endanger public health or welfare"); 42 U.S.C. § 7671(n) (requiring regulation to control pollution of the stratosphere that "may reasonably be anticipated to endanger public health or welfare").

visibility, and climate, damage to and deterioration of property . . . as well as effects on economic values and on personal comfort and well-being, whether caused by transformation, conversion, or combination with other air pollutants." 42 U.S.C. § 7602(h). These soils, waters, vegetation, and wildlife are greatly abundant in the National Park System and face particular climate vulnerabilities.

The mission of the EPA, then, is uniquely intertwined with the National Park System in that the former is charged with protecting the health of the latter. The National Park Service (NPS) cannot attain its stated goal of conserving "the natural and cultural resources and values of the National Park System for the enjoyment, education, and inspiration of this and future generations,"[6] if the EPA cannot attain its goal of protecting public welfare as it pertains to the preservation of the parks.

The EPA's statutory responsibility with respect to power plant GHG emissions—a critical part of the overall measures needed to meaningfully address climate change and protect the parks and relevant stakeholders—is one the agency does not share with any other government entity. If this Court holds the EPA cannot meaningfully regulate in this capacity, no other agency could simply take up the mantle. The protection of national parks is considerably dependent on the EPA's exercise of delegated authority to

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[6] *Our Mission, Role and Purpose*, NAT'L PARK SERV., https://www.nps.gov/orgs/1955/our-mission-and-role.htm (last updated Mar. 24, 2017).

regulate GHG emissions from power plants.[7] Regulation of such pollution by the EPA is a key tool to preserve this country's national parks for current and future generations.

II. The devastating effects of climate change are already significant and, if left unchecked, will have catastrophic repercussions across the National Park System and its stakeholders

The National Park System preserves many different types of landscapes—including wetlands, mountains, deserts, and beaches—and all of their ecosystems from the Everglades National Park to Yellowstone National Park. Beyond natural sites, many parks are historic—the Harriet Tubman Underground Railroad National Historic Park, the Martin Luther King, Jr. National Historic Park, and the Women's Rights National Historic Park are but a few examples of the many National Historic Parks.[8] Climate change poses an existential threat to these natural and historic public places.

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[7] Eric Schaeffer & Tom Pelton, *Greenhouse Gases from Power Plants 2005–2020: Rapid Decline Exceeded Goals of EPA Clean Power Plan*, ENVIRONMENTAL INTEGRITY PROJECT (Feb. 25, 2021), https://environmentalintegrity.org/wp-content/uploads/2021/02/Greenhouse-Gases-from-Power-Plants-2005-2020-report.pdf.

[8] *See National Parks*, NAT'L PARK SERV., https://www.nps.gov/subjects/heritagetravel/national-parks.htm (last updated Aug. 19, 2016); *Making the American Experience Tangible*, NAT'L PARK SERV., https://www.nps.gov/subjects/nationalhistoriclandmarks/index.htm (last updated Sept. 3, 2021).

Climate harms to our national parks are extensive, already causing an unprecedented loss of ecosystems, habitats, and historic sites, by rising temperatures, stronger storms, frequent wildland fires, and sea level rise. The more than four hundred historic and natural sites the National Park System protects have never known change at the current pace and scale. The numerous studies and decades of data detailing climate harms to these public places is vast, and the following provides a glimpse into this devastation.

A. Climate change has forced glaciers in the northernmost national parks to retreat to the verge of permanent disappearance and has devastating consequences on the communities and biodiversity in these regions

Some of the largest national parks by area are located at the highest latitudes, including in states like Alaska and Montana.[9] These parks are also famous for their glaciers, which are some of the largest and most accessible in the world.[10] Warming temperatures associated with human-caused climate change are causing the retreat and disappearance of

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[9] Rolando Y. Wee, *10 Largest National Parks in the United States*, World Atlas (Jan. 24, 2021), https://www.worldatlas.com/articles/biggest-national-parks-in-the-united-states.html.

