Our Children's Trust
P.O. Box 5181
Eugene, OR 97405

Submitted via email nrdems@mail.house.gov

February 3, 2022

Chairman Lowenthal and Ranking Member Stauber, House of Representatives Subcommittee on Energy and Mineral Resources

Re: Materials for January 20, 2022 Subcommittee on Energy and Mineral Resources Hearing on What More Gulf of Mexico Oil and Gas Leasing Means for Achieving U.S. Climate Targets

Dear Chairman Lowenthal and Ranking Member Stauber,

On behalf of Our Children's Trust ("OCT"), a nonprofit law firm dedicated to securing the legal right to a safe climate system for youth and future generations, please find enclosed herewith materials for your consideration relevant to the January 20, 2022 Subcommittee on Energy and Mineral Resources Hearing on "What More Gulf of Mexico Oil and Gas Leasing Means for Achieving U.S. Climate Targets." This submission is designed to emphasize the detrimental effects of the U.S. Department of the Interior's ("DOI") Interim Report on the Federal Oil and Gas Program on youth and future generations of Americans. We also hope to inspire you with the stories of courageous children and provide resources critical to developing science-based, technically and economically feasible solutions to the climate crisis that serve as alternatives to the years of devastation wrought by the Federal Oil and Gas Program.

Through youth-led constitutional legal actions, including *Juliana v. United States* ("*Juliana*"), the landmark federal constitutional climate case filed by twenty-one youth plaintiffs, including eleven Black, Brown and Indigenous youth, described in **Exhibit A,** OCT supports youth seeking to hold their governments accountable for policies and actions that have caused, and continue to cause, the climate crisis. Through these actions, youth seek science-based

remedies to reduce greenhouse gas emissions at rates necessary to protect their fundamental human rights.

It is OCT's understanding that the materials submitted for the January 20th hearing will inform the Committee's outlook on how to best shape future climate policy and legislation pertaining to DOI's report of the Federal Oil and Gas Program and related concerns. The U.S. government has long known of the dangers of climate change and can no longer act in a manner that ignores that a climate emergency exists. If DOI, as trustee of public trust resources, does not take immediate effective action to cease permitting activities that increase the Earth's energy imbalance (described below), our children, future generations, and innumerable species will continue to suffer greater injury with long-lasting and potentially irreversible consequences. Continued federal leasing without an adequate assessment of the effects on our Nation's children and implementation of a national plan to protect the atmosphere in trust for present and future generations would be a gross violation of the Constitution and DOI's public trust responsibilities. Given our mission as the Nation's only law firm dedicated to representing youth whose constitutional rights are being infringed by their government's conduct that causes climate change, OCT has a substantial interest in ensuring that any such legislation, policies, or programs are consistent with what the best available science dictates is necessary to stabilize the climate system and protect the fundamental rights of youth and future generations.

We invite you to consult the materials enclosed herewith, which demonstrate that climate change is *already harming* the fundamental rights of young people in the United States and legislation, policies and programs which ensure emissions reductions and sequestration of excess CO_2 is necessary for the protection of the fundamental rights of American children (Note: Carbon removed through natural sequestration in sinks must be counted separately and used to draw down the excess CO_2 already in the atmosphere from cumulative U.S. historic emissions, not to provide a negative credit or offset for ongoing and new U.S. emissions.).

There is simply no scientific basis to continue historical rates of extraction in light of the already-dangerous accumulations of greenhouse gases in the atmosphere to date and readily available and cost-effective renewable energy sources. Enclosed as **Exhibit B** are comments OCT submitted April 15, 2021 on DOI's Interim Report on the Federal Oil and Gas Program. As part of its fiduciary duties as trustee to manage and protect our country's vital natural resources, DOI has the duty of loyalty to administer the trust solely in the interest of the trust beneficiaries—both present and future generations of citizens—and that can only be done by recognizing and applying the best available science as to how to restore Earth's energy imbalance. With the current atmospheric CO_2 concentration over 415 ppm, the atmosphere has

already been substantially impaired – as Dr. Michael Kuperberg, former director of the U.S. Global Change Research Program has stated, we are in the "danger zone." How can we achieve global climate stability if DOI continues to authorize more emissions through its oil and gas leasing program? You must be able to answer that question and your answer should guide your conduct going forward. All analyses of the potential and historical impact of GHG emissions from changes in the Federal Oil and Gas Program must be evaluated in terms of whether the emissions are in line with the U.S. government's public trust and constitutional obligation to reduce emissions to below 350 ppm by 2100. Anything less than this scientifically supported trajectory will irreparably harm the environment on which our children rely for their life, liberty, and property and which our posterity are entitled to inherit.

Enclosed as **Exhibit C** you will find a document entitled "Government Climate and Energy Policies Must Target <350 ppm Atmospheric CO_2 by 2100 to Protect Children and Future Generations." This document details the scientific basis underlying, and prescription for, stabilization of the climate system as necessary to protect the fundamental human rights of youth and future generations relative to the climate crisis and explains the scientific conclusion that allowing warming of up to 1.5°C *is not safe*, as the IPCC has also acknowledged.

Climate legislation, policy, and programs which ensure emissions reductions and sequestration of excess CO_2 consistent with what the best available science dictates is necessary for the protection of the fundamental rights of young people and future generations. The information in these Exhibits are additionally relevant to the House of Representatives' concurrent resolution, Children's Fundamental Rights and Climate Recovery (H.Con.Res.31), sponsored by Representative Schakowsky, supporting the *Juliana* youth plaintiffs. It recognizes the disproportionate effects of the climate crisis on children and their fundamental rights which demands renewed U.S. leadership and development of a national, science-based climate recovery plan. This resolution, re-introduced on Earth Day 2021, had the support of 64 members from both chambers.

Should you have any questions regarding the enclosed materials, please feel free to contact Liz Lee, OCT's government affairs staff attorney at liz@ourchildrenstrust.org.

Sincerely,

/s/
Andrea Rodgers
Senior Litigation Attorney
Our Children's Trust
andrea@ourchildrenstrust.org

Enclosures:
Exhibit A: *Juliana v. United States* Summary and Plaintiffs' Profiles
Exhibit B: Our Children's Trust's Comments on U.S. Department of the Interior's Interim Report on the Federal Oil and Gas Program (April 15, 2021)
Exhibit C: Government Climate and Energy Policies Must Target <350 ppm Atmospheric CO_2 by 2100 to Protect Children and Future Generations (March 2021)

Exhibit A:

Juliana v. United States Summary
and Plaintiffs' Profiles

Juliana v. United States

Young Americans Fight for Their Constitutional Rights and Climate Recovery

Background

Represented by attorneys at Our Children's Trust, **21 young Americans, including 11 Black, Brown, and Indigenous youth, filed their constitutional climate lawsuit, *Juliana v. United States*, against the executive branch of the U.S. government in 2015.** They assert that the government's affirmative actions causing climate change have violated their constitutional rights to life, liberty, property, and equal protection of the laws, and impaired essential public trust resources. The youth are supported by a team of scientific experts who explain that atmospheric carbon dioxide levels must be reduced to 350 parts per million (ppm) by 2100, which would limit long-term warming to less than 1° Celsius, the safe target to stabilize the planet's climate system. Renowned energy experts published a 2019 report that demonstrates the technical and economic viability of the U.S. to meet this standard by 2100 and followed-up with a 2020 Florida report that includes updated U.S. data.

History

The U.S. District Court has repeatedly found that the youth plaintiffs have legitimate claims for trial. **In a ground-breaking decision in November 2016, the court found that the U.S. Constitution secures the fundamental right to a climate system capable of sustaining life;** that plaintiffs' injuries give them standing to bring their claims; and that the Court has authority to remedy the youth's injuries. Since that historic ruling, the defendants have relentlessly attempted to prevent *Juliana v U.S.* from going to trial. Four times in the Ninth Circuit Court of Appeals and twice in the U.S. Supreme Court, the courts ruled in favor of the youth.

On January 17, 2020, a divided panel of the Ninth Circuit Court of Appeals found for the plaintiffs in nearly every respect, but narrowly ruled that the courts cannot stop the executive branch of government from harming children with its policies that cause climate change. To address the concerns of the Ninth Circuit, on March 9, 2021, plaintiffs requested to amend their complaint in the U.S. District Court and seek a declaration of their constitutional rights and a declaration that the U.S. national energy system is unconstitutional. On May 13, 2021, the District Court judge ordered the parties to engage in settlement discussions. Oral argument on the motion to amend was held on June 25, 2021 and the plaintiffs anticipate a favorable ruling. On July 6, 2021, the Attorney General from New York filed an amicus brief that was also signed by the attorneys general of Delaware, Hawai'i, Minnesota, Oregon, and Vermont, in solidarity of the plaintiffs' opposition to the attorneys general from 18 republican states that sought intervention into the case. **The Biden administration and the Department of Justice now have a renewed opportunity to create a lasting legacy by enshrining science-based climate protection as a fundamental right for children and generations to come.**

Support These Brave Youth Plaintiffs

Please publicly support the youth plaintiffs' right to have their constitutional claims upheld in a court of law. Support the congressional resolution recognizing children's fundamental rights and the need for a national, science-based climate recovery plan at ourchildrenstrust.org/congressional-resolution-2021. Also, join future *amicus curiae* briefs in support of their constitutional rights and the judiciary exercising its Article III powers in their case (Twenty-four members filed a brief in March 2020 and an earlier brief in March 2019 both in the Ninth Circuit.). **Show our nation's children you care about their future, and the future of all generations.**

info@ourchildrenstrust.org | www.ourchildrenstrust.org

Juliana v. United States: Meet the Plaintiffs

Meet all 21 Juliana plaintiffs at ourchildrenstrust.org/federal-plaintiffs
Learn more about their stories in this 60 minutes segment (bit.ly/60minsjuliana) and their visit to Congress in this video (bit.ly/yearsprojectjuliana) from The YEARS Project

For over six years, these diverse, young plaintiffs, all of whom have been personally impacted by climate change, have been leading the game-changing litigation campaign to secure the legal right to a safe climate system for young people, based on the best available science. In 2015, they filed their constitutional climate lawsuit against the U.S. government in the U.S. District Court for Oregon.

Kelsey Juliana, 25, Eugene, OR

Fighting climate change since she was 10, Kelsey has been increasingly exposed to hazardous wildfire smoke in her hometown. As a teenager, she participated in the Great March for Climate Action, marching 1,600 miles from Nebraska to D.C. Time Magazine recognized Kelsey as a Rising Star in its list of the Next 100 Most Influential People in the World.

Vic Barrett, 22, White Plains, NY

A Garifuna American, Vic has spoken about environmental justice issues and how his climate anxiety is increased because his identities — first generation, trans, indigenous, Latinx, Black, youth — make him uniquely vulnerable to the climate crisis. In 2019, he testified at a historic joint hearing of the House Foreign Affairs and Select Committee on the Climate Crisis alongside Greta Thunberg.

Jaime Butler, 21, Flagstaff, AZ

Jaime is of the Tangle People Clan, born of the Bitterwater Clan. She grew up in Cameron, Arizona on the Navajo Nation Reservation, but had to move due to water scarcity and failed attempts at dryland farming. Jaime knows firsthand the cultural and spiritual impacts of climate change as she and her tribe struggle to participate in their traditional ceremonies due to climate-related impacts.

Levi Draheim, 14, Satellite Beach, FL

Levi has lived most of his life on a barrier island in Florida, barely above sea level and literally washing away due to sea level rise and storms made worse by climate change. In 2019, Levi addressed a youth stakeholder's meeting with members of the Senate Democrats' Special Committee on the Climate Crisis at the United Nations Foundation. His baby sister is a source of motivation and inspiration.

Xiuhtezcatl Martinez, 21, Boulder, CO

Xiuhtezcatl is a renowned hip-hop artist and activist. He is also the former Youth Director and Co-Chair of the executive board for Earth Guardians. He has experienced extreme weather events that have been exacerbated due to climate change, such as catastrophic flooding. Raised in the Aztec tradition, Xiuhtezcatl has spoken at the United Nations several times, including in English, Spanish, and his Native language, Nahuatl.

Exhibit B:

Our Children's Trust's Comments on
U.S. Department of the Interior's Interim Report
on the Federal Oil and Gas Program (April 15, 2021)

Our Children's Trust Youth v. Gov

April 15, 2021

Via email to energyreview@ios.doi.gov

Secretary of Interior Deb Haaland
Department of the Interior
1849 C Street NW
Washington, DC 20240

Re: Comment for the Department of the Interior's Interim Report on the Federal Oil and Gas Program

Secretary of Interior Deb Haaland,

On behalf of America's youth, Our Children's Trust provides these comments for the Department of the Interior's ("DOI") review of "Federal oil and gas permitting and leasing practices in light of the Secretary of the Interior's broad stewardship responsibilities over the public lands and in offshore waters, including potential climate and other impacts associated with oil and gas activities . . . ." Executive Order 14008, Sec. 208. As the Nation's only law firm dedicated to representing youth who are being harmed by their government's conduct that causes climate change, we write to advise DOI to align the federal oil and gas program with protecting the fundamental constitutional rights of children, particularly children within environmental justice communities, including communities of color, low-income communities, and indigenous communities.

As part of its review, DOI should first recognize the important role the agency plays in achieving the scientifically-defensible target of reducing total U.S. emissions by 80% by 2030 and 96-100% by 2050, while simultaneously enhancing biogenic sequestration capacity of sinks to drawdown historical cumulative CO_2 emissions, placing the U.S. on an emissions trajectory consistent with returning atmospheric CO_2 to below 350 ppm by 2100.[1] Experts have opined that it is economically and technically feasible to achieve these science-based GHG emission reduction targets.[2] Because CO_2 emissions from fossil fuels produced on federal lands are a significant source of U.S. emissions (23.7% of national emissions, 2005-2014),[3] and the U.S. is historically responsible for over one-quarter of global cumulative CO_2 emissions, DOI should continue to

[1] Letter from Our Children's Trust to White House National Climate Advisor Gina McCarthy, Special Presidential Envoy for Climate John Kerry, and Members of the National Climate Task Force (Mar. 22, 2021) [Attachment 1].
[2] *See* Mark Z. Jacobson et al., *100% Clean and Renewable Wind, Water, and Sunlight (WWS) All-Sector Energy Roadmaps for the 50 United States*, 8 Energy & Env't Sci. 2093 (2015); Ben Haley et al., *350 ppm Pathways for the United States* (2019); James H. Williams et al., *Carbon-Neutral Pathways for the United States*, 2 AGU Advances e2020AV000284 (2021).
[3] Matthew D. Merrill et al., *Federal Lands Greenhouse Gas Emissions and Sequestration in the United States—Estimates for 2005–14* (2018); As a federal court has found, "the plaintiffs' evidence shows that federal subsidies and leases have increased those [U.S.] emissions. About 25% of fossil fuels extracted in the United States come from federal waters and lands, an activity that requires authorization from the federal government." *Juliana v. United States*, 947 F.3d 1159, 1169 (9th Cir. 2020).

pause all new federal oil and natural gas leases on public lands and in offshore waters until finalizing a comprehensive analysis of both projected national oil and gas consumption that will be needed to meet domestic energy demand through 2050 based on a 350 ppm emissions reduction trajectory, and projected U.S. oil and gas production under current operations on both public and private lands. Until both aspects of that analysis are conducted, DOI cannot know whether and to what extent any additional leasing is necessary and consistent with the 350 ppm emission reduction trajectory. Finally, DOI should examine whether and to what extent these activities substantially impair the atmosphere and other public trust resources (including land, water, and wildlife) over which DOI acts as trustee.

The premier scientific experts are clear on three key points that are relevant to DOI's task at hand.

1. Children are uniquely vulnerable to human-caused climate change because of their developing bodies, higher exposure to air, food, and water per unit body weight, unique behavior patterns, dependence on caregivers, and longevity on the planet.[4] Climate change is causing a public health emergency that is adversely impacting the physical and mental health of American children through, among other impacts, extreme weather events, rising temperatures and increased heat exposure, decreased air quality, altered infectious disease patterns, and food and water insecurity.[5]

2. Earth's energy imbalance (and more global warming) can only be stopped by returning the atmospheric CO_2 concentration to below 350 ppm by 2100. This is the best scientific standard for "stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system. . . . within a time-frame" sufficient to protect life and liberties.[6]

3. Current increased average temperatures of 1.1°C are already dangerous. Basing decisions on temperature targets of even more heat at 1.5 to 2°C stokes more danger and is exponentially more catastrophic for our children and posterity. The IPCC Special Report on *Global Warming of 1.5°C* (2018) stated that allowing a temperature rise of 1.5°C "is not considered 'safe' for most nations, communities, ecosystems, and sectors and poses significant risks to natural and human systems as compared to current warming of 1°C (*high confidence*)."[7]

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[4] Samantha Ahdoot, Susan E. Pacheco & Council on Environmental Health, *Global Climate Change and Children's Health*, 136 Pediatrics e1468 (2015); Rebecca Pass Philipsborn & Kevin Chan, *Climate Change and Global Child Health*, 141 Pediatrics e20173774 (2018); Perry E. Sheffield & Philip J. Landrigan, *Global Climate Change and Children's Health: Threats and Strategies for Prevention*, 119 Env't. Health Persp. 291 (2011).
[5] Ahdoot, Pacheco & Council on Environmental Health, *supra* note 4.
[6] UNFCCC, Art. 2.
[7] J. Roy et al., *Sustainable Development, Poverty Eradication and Reducing Inequalities, in* Global Warming of 1.5°C, at 447 (2018); *see also* James Hansen et al., *Assessing "Dangerous Climate Change": Required Reduction of Carbon Emissions to Protect Young People, Future Generations and Nature*, 8 PLOS ONE e81648 (2013) [hereinafter *Assessing "Dangerous Climate Change"*].

At the March 25, 2021 public forum, Secretary Haaland recognized that "[i]n order to tackle the climate crisis and strengthen our nation's economy, we must manage our lands, waters, and resources not just across fiscal years, *but across generations.*"[8] We agree and believe that protecting the youngest among us is the key to protecting communities from the ravages of climate change. We disagree with Secretary Haaland, however, that "[f]ossil fuels will continue to play a major role in America for years to come . . . ." There is simply no scientific basis to continue historical rates of extraction in light of the already-dangerous accumulations of greenhouse gases ("GHGs") in the atmosphere to date and readily available and cost-effective renewable energy sources. A careful analysis of need, tied to scientific prescriptions for climate recovery, is vital.

Our Children's Trust represents twenty-one youth plaintiffs in the constitutional climate lawsuit, *Juliana v. United States*, against the U.S. government, asserting that, through the government's affirmative actions that cause climate change, it has violated the youngest generation's constitutional rights to life, liberty, property, and equal protection of the law, as well as failed to protect essential public trust resources. Federal courts have affirmed "that the federal government has long promoted fossil fuel use despite knowing that it can cause catastrophic climate change, and that failure to change existing policy may hasten an environmental apocalypse."[9] "The government affirmatively promotes fossil fuel use in a host of ways, including beneficial tax provisions, permits for imports and exports, subsidies for domestic and overseas projects, and *leases for fuel extraction on federal land*."[10] Federal courts have also confirmed that the government's conduct is injuring American youth:

> Jaime B., for example, claims that she was forced to leave her home because of water scarcity, separating her from relatives on the Navajo Reservation. *See Trump v. Hawaii*, __ U.S. __, 138 S. Ct. 2392, 2416, 201 L.Ed.2d 775 (2018) (finding separation from relatives to be a concrete injury). Levi D. had to evacuate his coastal home multiple times because of flooding. *See Maya v. Centex Corp.*, 658 F.3d 1060, 107-71 (9th Cir. 2011) (finding diminution in home property value to be a concrete injury). These injuries are not simply "'conjectural'" or 'hypothetical;'" at least some of the plaintiffs have presented evidence that climate change is affecting them now in concrete ways and will continue to do so unless checked.[11]

These facts must be taken account in any decision-making by DOI that affects the extent to which the U.S. government exacerbates American youth's existing climate change injuries. This conduct is part of the ongoing conduct challenged in the *Juliana* litigation. We hereby incorporate into our public comment the *Juliana* motion for preliminary injunction and expert testimony over these types of activities to more fully explicate our position.[12]

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[8] https://www.doi.gov/news/secretary-haaland-delivers-remarks-interiors-public-forum-federal-oil-and-gas-program (emphasis added).
[9] *Juliana v. United States*, 947 F.3d 1159, 1164 (9th Cir. 2020).
[10] *Id*. at 1167 (emphasis added).
[11] *Id*. at 1168.
[12] *See* Urgent Motion Under Circuit Rule 27-3(b) for Preliminary Injunction, *Juliana v. United States*, No. 18-36082 (9th Cir. Feb. 7, 2019) [Attachment 2]. Expert declarations in support of the motion for preliminary injunction are available at https://www.ourchildrenstrust.org/court-orders-and-pleadings.

The DOI has Public Trust and Constitutional Obligations to Protect the Atmosphere and Create a National Climate Recovery Plan.

Under the Public Trust Doctrine, embedded in our Constitution and other Founding Documents, and in the very sovereignty of our Nation, U.S. citizens (both present and future) have a right to access and use crucial natural resources. That right belongs not just to present generations, but to future generations as well. To uphold citizen's rights, the government has fiduciary duties as trustees to manage and protect our country's vital natural resources in trust for present and future generations of citizens.[13]

Specifically, DOI has a fiduciary obligation under the Public Trust Doctrine to refrain from activities that substantially impair the atmosphere, and other public trust resources (including land, water, and wildlife), by exacerbating the effects of human-induced global energy imbalance. As part of its review, DOI must determine whether it is managing national trust resources in a way that substantially impairs the atmosphere, the climate system, our oceans, lands, and water supply, or limits the ability of youth and future generations from accessing and enjoying these resources. If DOI, as trustee of public trust resources, does not take immediate effective action to cease permitting activities that increase the Earth's energy imbalance, our children, future generations, and innumerable species will continue to suffer greater injury with long-lasting and potentially irreversible consequences.[14] Significantly, fundamental constitutional rights of young people will continue to be violated, potentially irreparably.