[10] *How to See a Glacier*, NAT'L PARK SERV., https://www.nps.gov/glac/learn/nature/how-to-see-a-glacier.htm (last updated Aug. 4, 2021).

these wonders in U.S. national parks.[11] Researchers "have detected decreases in length, area, volume, and mass for almost all" of the 168,000 glaciers that have been measured since 1960—among them, glaciers in Denali, Glacier, Glacier Bay, and other national parks.[12]

Glaciers are the main tourist attraction for many of these northern parks.[13] As these wonders continue to retreat, the tourism industry in Alaska is likely to suffer as a result. Further, the visitor experience is harmed as sea level rise and wave height increases lead to "erosion and loss of gravel beaches along rocky coastlines."[14] Sea kayakers who use these "pocket beaches" recreationally will be turned away as the landscape continues to change.[15]

Similarly, Glacier National Park in northwestern Montana offers another illustration of the danger confronting park system glaciers. The park attracts a high number of visitors every year because of the beautiful scenery, numerous wildlife species, and some of the most accessible glaciers in the world.[16] The park's ecosystem is fragile and reflects

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[11] Gonzalez, *supra* note 2 at 106.
[12] *Id.*
[13] B. F. Molnia, *Late Nineteenth to Early Twenty-First Century Behavior of Alaskan Glaciers as Indicators of Changing Regional Climate*, 56 GLOB. AND PLANETARY CHANGE 23, 23–56 (2007).
[14] E. A. PENDLETON ET AL., U.S. GEOLOGICAL SURV. OPEN-FILE REP. 2004-1373, RELATIVE COASTAL CHANGE-POTENTIAL ASSESSMENT OF KENAI FJORDS NATIONAL PARK (2006).
[15] *Id.*
[16] *Visitation Numbers*, NAT'L PARK SERV., https://perma.cc/AQ5N-FF69 (last updated Sept. 23, 2019).

the irreversible effects of human caused climate change. Researchers estimate that before 1850, there were around 150 glaciers in the park.[17] In 2015, only 26 glaciers remained—and all had suffered significant reductions in size.[18] Models have projected the last of the park's glaciers will disappear in the coming decades, absent sharp reductions in GHGs.[19] A stark example of this trend is the iconic Grinnell Glacier, which the NPS reports lost 45 percent of its area between 1966 and 2015.[20] Once these glaciers disappear, they will be lost forever.

These glaciers are popular tourist attractions, and the visitor experience is hampered by glacier retreat. Hikers come from across the country to make the five-mile journey along Grinnell Trail to view the iconic glacier.[21] Without preserving these historic sites, the parks will lose meaningful elements of their appeal. Glaciers also play an essential role in the park's ecosystem by providing late-season runoff to keep rivers and streams full of water at a consistent temperature. [22] This water source is important to surrounding communities and the local fish and trout

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[17] *See, e.g.*, *Retreat of Glaciers in Glacier Nat'l Park*, U.S. GEOLOGICAL SURVEY, https://perma.cc/XWV3-UCJU.
[18] *Id.*
[19] *Id.*; *World of Change: Ice Loss in Glacier Nat'l Park*, NASA EARTH OBSERVATORY, https://perma.cc/4S45-Z5HG.
[20] *How to See a Glacier*, *supra* note 10.
[21] *Id.*
[22] STEPHEN SAUNDERS ET AL., GLACIER NATIONAL PARK IN PERIL: THE THREATS OF CLIMATE DISRUPTION, NAT'L RES. DEF. COUNCIL 18–29 (2010), https://perma.cc/ GL9Y-93AB.

populations.[23] Montana's drought levels have increased in the last few decades, and almost 90 percent of the state is currently in a "severe drought."[24] Drought conditions, exacerbated by the loss of glaciers, threaten both crop and livestock production, Montana's largest industry.[25]

Finally, beyond glacier loss, there is tremendous damage inherent in hotter temperatures in these vulnerable northern regions. Native Alaskan communities who have lived in this area for centuries are being displaced by the rising sea levels and associated permafrost erosion.[26] For these indigenous communities, this displacement threatens their very way of life. Displacement also is a large financial burden for governments and puts great strain on the social safety net.[27] Subsistence communities are also threatened as hunting practices become "more expensive and time-consuming."[28] Biodiversity also faces great risk, as the temperature change associated with climate change has led to a shift in over 80