The U.S. government has long known of the dangers of climate change and can no longer act in a manner that pretends that a climate emergency does not exist. As a federal court recently found:

> The record also conclusively establishes that the federal government has long understood the risks of fossil fuel use and increasing carbon dioxide emissions. As early as 1965, the Johnson Administration cautioned that fossil fuel emissions threatened significant changes to climate, global temperatures, sea levels, and other stratospheric properties. In 1983, an Environmental Protection Agency ("EPA") report projected an increase of 2 degrees Celsius by 2040, warning that a "wait and see" carbon emissions policy was extremely risky. And, in the 1990s, the EPA implored the government to act before it was too late. Nonetheless, by 2014, U.S. fossil fuel emissions had climbed to 5.4 billion metric tons, up substantially from 1965. This growth shows no signs of abating. From 2008 to 2017, domestic petroleum and natural gas production increased by nearly 60%, and the country is now expanding oil and gas extraction four times faster than any other nation.[15]

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[13] *Juliana v. United States*, 217 F. Supp. 3d 1224, 1254 (D. Or. 2016).
[14] *See Assessing "Dangerous Climate Change"*, *supra* note 7; James Hansen et al., *Ice Melt, Sea Level Rise and Superstorms: Evidence from Paleoclimate Data, Climate Modeling, and Modern Observations that 2°C Global Warming Could be Dangerous*, 16 Atmos. Chem. & Phys. 3761 (2016) [hereinafter *Ice Melt, Sea Level Rise and Superstorms*]; s*ee also* U.S. Global Change Research Program, *Fourth National Climate Assessment, Vol. II* (2018).
[15] *Juliana v. United States*, 947 F.3d 1159, 1166 (9th Cir. 2020).

As the honorable Judge Ann Aiken stated in her decision to deny the government's motion to dismiss *Juliana*: "[T]he right to a climate system capable of sustaining human life is fundamental to a free and ordered society. Just as marriage is the 'foundation of the family,' a stable climate system is quite literally the foundation 'of society, without which there would be neither civilization nor progress.'" (quoting *Obergefell v. Hodges*, 135 S. Ct. 2584, 2601 (2015)).[16] Science defines the fiduciary and constitutional obligation that federal authorities, as trustees, must fulfill under the Public Trust Doctrine and our Constitution. As the Biden Administration has acknowledged, rapid and science-based reductions of GHG emissions are required to preserve a habitable climate for present and future generations.

Scientists state the "Earth energy imbalance (EEI) is the most critical number defining the prospects for continued global warming and climate change."[17] "Stabilization of climate . . . requires that EEI be reduced to approximately zero to achieve Earth's system quasi-equilibrium."[18] Returning CO_2 concentrations to below 350 ppm would restore the energy balance of Earth by allowing as much heat to escape into space as Earth retains, an important historic balance that has kept our planet in the sweet spot for the past 10,000 years, supporting stable sea levels and coastlines, enabling productive agriculture, and allowing humans and other species to thrive.[19]

As part of its fiduciary duties as trustee to manage and protect our country's vital natural resources, DOI has the duty of loyalty to administer the trust solely in the interest of the trust beneficiaries—both present and future generations of citizens—and that can only be done by recognizing and applying the best available science as to how to restore Earth's energy imbalance.

Any Modifications of the Federal Oil and Gas Program Must Address the Direct, Indirect, and Cumulative Impacts of GHG Emissions and Climate Change.

In its review of the federal oil and gas program, DOI *should not* look narrowly at the environmental impacts stemming from the increased GHG emissions that would come from continuing leasing on public lands. With the current atmospheric CO_2 concentration over 415 ppm, the atmosphere has already been substantially impaired – as Dr. Michael Kuperberg, former director of the U.S. Global Change Research Program has stated, we are in the "danger zone". How can we achieve global climate stability if the DOI continues to authorize more emissions through its oil and gas leasing program? That question must be answered as part of this proposed review. DOI must assess the cumulative long-term impairment to the atmosphere and complete a full programmatic accounting of the GHG emissions from federal actions, and other actors, since 1965 to determine the influence of U.S. emissions on the levels of warming being experienced today. Much of this work has already been done by USGS for GHG emissions from federal lands for 2005-2014, and simply needs to be expanded.[20]

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[16] *Juliana v. United States*, 217 F. Supp. 3d 1224, 1250 (D. Or. 2016).
[17] Karina von Schuckmann et al., *Heat Stored in the Earth System: Where Does the Energy Go?*, 12 Earth Syst. Sci. Data. 2013 (2020).
[18] *Id*. ("[T]he EEI amounts to 0.87±0.12 Wm^{-2} during 2010-2018.").
[19] James Hansen, *Storms of My Grandchildren* 166 (2009); James Hansen et al., *Target Atmospheric CO_2: Where Should Humanity Aim?* 2 The Open Atmospheric Science Journal 217 (2008) [hereinafter *Target Atmospheric CO_2*].
[20] *See* Merrill et al., *supra* note 3.

All analyses of the potential and historical impact of GHG emissions from changes in the federal oil and gas program must be evaluated in terms of whether the emissions are in line with the U.S. government's public trust and constitutional obligation to reduce emissions to below 350 ppm by 2100. Anything less than this scientifically supported trajectory will irreparably harm the environment on which our children rely for their life, liberty, and property and which our posterity are entitled to inherit. Continued federal leasing without an adequate assessment of the effects on our Nation's children and implementation of a national plan to protect the atmosphere in trust for present and future generations would be a gross violation of the Constitution and DOI's public trust responsibilities.

In this review, DOI must take a hard look at the direct, indirect, and cumulative impacts of modifying the program and at alternatives that could reduce or eliminate those environmental impacts.[21] Thus DOI must account for the carbon emission, climate, and ocean acidification impacts to already-impaired resources over the lifespan of the program. This requires accounting of cumulative lifecycle emissions and calculating how additional CO_2 emissions resulting from additional extractions of fossil fuels would further imbalance the Earth's energy system.[22] DOI must also calculate the total emissions reductions required in the U.S. in order to be on a trajectory of returning CO_2 levels to below 350 ppm by 2100 and how adjusting the program affects those necessary reductions.

DOI must analyze the cumulative impact of lifecycle GHG emissions of all federally-approved fossil fuel use from public lands and offshore waters. As noted by the Ninth Circuit in *Center for Biological Diversity v. NHTSA*, "the fact that climate change is largely a global phenomenon that includes actions that are outside of the agency's control does not release the agency from the duty of assessing the effects of *its* actions on global warming within the context of other actions that also affect global warming."[23] A substantial portion (around 20%) of every ton of CO_2 emitted by humans persists in the atmosphere for centuries to millennia and while there continues to affect the climate system.[24] The impacts associated with today's GHG emissions will be mostly borne by our children and future generations.

Scientists agree that *GHG emissions levels this decade will determine our fate and may push us beyond tipping points from which we cannot return*. Time is of the essence.[25] As one example, Dr. James Hansen has noted: "If the ocean continues to accumulate heat and increase melting of marine-terminating ice shelves of Antarctica and Greenland, a point will be reached at which it is impossible to avoid large-scale ice sheet disintegration with sea level rise of at least several meters."[26] In 2017, NOAA's projections for global mean sea level rise included a range between 4.9-8.2 feet (1.5-2.5 m) by 2100.[27] Sea level rise is accelerating due primarily to rapid loss of ice on Greenland and Antarctica, which are melting significantly faster than a few decades

[21] 42 U.S.C. § 4332(2)(C)(i)-(ii); 40 C.F.R. §§ 1502.16, 1508.7, 1508.8, 1508.25.
[22] *See Assessing "Dangerous Climate Change"*, *supra* note 7.
[23] *Ctr. for Biological Diversity v. NHTSA*, 538 F.3d 1172, 1217 (9th Cir. 2008) (emphasis in original) (alterations and internal quotation marks omitted).
[24] *Target Atmospheric CO_2*, *supra* note 19.
[25] *See Assessing "Dangerous Climate Change"*, *supra* note 7.
[26] *Ice Melt, Sea Level Rise and Superstorms, supra* note 14.
[27] NOAA, *Global and Regional Sea Level Rise Scenarios for the United States* (2017) (intermediate-high to extreme global mean sea level rise scenarios).

ago.[28] DOI should consider how the cumulative GHG emissions from federal actions will affect our Nation's response to the urgency of the crisis and the need to reduce emissions at sufficient levels to avoid unsafe levels of heating, leading to further sea level rise and ocean acidification.

In summary, given its obligations under the Constitution and the Public Trust Doctrine, DOI should take all steps within its power to ensure its oil and gas program is aligned with reducing total U.S. emissions by 80% by 2030 and 96-100% by 2050 while simultaneously enhancing biogenic sequestration capacity, placing the U.S. on an emissions trajectory consistent with returning atmospheric CO_2 to below 350 ppm by 2100, or otherwise explain why those reductions cannot be met. Because CO_2 emissions from fossil fuels produced on federal lands play a significant role in U.S. total emissions, DOI also should continue to pause all new federal oil and natural gas leases on public lands and in offshore waters until DOI finalizes a comprehensive analysis of projected oil and gas consumption based on a <350 ppm trajectory. Finally, as part of its review, DOI should examine whether it is currently engaged in activities that substantially impair the atmosphere and other public trust resources (including land, water, and wildlife).

Thank you for your consideration. Our understanding from the March 25, 2021 public forum is that DOI is asking only for short public comments at this time. We are happy to provide any of the cited evidence on request for the administrative record. Please send us a response to our comments and decision documents to the address and email listed below.

Sincerely,
/s/

Julia Olson
Executive Director and Chief Legal Counsel
julia@ourchildrenstrust.org

Our Children's Trust
P.O. Box 5181
Eugene, OR 97405

Attachment 1: Letter from Our Children's Trust to White House National Climate Advisor Gina McCarthy, Special Presidential Envoy for Climate John Kerry, and Members of the National Climate Task Force (Mar. 22, 2021).

Attachment 2: Urgent Motion Under Circuit Rule 27-3(b) for Preliminary Injunction, *Juliana v. United States*, No. 18-36082 (9th Cir. Feb. 7, 2019).

[28] *See e.g.*, E. Rignot et al., *Four Decades of Antarctic Ice Sheet Mass Balance from 1979-2017*, 116 PNAS 1095 (2019); The IMBIE team, *Mass Balance of the Greenland Ice Sheet From 1992 to 2018*, 579 Nature 233 (2020).

Attachment 1

March 22, 2021

Via Email to recipients (for whom we have email addresses; White House National Climate Advisor Gina McCarthy, c/o Maggie Thomas)

White House National Climate Advisor Gina McCarthy
Special Presidential Envoy for Climate John Kerry
The White House
1600 Pennsylvania Avenue, NW
Washington, DC 20500

Re: United States' Nationally Determined Contribution and Best Scientific Standards for Protecting Children's Fundamental Rights

Dear White House National Climate Advisor Gina McCarthy, Special Presidential Envoy for Climate John Kerry, and Members of the National Climate Task Force,

By April 22, 2021, you will release the United States Nationally Determined Contribution (NDC), and set US energy and climate policy for the next ten years, with implications far beyond 2030. We write in the interest of our Nation's youth and posterity to petition for an NDC commensurate with the best available science and consistent with protecting the fundamental constitutional rights of children, such as children within environmental justice communities, including communities of color, low-income communities, and indigenous communities. The premier scientific experts on the planet are clear on three points:

1. Earth energy imbalance (and more global warming) can only be stopped by returning the atmospheric CO_2 concentration to below 350 ppm by 2100. This is the best scientific standard for "stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system. . . . within a time-frame" sufficient to protect life and liberties, and with which to align our Nation's NDC.[1]
2. Current increased average temperatures of 1.1°C are already dangerous. Aiming for temperature targets of even more heat at 1.5°C to 2°C stokes more danger and is exponentially more catastrophic for our children and posterity.
3. "Net Zero" emissions is a shell game with little accountability, detached from a precise standard for protection and prevention. Laws and policies, like NDCs, must separate emission allowances and reductions from sequestration efforts and measure them independent of one another.[2]

[1] UNFCCC, Art. 2.
[2] D. McLaren et al., *Beyond "Net-Zero": A Case for Separate Targets for Emissions Reduction and Negative Emissions*, Front. Clim. (2019).

First, scientists state the "Earth energy imbalance (EEI) is the most critical number defining the prospects for continued global warming and climate change."[3] "Stabilization of climate . . . requires that EEI be reduced to approximately zero to achieve Earth's system quasi-equilibrium."[4] The measured EEI from 2010-2018 is 0.87±0.12 Wm^{-2}. Returning CO_2 concentrations to below 350 ppm would restore the energy balance of Earth by allowing as much heat to escape into space as Earth retains, an important historic balance that has kept our planet in the sweet spot for the past 10,000 years, supporting stable sea levels and coastlines, enabling productive agriculture, and allowing humans and other species to thrive.[5]

With just 1°C of warming, glaciers in all regions of the world are melting at accelerating rates, as are the Greenland and Antarctic ice sheets, causing seas to rise.[6] From 1994 to 2017, the Earth lost 28 trillion tonnes of ice, with the rate of ice loss increasing by 57% compared to the 1990s.[7] The paleo-climate record shows the last time atmospheric CO_2 levels were over 400 ppm, the seas were 70 feet higher than they are today and heating consistent with CO_2 concentrations as low as 450 ppm may have been enough to melt almost all of Antarctica.[8] The last time the ice sheets were stable was when the atmospheric CO_2 level was <350 ppm prior to 1986. Similarly, scientists believe we can protect marine life and prevent massive bleaching and die-off of coral reefs only by rapidly returning CO_2 levels to below 350 ppm.[9]

Second, EEI and CO_2 standards should dictate emission reduction targets, leaving temperature and sea level rise measurements as useful indicators of whether governments are de- or re-stabilizing the climate system. However, the global average temperature increase allowance on the Earth's surface of 1.5°C to 2°C is based on "political science," backed by fossil fuel companies, not the "physical science" of climate stabilization. Scientific experts are clear that current levels of heating of 1.1°C above preindustrial temperatures are already too dangerous to sustain over time for human health, drought, extreme weather events and property damage, biodiversity loss, food and water shortages, and economic loss. The 2018 IPCC Special Report on 1.5°C said allowing **a temperature rise of 1.5°C "is not considered 'safe'** for most nations, communities, ecosystems, and sectors and poses

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[3] Karina von Schuckmann et al., *Heat Stored in the Earth System: Where Does the Energy Go?*, 12 Earth Syst. Sci. Data. 2013 (2020) (written by 38 international experts, including lead IPCC authors).
[4] *Id.*
[5] James Hansen, *Storms of My Grandchildren* 166 (2009).
[6] M. Zemp et al., *Global Glacier Mass Changes and their Contributions to Sea-Level Rise from 1961-2016*, Nature (2019); B. Menounos et al., *Heterogeneous Changes in Western North American Glaciers Linked to Decadal Variability in Zonal Wind Strength*, Geophysical Research Letters (2018).
[7] T. Slater et al., *Earth's Ice Imbalance*, 15 The Cryosphere 233 (2021).
[8] James E. Hansen, *Declaration in Support of Plaintiffs, Juliana v. United States*, No. 6:15-cv-01517-TC, 14 (D. Or. Aug. 12, 2015); IPCC, *Chapter 6.3.2, What Does the Record of the Mid-Pliocene Show?, in* Climate Change 2007: The Physical Science Basis (2007); Dowsett & Cronin, *High Eustatic Sea Level During the Middle Pliocene: Evidence from the Southeastern U.S. Atlantic Coastal Plain*, Geology (1990); N.J. Shackleton et al., *Pliocene Stable Isotope Stratigraphy of Site 846*, Proceedings of the Ocean Drilling Program, Scientific Results (1995); *see also* James Hansen et al., *Ice Melt, Sea Level Rise and Superstorms; Evidence from Paleoclimate Data, Climate Modeling, and Modern Observations that 2 °C Global Warming Could be Dangerous*, 16 Atmos. Chem. & Phys. 3761 (2016).
[9] J. Veron et al., *The Coral Reef Crisis: The Critical Importance of <350 ppm CO_2*, 58 Marine Pollution Bulletin 1428 (2009).

significant risks to natural and human systems as compared to current warming of 1°C (*high confidence*)."[10] Simply put—more heat is deadly.

Third, the politically popular concept of "net zero" allows governments to zero out a percentage of ongoing CO_2 emissions by counting them as "sequestered" through removal processes, such as biogenic or natural sequestration in terrestrial carbon sinks (called the LULUCF sector), leaving a smaller amount of source "net emissions" to be reduced. However, in order to align emissions and sequestration with a <350 ppm standard, carbon removed through natural sequestration in sinks must be counted separately and used to draw down the excess CO_2 already in the atmosphere from cumulative US historic emissions, not to provide a negative credit or offset for ongoing and new US emissions. Indeed, **all gross US emissions, not only net emissions, need to be swiftly reduced to near zero (not net zero) by 2050**. Three countries that set NDCs in 2020 all tier their emission reduction commitments by 2030 to "net emissions" without specifying the precise percentage of actual gross emissions that will cease. If the US takes that same approach, it will authorize ongoing emissions at levels with dangerous consequences for children and future generations. According to *Net Zero America*, which was funded in part by BP and ExxonMobil, there are several "net zero by 2050" scenarios that allow the US to continue high levels of oil and gas production for domestic consumption and exports, policies that are plainly incompatible with climate stabilization and correcting EEI.

US energy and climate policy should set emission levels consistent with a 350 ppm standard. It is scientifically defensible and technically and economically feasible to reduce total US emissions by 80% by 2030 and 96-100% by 2050 while simultaneously enhancing biogenic sequestration capacity of sinks and separately accounting for sinks as a drawdown of US historic cumulative CO_2 emissions.[11] Both are vital. By linking US emission reductions to "net emissions" you would authorize ~12% of US emissions to continue in perpetuity, leaving only ~88% to be addressed.[12] As the capacity of sinks for sequestration improve, this policy would allow even higher levels of ongoing emissions, without addressing the issue of excess atmospheric CO_2 that must be drawn down to restore EEI and prevent multi-meter sea level rise. There is no scientific basis for doing this, when the Nation's sequestration capacity in sinks must be counted toward carbon drawdown from *cumulative historic* CO_2 emissions, not ongoing and new annual emissions.

According to the 2019 draft US inventory, total gross US greenhouse gas emissions were 6,577.2 million metric tons of carbon dioxide equivalent (MMT CO_2e).[13] An 80%

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[10] J. Roy et al., *Sustainable Development, Poverty Eradication and Reducing Inequalities, in* Global Warming of 1.5°C. An IPCC Special Report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty, at 447 (2018) (emphasis added); *see also* James Hansen et al., *Assessing "Dangerous Climate Change": Required Reduction of Carbon Emissions to Protect Young People, Future Generations and Nature*, 8 PLOS ONE e81648 (2013).

[11] Mark Jacobson et al., *100% Clean and Renewable Wind, Water, and Sunlight (WWS) All-Sector Energy Roadmaps for the 50 United States*, Energy & Environ Sci (2015); B. Haley et al., *350 ppm Pathways for the United States* (2019); James Williams et al., *Carbon-Neutral Pathways for the United States*, 2 AGU Advances e2020AV000284 (2021)

[12] In 2019, US net emissions (5,788.3 MMT CO_2e) were 88% of total emissions (6,577.2 MMT CO_2e). US EPA, *Draft Inventory of U.S. Greenhouse Gas Emissions and Sinks 1990-2018*, ES-9 (2021).

[13] US EPA, *Draft Inventory of U.S. Greenhouse Gas Emissions and Sinks*: *1990-2019*, ES-4 (2021). Emissions from Wood Biomass, Ethanol, and Biodiesel Consumption are not included in this number. *Id.* ES-9, fn. A.

reduction in total U.S. emissions would result in gross emission levels of 1,315.4 MMT CO_2e by 2030. In 2019, "[t]he primary greenhouse gas emitted by human activities in the United States was CO_2, representing approximately 80.2 percent of total greenhouse gas emissions. The largest source of CO_2, and of overall greenhouse gas emissions, was fossil fuel combustion [primarily from transportation and power generation]."[14]

Separately, the US should commit to increase terrestrial sequestration in carbon sinks by up to 50% by improving land management policies and practices to increase actual carbon sink sequestration from 2019 levels of 788.9 MMT CO_2e, which is a decline in sequestration from 1990 at 900.8 MMT CO_2e. US sinks have capacity to sequester ~414 MMT CO_2 more per year than current stocks.[15] The NDC should commit to a 2030 target of increasing existing terrestrial carbon removal sequestration by at least 25% and up to 50%.

As National Climate Advisor McCarthy said, "Right now we are robbing young people of their future." Any NDC that aligns with 1.5°C or 2°C, or a misleading "net zero" emissions allowance not aligned with a <350 ppm standard, will continue to rob children of their future and be subject to challenge in our courts. This is the moment to align human laws and policies with nature's laws and protect our children from the climate crisis as Executive Order 14008 and the Constitution require. There is simply no more time for delay. The solutions are at hand.

We represent the youth of America from all communities on the climate crisis, and we respectfully request your attention on the science to ensure that your policies conform thereto.

Sincerely,
/s/
Julia Olson
Executive Director and Chief Legal Counsel

Andrea Rodgers
Senior Litigation Attorney

Liz Lee
Government Affairs Attorney

Nate Bellinger
Staff Attorney

Philip Gregory
Of Counsel

Our Children's Trust

Our Children's Trust is the world's only nonprofit public interest law firm that provides strategic, campaign-based legal services to youth from diverse backgrounds to secure their legal rights to a safe climate, including the 21 youth plaintiffs in Juliana v. United States.

[14] US EPA, *Draft Inventory of U.S. Greenhouse Gas Emissions and Sinks*: *1990-2019*, ES-9.
[15] Expert Report of G. Philip Robertson, *Juliana v. United States*, No. 6:15-cv-01517-TC (D. Or. Aug. 12, 2015); J.E. Fargione et al., *Negative Emission Technologies and Reliable Sequestration: A Research Agenda*, National Academies of Sciences, Engineering, and Medicine, Chapter 3 (2019).

cc:
Members of the National Climate Task Force
Janet Yellen, Secretary of the Treasury
Lloyd Austin, Secretary of Defense
Merrick Garland, Attorney General
Deb Haaland, Secretary of the Interior
Tom Vilsack, Secretary of Agriculture
Gina Raimondo, Secretary of Commerce
Miguel Cardona, Secretary of Education
Al Stewart, Acting Secretary of Labor
Xavier Becerra, Secretary of Health and Human Services
Marcia Fudge, Secretary of Housing and Urban Development
Pete Buttigieg, Secretary of Transportation
Jennifer Granholm, Secretary of Energy
Alejandro Mayorkas, Secretary of Homeland Security
Katy Kale, Acting Administrator of General Services
Matt Lee-Ashley, Acting Chair of the Council on Environmental Quality
Michael Regan, Administrator of the Environmental Protection Agency
Steve Jurczyk, Acting Administrator of the National Aeronautics and Space Administration
Rob Fairweather, Acting Director of the Office of Management and Budget
Kei Koizumi, Acting Director of the Office of Science and Technology Policy
Susan Rice, Assistant to the President for Domestic Policy
Jake Sullivan, Assistant to the President for National Security Affairs
Elizabeth Sherwood-Randall, Assistant to the President for Homeland Security and Counterterrorism
Brian Deese, Assistant to the President for Economic Policy

Attachment 2

Case No. 18-36082

IN THE UNITED STATES COURT OF APPEALS
FOR THE NINTH CIRCUIT

KELSEY CASCADIA ROSE JULIANA, *et al*.,
Plaintiffs-Appellees,
v.
UNITED STATES OF AMERICA, *et al*.,
Defendants-Appellants.