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[23] *Id.*
[24] *Montana*, NAT'L INTEGRATED DROUGHT INFO. SYS., https://www.drought.gov/states/montana (last visited on Jan. 21, 2022).
[25] *Economy of Montana*, BRITANNICA, https://www.britannica.com/place/Montana-state/Economy (last visited on Jan. 21, 2022).
[26] Don Callaway, *A Changing Climate: Consequences for Subsistence Communities*, 6 ALASKA PARK SCI. 19, 19–23 (2007).
[27] *Id.*
[28] *Id.*

percent of the animal and plant species in the eight different national parks located in Alaska.[29]

B. Rising sea levels resulting from human-caused climate change threaten low-latitude and coastal national parks

In the past century, as glaciers have receded world-wide, sea levels have risen by around seven to eight inches due to climate change.[30] The 2018 National Climate Assessment estimated there is likely to be a one to four feet sea level rise by the end of the 21st century.[31] The NPS manages 86 coastal parks that include over 11,000 miles of coastline and 2.5 million acres of ocean and Great Lakes waters.[32] These parks host over 88 million visitors every year, bringing in a revenue of $4.8 billion annually to the local economies.[33] One study conducted by the Interior Department—which examined only a third of coastal parks threatened by sea-level rise—found that one

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[29] Terry L. Root et al., *Fingerprints of Global Warming on Wild Animals and Plants*, 421 NATURE 57, 57–60 (2003).

[30] U.S. GLOB. CHANGE RSCH. PROGRAM, CLIMATE SCIENCE SPECIAL REPORT: FOURTH NATIONAL CLIMATE ASSESSMENT, 25–26, 333, 339, 343 (D.J. Wuebbles et al. eds., 2017), https://perma.cc/BY2R-QLPS.

[31] Katharine Hayhoe et al., *Our Changing Climate*, in U.S. GLOB. CHANGE RESEARCH PROGRAM, FOURTH NATIONAL CLIMATE ASSESSMENT.

[32] *Ocean and Coastal Resources*, NAT'L PARK SERV. (last updated May 17, 2017), https://perma.cc/L5E S-X3ZN.

[33] *Id.*

meter of rise would place $40 billion worth of park assets at risk.[34]

Everglades National Park, in the southwestern portion of Florida, is a subtropical peatland ecosystem with low elevation and flat topography that make it particularly vulnerable to sea-level rise.[35] Congress authorized the park in 1934 to preserve its subtropical ecosystem,[36] marking the first time federal land was set aside for its abundant biodiversity rather than for "scenic views."[37]

The Everglades requires both saltwater and freshwater to support a unique, hybrid ecosystem,[38] and sea level rise threatens this delicate balance. Observations of actual sea level rise along the Florida coast are already exceeding projections,[39] and this increase threatens significant harm to the Everglades. Twenty-seven rare plants—including endangered species, such as tropical orchids and herbs, found only

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[34] *Interior Department Releases Report Detailing $40 Billion of National Park Assets at Risk from Sea Level Rise*, U.S. DEP'T OF THE INTERIOR (Apr. 26, 2016), https://perma.cc/79S2-KXQT.

[35] POTENTIAL ECOLOGICAL CONSEQUENCES OF CLIMATE CHANGE IN SOUTH FLORIDA AND THE EVERGLADES (2009), NAT'L PARK SERV., U.S. DEP'T OF THE INTERIOR (2009), https://perma.cc/NZ2J-Y7NP.

[36] *Why Protect Everglades National Park?*, NAT'L PARK SERV., https://perma.cc/8JH4-7WUG (last updated Aug. 20, 2015).

[37] *Id.*

[38] *See* M.S. Ross et al., *The Southeast Saline Everglades Revisited: 50 Years of Coastal Vegetation Change,* 11 J. VEGETATION SCI. 101, 101 (2000) (describing how coastal wetlands "reflect a dynamic hydrologic balance").

[39] *Why Protect Everglades National Park?*, *supra* note 36.

in south Florida—will be affected by the salinization of groundwater and the soil.[40] It is unclear which species will be able to tolerate the increased salinity.[41]

Sea level rise will also affect parks we might not expect, including the most visited national park in the country and one of the most iconic—the National Mall in Washington, D.C. According to the NPS, "the National Capital Region is projected to experience the highest average rate of sea level change" within the National Park System by 2100.[42] In 2019, the Mall's Tidal Basin was identified as one of the 11 most endangered historic places by the National Trust for Historic Preservation, in part because of its crumbling infrastructure, but mostly due to persistent flooding.[43] One ongoing project directed at improving the National Mall's climate resilience and security is expected to cost as much as $500 million.[44]

The Harriet Tubman Underground Railroad National Historical Park is located in southern

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[40] Erik Stabena, et al., *Sea-level Rise: Observations, Impacts, and Proactive Measures in Everglades National Park*, 28 PARK SCI. 26, 29 (2011).

[41] *Id.*

[42] MARIA A. CAFFREY, NAT'L PARK SERV., SEA LEVEL RISE AND STORM SURGE PROJECTIONS FOR THE NATIONAL PARK SERVICE viii (2018), https://perma.cc/55XX-X466.

[43] *Discover America's 11 Most Endangered Historic Places for 2019*, NAT'L TR. FOR HISTORIC PRES. (May 30, 2019), https://perma.cc/ PL8J- ZX7Q.

[44] Andrew Giambrone, *Famed D.C. Cherry Blossoms Face Long-Term Risks from High Tides*, CURBED D.C. (Apr. 4, 2019), https://perma.cc/WCY8-5JZW.

Maryland.[45] The approximate elevation of the park is a mere three feet above sea level and is surrounded by inlets of the Chesapeake Bay.[46] As water levels continue to rise, this national historic park may be permanently lost.[47]

C. Wildfires pose a significant threat to the western U.S., home to many national parks

Wildfires are becoming more frequent and intense in the West.[48] A growing body of scientific evidence links this trend to human-caused climate change.[49] As the western U.S. is home to more than half of our national parks, including eight of the ten parks most visited in 2018, more frequent and intense wildfires will pose significant threats to the National Park System absent targeted action to reduce GHG pollution.[50]

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[45] *Harriet Tubman Underground Railroad*, NAT'L PARK SERV., https://www.nps.gov/hatu/index.htm.
[46] *Id.*
[47] *Id.*
[48] *See* John Abatzoglou & A. Park Williams, *Impact of Anthropogenic Climate Change on Wildfire Across Western U.S. Forests,* 113(42) PROC. OF THE NAT'L ACAD. OF SCI. 11770 (2016); Jia Coco Liu et al., *Particulate Air Pollution from Wildfires in the Western U.S. Under Climate Change*, 138 CLIMATIC CHANGE 655 (2016); William T. Sommers et al., *Wildland Fire Emissions, Carbon, and Climate: Science Overview and Knowledge Needs,* 317 FOREST ECOLOGY & MGMT. 1, 1–8 (2014).
[49] *See supra* note 48.
[50] *Visitation Numbers*, *supra* note 16.

Western lands are burning at an alarming rate. According to researchers, climate change has doubled the number of acres burned by wildfire.[51] Scientists believe this measure may double again by mid-century.[52] Fire seasons are on average 78 days longer today than 50 years ago, and scientists expect this upward trend to continue.[53] In 2020, wildfires burned over 10 million acres of federal land,[54] including many beloved and iconic national parks such as Glacier, Sequoia, Yellowstone, Crater Lake, Rocky Mountain, Kings Canyon, Saguaro, Olympic, and Yosemite National Parks, and flames have touched Grand Canyon and Wind Cave National Parks.[55] Scientists project that Yellowstone National Park could see fires increase in frequency three to ten times by 2100, compared to 1990.[56]

Although wildfires are a natural part of many ecosystems, climate change is making many forests

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[51] U.S. FOREST SERV., THE RISING COST OF WILDFIRE OPERATIONS: EFFECTS ON THE FOREST SERVICE'S NON-FIRE WORK 2–3 (2015), https://perma.cc/YA4K-MYUL.

[52] *Id.* at 2.

[53] *Id.*

[54] CONG. RESEARCH SERV., WILDFIRE STATISTICS, (Oct. 3, 2019), https://perma.cc/J4D8-RWQY; https://perma.cc/J4D8-RWQY; *Suppression Costs*, NAT'L INTERAGENCY FIRE CTR., https://www.nifc.gov/fire-information/statistics/suppression-costs (last visited Jan. 21, 2022). In 2020, 10,122,336 acres were burned, the second highest amount since 1985.