On Interlocutory Appeal Pursuant to 28 U.S.C. § 1292(b)

URGENT MOTION UNDER CIRCUIT RULE 27-3(b) FOR PRELIMINARY INJUNCTION

ACTION NECESSARY BY MARCH 19, 2019

JULIA A. OLSON
(OSB No. 062230, CSB No. 192642)
Wild Earth Advocates
1216 Lincoln Street
Eugene, OR 97401
Tel: (415) 786-4825

PHILIP L. GREGORY
(CSB No. 95217)
Gregory Law Group
1250 Godetia Drive
Redwood City, CA 94062
Tel: (650) 278-2957

ANDREA K. RODGERS
(OSB No. 041029)
Law Offices of Andrea K. Rodgers
3026 NW Esplanade
Seattle, WA 98117
Tel: (206) 696-2851

Attorneys for Plaintiffs-Appellees

CORPORATE DISCLOSURE STATEMENT

Pursuant to Rule 26.1 of the Federal Rules of Appellate Procedure, Plaintiff-Appellee Earth Guardians states that it does not have a parent corporation and that no publicly-held companies hold 10% or more of its stock

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I. INTRODUCTION

Pursuant to Federal Rule of Appellate Procedure 8 and Circuit Rule 27-3(b), twenty-one children and youth ("Plaintiffs") respectfully move this Court for preliminary injunctive relief pending resolution of the interlocutory appeal.[1] This injunction is urgently needed because, despite long-standing knowledge of the resulting destruction to our Nation and the profound harm to these young Plaintiffs, Defendants' ongoing development of the fossil fuel-based energy system is actively harming Plaintiffs and jeopardizing Plaintiffs' ability to obtain the full remedy in their case. This Court should preliminarily enjoin, for the pendency of this interlocutory appeal, Defendants[2] from authorizing through leases, permits, or other federal approvals: (1) mining or extraction of coal on Federal Public Lands[3]; (2)

[1] Moving for preliminary injunctive relief in the district court is not possible as the district court stayed all proceedings. D. Ct. Doc. 444. Following Plaintiffs' motion for reconsideration of the stay order, D. Ct. Doc. 446, the district court reaffirmed the proceedings in the district court were stayed and "[a]ny further motions should be directed to the Ninth Circuit Court of Appeal." D. Ct. Doc. 453.

[2] In accordance with Federal Rule of Civil Procedure 65(d), and for purposes of the injunction, the term "Defendants" includes the parties' officers, agents, servants, employees, attorneys, and other persons who are in active concert or participation with anyone described in Rule 65(d)(2)(A) or (B).

[3] "Federal Public Lands" include any land and interest in land owned by the United States and within the several States and administered by any Defendant, without regard to how the United States acquired ownership. The term "Federal Public Lands" shall include any and all land and interests in land owned by the United States which are subject to the mineral leasing laws, including mineral resources or mineral estates reserved to the United States in the conveyance of a surface or non-mineral estate. 30 U.S.C. § 1702(1).

offshore oil and gas exploration, development, or extraction on the Outer Continental Shelf[4]; and (3) development of new fossil fuel infrastructure[5], in the absence of a national plan that ensures the above-denoted authorizations are consistent with preventing further danger to these young Plaintiffs.[6] At a minimum, this injunction would apply to the approximately 100 new fossil fuel infrastructure projects poised for federal permits, including pipelines, export facilities, and coal and liquefied natural gas terminals. Erickson Decl. ¶18. The evidence shows that these systemic activities must be enjoined immediately to preserve Plaintiffs' ability to obtain a remedy in this case that redresses their injuries and protects the public interest.[7]

The law, facts, and persistent delay of this case necessitate this preliminary injunction. Plaintiffs are likely to prevail on the merits of their constitutional claims.

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[4] "Outer Continental Shelf" means "all submerged lands lying seaward and outside of the area of lands beneath navigable waters as defined in section 1301 [of the Outer Continental Shelf Lands Act], and of which the subsoil and seabed appertain to the United States and are subject to its jurisdiction and control." 43 U.S.C. § 1331(a).

[5] "Fossil Fuel Infrastructure" includes any equipment or facility used to extract, process, transport, import, export, store, or generate electricity from, fossil fuels. This specifically includes onshore and offshore drilling equipment, pipelines, port facilities, terminals, storage facilities, refineries, and electric generation facilities, used for fossil fuels of any kind.

[6] Once the case is remanded to the district court and the district court's stay is lifted, that court can determine whether to maintain any preliminary injunction issued by this Court until final judgment is rendered.

[7] Counsel for Plaintiffs conferred with counsel for Defendants, who oppose this motion. Olson Decl. ¶8.

The record shows that, for decades, Defendants have knowingly and affirmatively placed Plaintiffs in peril of present and worsening climate change-induced harms, with shocking, deliberate indifference to the known and obvious dangers in advancing a fossil fuel-based energy system.

The record shows Plaintiffs are already suffering concrete harm to their persons, and these harms will worsen and likely become irreversible in the absence of a preliminary injunction. The longevity of the dangers to Plaintiffs and the protracted time-frame for a full remedy does not in any way diminish the additional harm being waged on these youth, by these Defendants, today and every day this Court does not intervene. Plaintiffs made every effort to avoid seeking preliminary relief by moving the case swiftly to trial; Defendants made every effort to prevent Plaintiffs' case from being decided, all while accelerating fossil fuel development and increasing GHG emissions to the point where it will become impossible for Plaintiffs to protect themselves from the climate danger Defendants have had a substantial role in causing. Defendants have deliberately chosen to prioritize use of fossil fuels in our national energy system, disregarding decades of knowledge that this path would destroy our Nation and the lives of children and future generations. This injunction will serve and protect the public's interest in national security and liberty and prevent further inequity to Plaintiffs.

As stated in the Declaration of Nobel Laureate and renowned economist Dr. Joseph Stiglitz: "An injunction on future leases and mining permits for extracting coal on federal public lands and on future leases for offshore oil and gas exploration and extraction activities, alongside enjoining new fossil fuel infrastructure requiring federal approval will prevent, not cause, economic harm." Stiglitz Decl. ¶13. Dr. Stiglitz opines:

> There is no urgency to promote more fossil fuels. There is no urgency for energy supply. There is no urgency for employment or economic growth. There is, however, real urgency to stop the climate crisis and the already-dangerous *status quo* from worsening, and to protect these young people's constitutional rights. There are very real and substantial societal costs and risks of moving forward with these fossil fuel enterprises while this lawsuit is pending.

Id. ¶28.

Plaintiffs request this Court enjoin Defendants from committing further constitutional violations by authorizing new, unnecessary, and harmful fossil fuel extraction from federal public lands and waters and by authorizing new, unnecessary, and harmful fossil fuel infrastructure. Such a prohibitory injunction would protect the already dangerous *status quo* from worsening while the parties conduct this appeal. This injunction is properly intended to "prevent[] the irreparable loss of rights before judgment," not to litigate the merits. *Sierra On-Line, Inc. v. Phoenix Software, Inc.*, 739 F.2d 1415, 1422 (9th Cir. 1984). Plaintiffs meet all of the factors for preliminary relief and the equities tip sharply in favor of Plaintiffs.

Plaintiffs seek issuance of an injunction within six weeks of this filing, prior to yet another lease sale by Defendant Department of Interior of federal public offshore lands in the Gulf of Mexico on March 20, 2019.[8] Plaintiffs respectfully ask this Court to schedule oral argument and live witness testimony in support of a preliminary injunction should Defendants contest the facts of irreparable harm or the public interest in the injunction.

II. SUMMARY OF THE EVIDENCE[9]

> *The federal government has for many years had knowledge, information, and scientific recommendations that it needed to transition the Nation off of fossil fuels in order to first prevent against, and now try to stop, catastrophic climate change. We are well beyond the maxim: 'If you find yourself in a hole, quit digging.'*

Dr. Steve Running, Professor Emeritus University of Montana, Decl. ¶46.[10]

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[8] Upon information and belief, the next lease sale is Defendant Department of Interior's Bureau of Ocean Energy Management's Gulf of Mexico Region-wide Planning Area Oil and Gas Lease Sale 252, scheduled for 9 a.m. on March 20, 2019. This lease sale covers 14,696 unleased blocks (approximately 78.5 million acres). *See* https://www.boem.gov/Proposed-Notice-of-Sale-252-Cover-Sheet/.

[9] Plaintiffs recognize they are submitting substantial new evidence to this Court and that, in this short brief, the numerous Declarations cannot appropriately "be distilled" so that the full scope of Defendants' Due Process violation can be set forth. D. Ct. Doc. 444, 2. As the district court noted, "[g]iven the sheer volume of evidence submitted by the parties … a bifurcated trial might present the most efficient course for both the parties and the judiciary." *Id*. While they would have preferred to have presented this evidence at the October 29 trial, given both the urgency and the harm, Plaintiffs have no choice but to seek an injunction from this Court, notwithstanding the district court's view, "that this case would be better served by further factual development at trial." *Id*. at 5.

[10] All Declarations in support of this Motion are cited by last name of the expert declarant, followed by "Decl." and the paragraph number. Plaintiffs are cited by first name. The Declaration of Julia Olson filed herewith addresses Defendants'

The United States is responsible for one-quarter of the accumulated carbon dioxide (CO_2) in the atmosphere. Hansen Decl. ¶6. For over 100 years, scientists have understood that burning fossil fuels caused CO_2 emissions and increasing atmospheric CO_2 levels caused climate change. Running Decl. ¶4. For at least 50 years, the federal government, including the White House, has understood the climate science and issued reports on the catastrophic dangers of continuing to burn fossil fuels. Rignot Decl. ¶15; Hansen Decl. ¶¶77-81. For decades, in spite of this knowledge, Defendants have knowingly promoted and controlled a national fossil fuel energy system when available alternatives existed. Running Decl. ¶46; Erickson Decl. ¶¶10-11; Hansen Decl. ¶¶82-83. Dr. Stiglitz confirms that "[t]he current national energy system, in which approximately 80 percent of energy comes from fossil fuels, is a direct result of decisions and actions taken by Defendants." Stiglitz Decl. ¶8. In his expert opinion Dr. Stiglitz avers:

> The fact that the U.S. national energy system is so predominately fossil fuel-based is not an inevitable consequence of history. The current level of dependence of our national energy system on fossil fuels is a result of intentional actions taken by Defendants over many years. These actions, cumulatively, promote the use of fossil fuels, contribute to dangerous levels of CO_2 emissions, and are causing climate change.

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upcoming lease sales and similar actions, as well as attaching expert reports served in the district court. The Declaration of Andrea Rodgers is filed in support Plaintiffs' Motion to File Documents Under Seal and attaches the Declaration of Dr. Van Susteren and the Rebuttal Expert Reports of Drs. Karrie Walters and Akilah Jefferson, all of which contain confidential medical information of the Plaintiffs.

Stiglitz Decl. ¶9.

Today, when it is technically and economically feasible to transition swiftly away from fossil energy, and when the climate system is in a dangerous state of emergency, Defendants are recklessly increasing fossil fuel development. Stiglitz Decl. ¶10 ("For decades, the U.S. government has had extensive knowledge that there were viable alternatives to a fossil fuel-based, national energy system, and with the appropriate allocation of further resources to research and development, it is likely that these alternatives would have been even more competitive than fossil fuels."); Williams ¶1, 13-18; Jacobson Decl. Ex. 1, 2, 21-22; Erickson Decl. ¶14 (Defendants have plans for "new offshore oil and gas drilling in virtually all (98%) of U.S. coastal waters during 2019-2024."). "The United States is expanding oil and gas extraction on a scale at least four times faster and greater than any other nation and is currently on track to account for 60% of global growth in oil and gas production." Erickson Decl. ¶15. As part of Defendants' fossil fuel energy system and strategy for fossil fuel dominance, there are presently close to 100 new fossil fuel infrastructure projects poised for federal permits, including pipelines, export facilities, and coal and liquefied natural gas terminals. *Id.* ¶17. Such conduct threatens national security. Gunn Decl. *passim.*

"The economic impacts of these actions are deleterious to Youth Plaintiffs and the Nation as a whole. Defendants' actions promoting a fossil fuel based energy system are serving to undermine the legitimate government interests of national security and economic prosperity that they purport to advance." Stiglitz Decl. ¶9. The enormous economic burdens and costs will be borne by these Plaintiffs and other children. *Id.* ¶9 n.4.

Children, including Plaintiffs, are also bearing the health burdens of climate change. Dr. Paulson, an expert on the health effects of climate change, explains: "By continuing to promote fossil fuels, the federal government is knowingly putting these children in an increasingly risky situation when it comes to their health." Paulson Decl. ¶23. Dr. Paulson finds Defendants' actions "truly shocking" in light of the "undisputed health risks to children." *Id.* ¶41. Some Plaintiffs are "at risk of irreparable harm from having decreased lung function as a result of growing up in environments with more air pollution." *Id.* ¶34. Plaintiffs like Nicholas who have asthma are already harmed by pollution from fossil fuels, increased prevalence of wildfire smoke, and exacerbated ozone conditions due to climate change. Nicholas Decl. ¶¶4-7. The more fossil fuels burned, the worse Nicholas's health will be. Paulson Decl. ¶¶27-30. "Without immediate and significant actions to reduce greenhouse gas emissions by Defendants, global temperatures will continue to increase and exacerbate [wildfire] conditions. The magnitude of wildfire that

destroyed Paradise, is a harbinger of destruction to come in the West." Running Decl. ¶36.

Plaintiffs are also being profoundly psychologically harmed by Defendants. Van Susteren Decl. ¶¶13, 28-29. Plaintiffs Aji, Nicholas, Levi, and Journey all attest to intense impacts to their mental and emotional wellbeing. Sleeplessness, nightmares, anxiety, anger, depression, fear, and deep feelings of betrayal by their government are part of the psychological makeup of these young people. Aji Decl. ¶¶3-4, 8, 11; Levi Decl. ¶¶7-9, 25; Journey Decl. ¶¶25-26; Nicholas Decl. ¶8. Plaintiff Aji feels as if he is in a pressure cooker. Aji Decl. ¶¶5-6, 11-13.

In addition to harming Plaintiffs' economic, physical, and psychological wellbeing, Defendants are also contributing to the irreversible loss of resources on which Plaintiffs depend, like coral reefs. Hoegh-Guldberg Decl. ¶15. "If emissions are not rapidly reduced, the damage we are doing now may not be completely undone for generations if not millennia." *Id*. ¶18. "To give Hawai'ian reefs any chance of survival, CO_2 concentrations must rapidly decline, and the warming of the oceans must be stabilized as quickly as is possible. Such a turnaround will not occur if the U.S. continues to grow its emissions and lock in more fossil fuel use." *Id*. ¶21. Plaintiff Journey is already harmed by the dying reefs:

> My two favorite places I used to swim and snorkel at – Anini Beach and Tunnels Beach – are suffering terribly. Almost all of the reefs have died over the last couple of years at both beaches. Diseased corals are disintegrating from high ocean temperatures and releasing a lot of

> bacteria in the water, such that many surfers at Tunnels are getting sick. The local marine biologist has advised me that the places where these reefs are dying present a health hazard and are no longer safe for swimming, surfing, or snorkeling. I will not return to these beaches as a result.

Journey Decl. ¶12. Similarly, "U.S. government agencies have acknowledged that there is virtually no chance that the coral reefs of Florida, which Levi enjoys visiting, will continue to exist in a few decades if warming and emissions trends continue." Hoegh-Guldberg Decl. ¶23; *see also id*. ¶25.

Melting ice sheets are yet another catastrophe of our heating oceans. The nation's leading expert, Dr. Eric Rignot, declares:

> What we do *today* will influence the stability of ice sheets for the next 30-40 years with enormous consequences for the nation's shorelines and marine resources. Presently, we are on course to launch the ice sheets of Greenland and Antarctica into multi-meter sea level rise. While we have passed the point of return for some of these ice sheets, we cannot afford for others, like the East Antarctic Ice Sheet, to follow the same fate. Every month of growing CO_2 accumulation in the atmosphere does more damage to the cryosphere and leads to more sea level rise and more commitment to raise sea level rapidly in decades to come.

Rignot Decl. ¶9. Dr. Rignot maintains "that if emissions do not steeply decline forthwith, we will lose the opportunity to protect even more of these giant ice sheets from collapse. We are running out of time." *Id*. ¶12. The leading expert on climate change and extreme weather explains that the amount of energy absorbed by the oceans alone in 2018, from CO_2 levels, is equivalent to 680 times the total electricity energy consumption in the United States in 2017. Trenberth Decl. ¶10. The 2016

Louisiana Floods, which flooded Plaintiff Jayden's home and harmed her physical and emotional health, were driven by this increased ocean heat content and resulting high sea surface temperatures. Trenberth Decl. ¶¶12-13; D. Ct. Doc. 283, Jayden Decl. ¶¶6-26.

Locking in more fossil fuel use right now, and delaying the transition to clean energy, will cost lives. Dr. Mark Jacobson explains: "[e]very year of powering the United States national energy system primarily with fossil fuels for all purposes (as it is now) costs about 62,000 U.S. lives annually compared with a 100% renewable system." Jacobson Decl. ¶16. It also makes it much harder to transition the energy system in the time frame needed because new infrastructure becomes embedded in our energy system for decades. *Id*. ¶14. "Ceasing new fossil fuel leasing on federal public lands and preventing new fossil fuel infrastructure is necessary for meeting an 80% transition by 2030 and a 100% transition by 2050, because any new leasing will result in embedded infrastructure that can last for decades." *Id*. ¶15; Erickson Decl. ¶¶24-27; Williams Decl. ¶22.

Climate scientists agree that there is still time to slow climate change if we act now, "but we are on the brink of being too late." Running Decl. ¶44. "The more GHG emissions that are emitted into the atmosphere, the more unlikely it is that mitigation efforts can be implemented quickly enough to avoid the devastating climate change impacts that are projected to occur." *Id*. The world's leading coral

reef expert says to preserve viable remnants of coral reef ecosystems in the short-term for a chance at eventual recovery: "I cannot emphasize enough the urgent and dire necessity of bringing CO_2 emissions swiftly down from every major emitting nation, this year in 2019 and beyond." Hoegh-Guldberg Decl. ¶17.

"Each month that passes by without action by the federal government to reduce fossil fuel extraction and GHG emissions exacerbates this already grave public health emergency facing our nation's must vulnerable population – our children." Paulson Decl. ¶14. "In order to prevent additional physical harms to Plaintiffs from climate change and air pollution associated with fossil fuels, and to ensure that the Plaintiffs' current physical ailments do not worsen at the hands of their own government, the federal government must stop authorizing and sanctioning new investments in fossil fuel energy." *Id*. ¶43.

There is not "any significant economic cost to the federal government or the public of delaying pipeline permits or leasing federal public lands for coal extraction or offshore drilling." Stiglitz Decl. ¶17. Nor is there a threat to energy independence or jobs. *Id*. ¶23. Conversely, authorizing those fossil fuel projects during this appeal will cause harm to the Plaintiffs, society, the economy, and the government's own fiscal resources. *Id*. ¶¶13, 19, 20, 26-28. "[E]fforts by the present administration to expand fossil fuel production and continue authorizing the extraction of coal on federal lands are extremely reckless." Trenberth Decl. ¶13.

III. PROCEDURAL HISTORY

This Panel is well-aware of the procedural history underlying this case,[11] which has been described in numerous prior filings. *See, e.g.,* Ct. App. IV Doc. 5, 1-14 (Plaintiffs' Response to Defendants' Fourth Petition for Writ of Mandamus); Ct. App. V App. Doc. 2-1, 3-10 (Plaintiffs' Response to Defendants' Petition for Interlocutory Appeal). Here, Plaintiffs provide a concise version of that history.

On September 10, 2015, twenty-one Youth Plaintiffs, a youth organization known as Earth Guardians, and Dr. James Hansen on behalf of future generations filed the First Amended Complaint ("FAC") to stop Defendants from infringing their substantive due process rights to life, liberty, and property, including recognized unenumerated rights to personal security and family autonomy, and by placing Plaintiffs in a position of danger with deliberate indifference to their safety under a state-created danger theory. D. Ct. Doc. 7, ¶¶277-289, 302-306.

On November 10, 2016, Judge Aiken denied Defendants' motion to dismiss, finding, *inter alia*, that Plaintiffs' state-created danger claim was adequately pled:

[11] Plaintiffs refer to the District Court docket, *Juliana v. United States*, No. 6:15-cv0157-AA (D. Or.), as "D. Ct. Doc."; the docket for Defendants' First Petition, *In re United States*, No. 17-71692 (9th Cir.), as "Ct. App. I Doc."; the docket for Defendants' Fourth Petition, *In re United States*, No. 18-73014 (9th Cir.) as "Ct. App. IV Doc."; the docket for Defendants' Petition for Permission to Appeal ("Fifth Petition"), *Juliana v. United States*, No. 18-80176 (9th Cir.), as "Ct. App. V App. Doc."; the docket for Defendants' Second Application to the Supreme Court for stay, *In re United States*, No. 18A410, as "S. Ct. II App. Doc."

> Plaintiffs have alleged that defendants played a significant role in creating the current climate crisis, that defendants acted with full knowledge of the consequences of their actions, and that defendants have failed to correct or mitigate the harms they helped create in deliberate indifference to the injuries caused by climate change. They may therefore proceed with their substantive due process challenge to defendants' failure to adequately regulate CO_2 emissions.

Juliana v. United States, 217 F.Supp.3d 1224, 1252 (D. Or. 2016).

On January 13, 2017, Defendants filed their Answer, admitting many of Plaintiffs' scientific and factual allegations. *See* D. Ct. Doc. 98, ¶¶1, 7, 10, 150, 151, 213; *see also* D. Ct. Doc. 146, 2-4 (district court setting forth "non-exclusive sampling" of significant admissions in Answer).