[55] Kurt Repanshek, *Wildfires Show How Climate Change is Transforming National Parks*, NAT'L GEOGRAPHIC (Oct. 14, 2020), https://www.nationalgeographic.com/travel/article/wildfires-a-sign-climate-change-effects-are-worsening-in-national-parks.

[56] Gonzalez, *supra* note 2, at 121 (Table 6.3).

drier, and therefore less able to rebound from wildfires.[57] In places where forests are found at the edge of their climatic tolerance, dry conditions combined with wildfire may cause those forests to convert to grasslands or shrubs.[58]

Increased wildfires also lead to increases in various pollutants emitted by these wildfires.[59] These pollutants include ground-level ozone and fine particulate matter, or "$PM_{2.5}$."[60] These pollutants obscure the scenic views of these national parks and simultaneously jeopardize human health. Exposure to increased concentrations of $PM_{2.5}$, like those recorded in the parks, raises the risk of respiratory and cardiovascular diseases.[61] Smoke waves are likely to keep visitors away from national parks and threaten the health of those who do make the trip.[62]

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[57] Camille S. Stevens-Rumann et al., *Evidence for Declining Forest Resilience to Wildfires under Climate Change*, 21 ECOLOGY LETTERS 243, 243 (2018).

[58] *Id.*

[59] BENJAMIN DEANGELO ET AL., U.S. ENV'T. PROT. AGENCY, TECHNICAL SUPPORT DOCUMENT FOR ENDANGERMENT AND CAUSE OR CONTRIBUTE FINDINGS FOR GREENHOUSE GASES UNDER SECTION 202(A) OF THE CLEAN AIR ACT 89 (2009), https://perma.cc/J538-7EX7.

[60] *See* Yuanyuan Fang, *Impacts of 21st Century Climate Change on Global Air Pollution-Related Premature Mortality*, 121 CLIMATIC CHANGE 239 (2013).

[61] Jia Coco Liu et al., *Wildfire-Specific Fine Particulate Matter and Risk of Hospital Admissions in Urban and Rural Counties*, 28 EPIDEMIOLOGY 77, 77 (2017).

[62] *See, e.g.*, Jaclyn Cosgrove, *Fire Siege Leaves Yosemite Empty of Humans, Filled with Smoke During Peak Summer Season*, L.A. TIMES (Aug. 4, 2018),

As wildfires intensify, so do the costs of fighting them. From 1985 to 1999, federal fire-fighting costs never exceeded $1 billion per year in any year.[63] Since 2011, costs have exceeded $1 billion every year.[64] In 2015 and 2017, costs exceeded $2 billion, and in 2018, costs exceeded $3 billion.[65] Fire operations take financial resources away from other needs, such as infrastructure maintenance, natural-resource preservation, recreational programs, and staffing, which, in turn, harms visitor experience and local communities.[66]

Like the rest of the West, Yosemite National Park is experiencing more frequent and intense wildfires.[67] Yosemite faced the two largest wildfires in its history within the past seven years. In 2013, the Rim Fire burned over 77,000 acres—nearly ten percent of the park.[68] In 2018, the Ferguson Fire burned over 10,000 acres of park land, closing

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https://www.latimes.com/local/lanow/la-me-yosemite-fire-20180804-story.html.

[63] *See Federal Firefighting Costs (Suppression Only)*, NAT'L INTERAGENCY FIRE CTR., https://perma.cc/A7L8-PAQS.

[64] *See id.*

[65] *See id.*

[66] *See* U.S. DEP'T OF THE INTERIOR, BUDGET JUSTIFICATIONS 6–7, 50 (2019), https://perma.cc/ NDR4-CE43.

[67] *See Yosemite: Past Fire Activity*, NAT'L PARK SERV. (Aug. 29, 2019), https://perma.cc/7APT-HEAJ (Yosemite's fire history map); Gonzalez, *Climate Change Trends*, *supra* note 2, at 115 (Table 6.2) (noting that "[f]ire frequency and burned area [have] increased with temperature" in western parks).