On June 9, 2017, Defendants first petitioned for mandamus with this Court. Ct. App. I Doc. 1 ("First Petition"). After a seven-and-a-half month delay of pretrial proceedings, this Court denied the First Petition on March 7, 2018. *In re United States*, 884 F.3d at 834.

On April 12, the district court set trial to commence on October 29, 2018. Thereafter, Defendants moved for judgment on the pleadings under Rule 12(c) and for partial summary judgment. D. Ct. Docs. 195, 207, i, 1-2. At oral argument, Defendants conceded Plaintiffs established injury-in-fact. *See* D. Ct. Doc. 329, 25:5-13, 19-20.

On October 15, the district court granted in part the Rule 12(c) and summary judgment motions. *Juliana v. United States*, 339 F.Supp.3d 1062 (D. Or. 2018).

Regarding Plaintiffs' state-created danger claim, the district court found "plaintiffs have introduced sufficient evidence and experts' opinions to demonstrate a question of material fact as to federal defendants' knowledge, actions, and alleged deliberate indifference." *Id*. at 1101.

On October 18, Defendants filed another Petition with the Supreme Court and applied to stay district court proceedings. S. Ct. II. App. Doc. 1 ("Second Application"). On October 19, Chief Justice Roberts ordered a stay pending Plaintiffs' response to the Second Application. *In re United States*, No. 18A410, 2018 WL 5115388. On November 2, the Supreme Court denied the Second Application and lifted the temporary stay. *In re United States*, No. 18A410, 2018 WL 5778259.

On November 8, this Court issued a partial stay pending consideration of Defendants' Fourth Petition for mandamus, staying only trial. Ct. App. IV. Doc. 3. On November 21, in response to this Court's request, the district court certified four orders for interlocutory appeal and stayed proceedings, but in doing so set forth the many reasons why it believed interlocutory appeal was *not* appropriate. *See* D. Ct. Doc. 444.

On November 30, Defendants petitioned for permission to appeal the certified orders. Ct. App. V. App. Doc. 1-1. In opposition, Plaintiffs outlined the further delay that would occur, the urgent nature of the case, and the likely need for preliminary

injunctive relief should interlocutory appeal be awarded to Defendants. Ct. App. V. App. Doc. 2-1, 14-18. On December 26, Defendants' petition for permission to appeal was granted. Ct. App. V. App. Doc. 8. On December 5, Plaintiffs moved the district court for reconsideration of its November 21, 2018 stay order. D. Ct. Doc. 446. On January 8, 2019, the district court denied Plaintiffs' motion for reconsideration, affirming that district court proceedings are stayed, and directing "[a]ny further motions should be directed to the Ninth Circuit Court of Appeal." D. Ct. Doc. 453.

IV. STANDARD FOR ISSUANCE OF A PRELIMINARY INJUNCTION

To justify an urgent injunction pending appeal, Plaintiffs need establish: "that [they are] likely to succeed on the merits, that [they are] likely to suffer irreparable harm in the absence of preliminary relief, that the balance of equities tips in [their] favor, and that an injunction is in the public interest." *Winter v. Natural Res. Def. Council, Inc.*, 555 U.S. 7, 20 (2008). Where there is a likelihood of irreparable harm, "'serious questions going to the merits' and a balance of hardships that tips sharply towards the plaintiff" can warrant a preliminary injunction that favors the public interest. *Alliance for the Wild Rockies v. Cottrell*, 632 F.3d 1127, 1135 (9th Cir. 2011).

A preliminary injunction is "a device for preserving the status quo and preventing the irreparable loss of rights before judgment." *Sierra On-Line, Inc.*, 739

F.2d at 1422; *Univ. of Texas v. Camenisch*, 451 U.S. 390, 395 (1981). However, "'[i]f the currently existing status quo itself is causing one of the parties irreparable injury, it is necessary to alter the situation so as to prevent the injury . . . .'" *Golden Gate Rest. Ass'n v. City of San Francisco*, 512 F.3d 1112, 1116 (9th Cir. 2008) (citations omitted). An "injunction [that] prevents future constitutional violations [is] a classic form of prohibitory injunction." *Hernandez v. Sessions*, 872 F.3d 976, 998 (9th Cir. 2017) (collecting cases); *see Marlyn Nutraceuticals, Inc. v. Mucos Pharma GmbH & Co.*, 571 F.3d 873, 878 (9th Cir. 2009).

V. PLAINTIFFS ARE LIKELY TO SUFFER IRREPARABLE HARM ABSENT AN INJUNCTION

There is overwhelming evidence that irreparable harm to Plaintiffs is "*likely* in the absence of an injunction." *Arc of California v. Douglas,* 757 F.3d 975, 990 (2014) (quoting *Winter*, 555 U.S. at 22). Plaintiffs' harms either have occurred, are occurring, are immediately threatened to result, or certain to become irreversibly inevitable absent injunctive relief from this Court. "It is well established that the deprivation of constitutional rights 'unquestionably constitutes irreparable injury.'" *Melendres v. Arpaio*, 695 F.3d 990, 1002 (9th Cir. 2012) (quoting *Elrod v. Burns*, 427 U.S. 347, 373 (1976)); *see also, Arizona Dream Act Coalition v. Brewer*, 757 F.3d 1053, 1069 (9th Cir. 2014); *Hernandez,* 872 F.3d at 994–95. Therefore, Plaintiffs "carry their burden" to demonstrate irreparable harm by demonstrating infringement of their rights under the Due Process Clause. *Id.* at 995; *Am. Trucking*

Ass'n, Inc. v. City of Los Angeles, 559 F.3d 1046, 1059 (9th Cir. 2009) (citations omitted). Further, without injunctive relief, Plaintiffs will likely lose the ability to achieve their required remedy, which would lock-in irreparable harm to Plaintiffs, including to their psychological health.

A. WITHOUT INJUNCTIVE RELIEF IT IS LIKELY THAT PLAINTIFFS WILL LOSE THE ABILITY TO ACHIEVE THEIR DESIRED REMEDY, CAUSING PLAINTIFFS IRREPARABLE HARM

One of the purposes of preliminary injunctive relief is "to prevent irreparable injury so as to preserve the court's ability to render a meaningful decision on the merits." *Golden Gate Rest. Ass'n*, 512 F.3d at 1116 (quoting *Canal Auth. of Florida*, 489 F.2d at 576). Here, after trial, Plaintiffs will seek an order that would, among other things, enjoin Defendants from violating Plaintiffs' constitutional rights and require Defendants to prepare and implement a national remedial plan, of their own devising, to stabilize the climate system and protect the vital resources on which Plaintiffs depend. D. Ct. Doc. 7, Prayer for Relief. According to the best available science, atmospheric CO_2 concentrations must be reduced to no more than 350 parts per million ("ppm") by 2100 in order to stabilize our climate system. D. Ct. Doc. 7, ¶257; Hansen Decl. Ex. 1 at 3-5; Hoegh-Guldberg Decl. Ex 1 at 8-9. A remedial plan that aligns the United States with restoring CO_2 to 350 ppm by 2100 is economically and technically feasible. Williams Decl. ¶¶13-18; Jacobson Decl. ¶¶7-13. However, without immediate action to reduce U.S. GHG emissions resulting

from fossil fuel extraction from federal lands and waters and new fossil fuel infrastructure, it will not be possible to stabilize atmospheric CO_2 concentrations to 350 ppm by 2100, and the district court's ability to render a meaningful remedy will be compromised. Williams Decl. ¶14, 19-23; Jacobson Decl. ¶¶14-15.

Preserving the ability to return atmospheric CO_2 concentrations to 350 ppm by 2100 is critical because, without that remedy, the natural resources that Plaintiffs depend upon for their safety, well-being, recreation, and survival will be irrevocably damaged and lost. Hansen Decl. ¶¶9, 39-40, 43, 49, 55-56; Hoegh-Guldberg Decl. ¶¶17-18; Rignot Decl. Ex. 1, 18-19; Running Decl. ¶¶13-14, 29, 36-37, 44-45; Trenberth Decl. ¶14. This causes Plaintiffs irreparable harm. *Save Our Sonoran, Inc. v. Flowers*, 408 F.3d 1113, 1124 (9th Cir. 2005) quoting *Amoco Prod. Co. v. Village of Gambell*, 480 U.S. 531, 545 (1987) (environmental harm is often irreparable). Plaintiffs' harms, some of which are not yet irreparable, will become locked-in, causing *life-long* consequences for Plaintiffs in the absence of an injunction. Hansen Decl. ¶¶9, 66; Rignot Decl. ¶¶8-9, 12, 16; Running Decl. ¶14 ("Continuing U.S. emissions at the present level for even two years will make it progressively more difficult to stabilize the climate system this century in order to preserve the critical components for human life on this planet as we know it today, such as ice sheets."); Hoegh-Guldberg Decl. ¶¶17-18, 21.

Plaintiff Journey's personal wellbeing depends upon the coral reefs in Hawaii that are dying at accelerating rates. Journey Decl. ¶¶10-13. The harms Plaintiff Journey is experiencing from the loss of coral reefs in Hawai'i will become irreparable with more fossil fuel development. Hoegh-Guldberg Decl. ¶20-21. "I cannot emphasize enough the urgent and dire necessity of bringing CO_2 emissions swiftly down from every major emitting nation, this year in 2019 and beyond . . . . If emissions are not rapidly reduced, the damage we are doing now may not be completely undone for generations if not millennia." *Id.* ¶¶17-18; Hansen Decl. ¶11 (explaining that we are approaching a point of no return and, "if we arrive at this point, climate change becomes irreversible for centuries to millennia").[12]

Additionally, the extreme weather events that have already harmed individual Plaintiffs, including Levi, Journey, and Jayden, are becoming increasingly frequent and destructive and will get worse without immediate action to reduce GHG emissions. Levi Decl. ¶¶18-22; Journey Decl. ¶¶14-19; D. Ct. Doc. 283, Jayden Decl. ¶¶6, 23; Paulson Decl. ¶¶19-20. Plaintiff Levi has been forced to evacuate his home on a barrier island off Florida because of hurricanes and flooding, which are driven by increased ocean heat content and the resulting high sea surface

[12] While actions of other nations are certainly a factor in the ultimate global effort to stave off climate catastrophe, irreparable harm cannot be avoided without changing Defendants' course of conduct. Hansen Decl. ¶¶35-37. Regardless of the actions of third-party nations not before this Court, *these Defendants* cannot affirmatively continue to endanger these youth under the constitutional law of our Nation.

temperatures. Levi Decl. ¶¶18, 22; Trenberth Decl. ¶12. Fleeing from his home, having his school permanently closed after Hurricane Irma, and witnessing climate change-induced environmental devastation has caused Levi to legitimately fear for his personal safety and security. Levi Decl. ¶¶7, 22.

Many of Plaintiffs' injuries due to rising temperatures, ice melt, sea level rise, and ocean acidification are becoming irreversible. Increasing concentrations of CO_2, largely from the burning of fossil fuels, have changed the Earth's energy balance, which directly results in increasing air temperatures. Running Decl. ¶9; Hansen Decl. ¶6-8 ("Earth's energy imbalance is . . . equivalent of the energy of 400,000 Hiroshima atomic bombs per day every day of the year."). Dr. Rignot explains how "we have already lost too much of our ice sheets to unstoppable collapse and if the United States does not shift course, we will lose even more." Rignot Decl. ¶1. "Enormous irreparable damage has already been done, but there is even greater damage that is still preventable if we act swiftly." *Id.* ¶8. The "dire implications" of this accelerated warming also include "record-breaking hurricanes, super storms and extreme flooding" as well as increased sea level rise. Trenberth Decl. ¶¶12-13. "We are in a situation where the extra heat from accumulated carbon dioxide ("CO_2") concentrations has created a ticking time bomb for the planet's ice sheets." Rignot Decl. ¶7.