[68] *Id.*

Yosemite Valley, in its entirety, for 20 days.[69] For nearly a century, visitors have converged on Yosemite.[70] Now, these groups are being exposed to the harmful pollutants left behind by wildfires.[71] Moreover, the view of iconic sites like El Capitan, Half Dome, and Bridal Veil Falls may be increasingly obscured by haze from wildfires exacerbated by climate change.[72]

Finally, climate change also worsens air quality independent of wildfires because a warm climate amplifies the harms of ozone pollution.[73] This warming in turn makes places where there are instances of high ozone pollution, like Joshua Tree or Rocky Mountain National Park, all the worse for

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[69] Chris Erskine, *Yosemite Valley to Reopen Tuesday After Nearby Fires Closed It for 20 Days*, L.A. TIMES (Aug. 10, 2018), https://perma.cc/R3GB-PWYT; *Post Ferguson Fire,* YOSEMITE MARIPOSA CNTY. TOURISM BUREAU, https://perma.cc/528M-V5DM.

[70] *About Us*, CAMP WAWONA, https://perma.cc/Q4DJ-VBCK (last visited Jan. 21, 2022); *Two Popular Summer Camps Near Yosemite Close Due to Smoky Air*, KTVU FOX 2 (July 21, 2018), https://perma.cc/V66B-XVAY.

[71] Alex Rudee, *Yosemite's Dirty Air Secret*, NAT'L PARKS CONSERVATION ASS'N (Sept. 19, 2017), https://perma.cc/G4PT-MQTG.

[72] *Id.*

[73] *See Air Quality and Climate Change Research*, U.S. ENV'T PROT. AGENCY, https://www.epa.gov/air-research/air-quality-and-climate-change-research; *How Climate Change Affects the Air We Breathe*, THE WEATHER CHANNEL (Dec. 6, 2021), https://weather.com/news/climate/video/how-climate-change-affects-the-air-we-breathe.

visitors to breathe.[74] Ozone pollution is associated with a myriad of health problems, including diminished lung function and premature death.[75]

III. Damage to the National Park System from climate change also brings significant harm to the U.S. economy and the interests of various stakeholders

The NPS is tasked with managing the national parks and its 20,000 employees, and its budget is funded by the U.S. taxpayer.[76] The national parks have been substantial economic generators and a sound investment, "return[ing] more than $10 for every $1" the U.S. taxpayer invests in the NPS.[77] In 2020, national parks contributed $16.7 billion in total value to the national economy.[78] In 2019, at pre-pandemic levels, national parks contributed $24.3 billion in total value.[79]

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[74] *See Ozone Exceedances Monitored in National Parks*, NAT'L PARK SERV., https://www.nps.gov/subjects/air/ozone-exceed.htm (last updated May 24, 2021) (illustrating ozone exceedances across national parks monitored for ozone).

[75] *Climate Change Decreases the Quality of the Air We Breathe*, CTRS. FOR DISEASE AND CONTROL, https://www.cdc.gov/climateandhealth/pubs/air-quality-final_508.pdf (last visited Jan. 20, 2022).

[76] Amelia Josephson, *The Economics of National Parks*, SMARTASSET (Mar. 18, 2021), https://smartasset.com/taxes/the-economics-of-national-parks.

[77] *Id.*

[78] CATHERINE CULLINANE THOMAS & LYNNE KOONTZ, NATURAL RESOURCE REP. 2021/2259, 2020 NATIONAL PARK VISITOR SPENDING EFFECTS: ECONOMIC CONTRIBUTIONS TO LOCAL COMMUNITIES, STATES, AND THE NATION (2021).

[79] *Id.*

Increased costs of protecting national parks from GHG-driven climate change will continue to burden the U.S. taxpayer if unabated. Every time a national park and adjacent community suffer the physical damage associated with human-caused climate change, the tourism dollars and federal funding go towards clean-up and repair efforts.[80] Whether it be from floods or fires, natural disasters are expensive,[81] and this cost is largely shouldered by the local communities supporting the national parks.[82]

The potential economic impact of reduced visits to national parks can be seen through another real-world case study: the COVID-19 pandemic. 2020 saw a steep decline in visits to national parks compared to 2019 likely due to the coronavirus pandemic. In 2020, national park recreation visits were reported at 237,064,332.[83] This figure is a 27.7 percent decrease

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[80] *See* Christina A. Cassidy & Bob Salsberg, *Costs From Major Natural Disasters Can Stress State Budgets*, FLATHEAD BEACON (Sept. 18, 2017), https://flatheadbeacon.com/2017/09/18/costs-major-natural-disasters-can-stress-state-budgets/.

[81] *Billion-Dollar Weather and Climate Disasters*, NAT'L CTR. FOR ENV'T INFO., https://www.ncdc.noaa.gov/billions/ (last visited Jan. 21, 2022). In 2021, damage caused by weather and climate disasters cost $145 billion. *Id.*

[82] McLeod Brown, *The Effect of Natural Disasters on Local Economies*, BUREAU OF LAB. STAT.: MONTHLY LAB. REV. (Jul. 2017), https://www.bls.gov/opub/mlr/2017/beyond-bls/the-effect-of-natural-disasters-on-local-economies.htm.

[83] PAMELA S. ZIESLER & CLAIRE M. SPALDING, NATURAL RESOURCE DATA SERIES 2021/1326, STATISTICAL ABSTRACT: 2020 (2021).

from 2019 levels, equivalent to 90.5 million visits.[84] As a result of decreased visitation, visitor spending in the national parks and surrounding communities decreased from $21.0 billion in 2019 to $14.5 billion in 2020, a decrease of $6.5 billion or 31 percent.[85]

Furthermore, failure to meaningfully address climate change may threaten the economic vitality of communities that depend on national parks. "Gateway communities" are the towns located within 60 miles of a national park.[86] These economies are hugely dependent on tourism and spending from visitors to the national parks. In 2019, visitors to national parks contributed $21.0 billion in consumer spending to the economies of the gateway communities alone.[87] Visitors to national parks spend money in the surrounding communities, allowing local restaurants, hotels, recreation services, and shops to thrive. Employees of local businesses also use their incomes to make purchases within the local economies, further contributing to the economic growth of gateway communities.[88]

As a result of decreased visitation to national parks during the pandemic, the total jobs supported by the national park community decreased from

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[84] *Id.* at 11.
[85] THOMAS & KOONTZ, *supra* note 78.
[86] Josephson, *supra* note 76.
[87] *Visitor Spending Effects: Economic Contributions of National Park Visitor Spending*, NAT'L PARK SERV., https://www.nps.gov/subjects/socialscience/vse.htm (last updated Apr. 25, 2018).
[88] THOMAS & KOONTZ, *supra* note 78, at 3.

340,500 in 2019 to 234,000 in 2020, a 31.3 percent decrease.[89] This figure includes the people employed by the parks and all of the employees of the associated tourism industry, and the vast majority of these jobs were located within 60 miles of the parks.[90] The sharp decrease in visitor spending and employment opportunities in local communities is devastating, and similar trends may be realized if national parks are further destroyed by the droughts, wildfires, sea level rise, and other harms associated with climate change.[91]

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[89] *Id.*

[90] *National Park Visitor Spending Contributed $28.6 Billion to U.S. Economy in 2020*, NAT'L PARK SERV. (June 10, 2021), https://www.nps.gov/orgs/1207/vse2020.htm.

[91] *See* Katherine Kornei, *Invasive Plants and Climate Change Will Alter Desert Landscapes*, EOS (Jan. 13, 2022), https://eos.org/articles/invasive-plants-and-climate-change-will-alter-desert-landscapes; Alicia Victoria Lozano, *Wildfire Near Rocky Mountain National Park Fully Contained at 147 Acres*, MSN (Nov. 20, 2021), https://www.msn.com/en-us/news/us/wildfire-near-rocky-mountain-national-park-fully-contained-at-147-acres/ar-AAQX2Uk; David Boraks, *For Gullah Geechee People on the SC Coast, Climate Change is Already a Threat*, WFAE 90.7: CHARLOTTE'S NPR NEWS SOURCE (Oct. 28, 2021), https://www.wfae.org/energy-environment/2021-10-28/for-gullah-geechee-people-on-the-sc-coast-climate-change-is-already-a-threat.

CONCLUSION

The cases should be dismissed. If not, the judgment below should be affirmed.

Respectfully submitted.

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