Plaintiffs are already being harmed by the climate-induced increase in

wildfires and their severity and the impacts will get even worse if GHG emissions are not reduced immediately. Nicholas states: "I have asthma. The wildfire smoke makes it impossible for me to exercise and sometimes I can't even go outside at all on particularly poor air quality days." Nicholas Decl. ¶4. Dr. Paulson warns:

> For Sahara, Jacob, Alex, Isaac, Aji, Nicholas, and other Plaintiffs exposed to smoke from wildfire, I expect, consistent with the literature, that their increased exposure to smoke will exacerbate existing health issues, such as asthma, and may cause new acute and chronic respiratory illnesses. By continuing to promote fossil fuels, the federal government is knowingly putting these children in an increasingly risky situation when it comes to their health.

Id. ¶23; *see also* Olson Decl. Ex. 2, 15 (Frumkin Report); Rodgers Decl. Ex. 3, 3-6 (Jefferson Report); Nicholas Decl. ¶¶4-7. "[T]he irreversible harms associated with current levels of warming will only increase as GHG emissions continue to rise." Running Decl. ¶14.

If Defendants are allowed to continue to issues leases, permits, or otherwise authorize the extraction of coal, offshore oil and gas development, and fossil fuel infrastructure, the adverse health impacts to Plaintiffs due to extreme weather events, rising temperatures, wildfire, air pollution, and other climate impacts will get worse, have life-long consequences, and potentially become irreversible. Plaintiffs, as youth, are especially vulnerable to the impacts of climate change. Paulson Decl. ¶¶32-41; *see Arizona Dream Act Coal.*, 757 F.3d at 1068 ("The irreparable nature of Plaintiffs' injury is heightened by Plaintiffs' young age and fragile socioeconomic

position."). Injunctive relief is necessary in order to avoid locking in these and other irreparable harms. Erickson Decl. ¶29; Williams Decl. ¶23.

B. PLAINTIFFS ARE LIKELY TO SUFFER IRREPARABLE HARM TO THEIR PSYCHOLOGICAL HEALTH IN THE ABSENCE OF AN INJUNCTION

Without an injunction, existing harms to Plaintiffs' psychological health will worsen and become irreparable. According to Dr. Van Susteren:

> Climate change is causing devastating physical impacts – injuries, illnesses, and deaths. But for the magnitude of its impacts, the potential insinuation into every aspect of our lives, the relentlessness of its nature and debilitating effects, it is the emotional toll of climate change that is even more catastrophic, especially for our children. It has the capacity to destroy children psychologically.

Van Susteren Decl. ¶12.

Plaintiffs have testified about the deep anger, frustration, depression, and feelings of betrayal they are experiencing because of their knowledge that the federal government is actively causing them harm, when the government is supposed to be protecting them. Van Susteren Decl. ¶19; *id.* Ex. C to Ex. 1; Aji Decl. ¶¶3-4, 8, 11; Levi Decl. ¶¶7-9, 25; Journey Decl. ¶¶25-26; Nicholas Decl. ¶8. These emotional harms are consistent with what is reported in the medical literature. Van Susteren Decl. Exhibit 1, 16-17; Rodgers Decl. Ex. 2, 5 (Walters Report). Dr. Van Susteren characterizes these psychological harms as "institutional betrayal," in that the federal government, a trusted and powerful institution, is affirmatively causing harm to

individuals that trust and depend on the government. Van Susteren Decl. ¶¶10-11. Dr. Van Susteren notes:

> Harms that are inflicted intentionally are much more psychologically damaging than what happens to us accidentally. The Plaintiffs know that the harm coming to them has been inflicted intentionally and that they are attributable not only to past actions but are also a direct result of actions the federal government is taking ***today***.

Id. ¶16; Aji Decl. ¶11 (Defendants "keep making more dire projections about my future" but "my government doesn't stop doing what it is doing to make my life unsafe."). Jayden described her horror when the federal government made the decision to *increase* off-shore oil drilling in the Gulf of Mexico near her home immediately after her home, health, and well-being were harmed by the climate change-driven Louisiana floods of 2016. D. Ct. Doc. 283, Jayden Decl. ¶¶43-44; Trenberth Decl. ¶12. For Aji, Defendants' decisions increase "the pressure cooker feeling that lives in me and ignites my feeling of panic." Aji Decl. ¶11. Levi has had recurring nightmares about climate change. Levi Decl. ¶¶8, 24-25. Journey says that knowing U.S. GHG emissions are rising and Defendants are expanding fossil fuel extraction causes him great "emotional pain." Journey Decl. ¶25. For Nicholas, "the speed at which we achieve those solutions greatly matters. And the government is not just going too slow, it is going backwards." Nicholas Decl. ¶8.

Children are uniquely vulnerable to psychological harms from climate change. Trauma from climate change and institutional betrayal can alter hormone

levels, brain development, cognitive functioning, reproductive success, and even alter children's DNA. Van Susteren Decl. ¶¶21-29; Paulson Decl. ¶¶39-42; Olson Decl. Ex. 2, 10-11 (Frumkin Report). These "particularly pernicious" irreparable harms are likely to befall Plaintiffs without injunctive relief. Van Susteren Decl. ¶17. Granting the injunctive relief, however, would provide an immediate remedy for Plaintiffs' psychological suffering related to their feelings of institutional betrayal. According to Dr. Van Susteren:

> The only way to relieve at least part of the psychological harm Plaintiffs are experiencing from the federal government's institutional betrayal is for the government to stop endangering Plaintiffs. . . . [I]njunctive relief would also give the Plaintiffs hope that the judiciary understood the harms they are grappling with ***on a daily basis. It would also help restore confidence that ultimately they would find recourse for government supported and sponsored threats to their survival.***

Id. ¶20 (emphasis added).

VI. PLAINTIFFS ARE LIKELY TO SUCCEED ON THE MERITS OF THEIR STATE-CREATED DANGER CLAIM

A. PLAINTIFFS HAVE STANDING TO BRING THEIR FIFTH AMENDMENT CLAIM AND SEEK PRELIMINARY RELIEF[13]

To establish standing, a plaintiff must demonstrate he or she has suffered a concrete and particularized injury that is either actual or imminent; the injury is fairly

[13] Given space limitations, Plaintiffs are not briefing in detail the extensive factual record as to whether they have standing to seek injunctive relief. Plaintiffs incorporate by reference the district court's analysis in denying summary judgment, where it concluded Plaintiffs have Article III standing to seek injunctive relief. D. Ct. Doc. 369 at 29-45.

traceable to the defendant; and it is likely that a favorable decision will redress that injury. *Horne v. Flores*, 557 U.S. 433, 445 (2009); *Massachusetts v. EPA*, 549 U.S. 497, 517 (2007) (citing *Lujan v. Defs. of Wildlife*, 504 U.S. 555, 560-61 (1992)). As the district court repeatedly found below, Plaintiffs have provided sufficient factual evidence and legal justification to satisfy all three criteria and avoid adverse summary judgment. *Juliana*, 217 F.Supp.3d at 1242-48; *Juliana*, 339 F.Supp.3d at 1086-96. On summary judgment, Defendants conceded Plaintiffs made a prima facie case of injury-in-fact. D. Ct. Doc. 329, 25. As a result, there is an Article III "case or controversy," and the issue for purpose of this motion turns to whether Plaintiffs show a "real or immediate threat that the plaintiff[s] will be wronged again" adequate to maintain a claim for equitable relief. *Hodgers-Durgin v. De La Vina*, 199 F.3d 1037, 1042 (9th Cir. 1999) (en banc) (quoting *City of Los Angeles v. Lyons*, 461 U.S. 95, 111 (1983)).

To assert a claim for prospective injunctive relief, a plaintiff must demonstrate "that he is realistically threatened by a repetition of [the violation]." *City of Los Angeles*, 461 U.S. at 109. Courts have "enumerated two ways in which a plaintiff can demonstrate that such injury is likely to recur." *Mayfield v. United States*, 599 F.3d 964, 971 (9th Cir. 2010). "First, a plaintiff may show that the defendant had, at the time of the injury, a written policy, and that the injury 'stems from' that policy." *Armstrong v. Davis*, 275 F.3d 849, 861 (9th Cir. 2001), abrogated on other grounds

by *Johnson v. California*, 543 U.S. 499, 504–05 (2005).[14] "Second, the plaintiff may demonstrate that the harm is part of a 'pattern of officially sanctioned . . . behavior, violative of the plaintiffs' [federal] rights.'" *Id.* (alterations in original) (quoting *LaDuke v. Nelson*, 762 F.2d 1318, 1323 (9th Cir. 1985)). Here, Defendants' ongoing systemic aggregate actions to perpetuate a fossil fuel energy system as challenged herein include both written policies and a pattern of officially sanctioned behavior that give rise to Plaintiffs' injuries. Plaintiffs seek to enjoin Defendants' perpetuation of new fossil fuel extraction from federal public lands and infrastructure components of those systemic policies and patterns of conduct, which most immediately threaten to worsen the *status quo* for Plaintiffs during the pendency of this appeal and adversely affect the options Defendants have after final judgment to devise a plan to bring the Nation's energy system into constitutional compliance.[15]

[14] A policy is "'a deliberate choice to follow a course of action ... made from among various alternatives by the official or officials responsible for establishing final policy with respect to the subject matter in question.'" *Fairley v. Luman*, 281 F.3d 913, 917-18 (9th Cir. 2002) (per curiam) (citations omitted). A policy may consist of actions or inaction. *See City of Canton v. Harris*, 489 U.S. 378, 388 (1989).

[15] Defendants have repeatedly mischaracterized Plaintiffs' ultimate prayer for relief as requiring the district court to take over the policy-making of the other branches. On the contrary, Plaintiffs wish to preserve the ability of the other branches to develop policies and plans that protect Plaintiffs' rights and preserve the capacity of our government to govern our Nation away from precipitous climate danger. A national plan, developed by Defendants, not the courts, is Plaintiffs' ultimate relief. This short-term preliminary injunction will preserve the varied options and ultimate efficacy of that plan, should it be ordered.

Any inquiry into whether Plaintiffs have standing is "gauged by the specific . . . claims that [they] present[]." *Int'l Primate Protection League v. Admins. of Tulane Educ. Fund*, 500 U.S. 72, 77 (1991). When federal government agencies and officials are "deliberately indifferent" to their safety, children can allege claims to challenge the "substantial risk of serious future harm" that these policies and practices create. *E.g., Henry A. v. Willden*, 678 F.3d 991, 1000 (9th Cir. 2012) (describing foster children's substantive due process rights). These claims are equivalent to those brought by prisoners when prison mismanagement subjects them to a risk of harm. *See, e.g.*, *Brown v. Plata*, 563 U.S. 493, 531 (2011). Thus, standing imposes no barrier to this action of children bringing claims of substantial risk of harm arising from system-wide governmental policies and practices.

B. DEFENDANTS KNOWINGLY, AND WITH DELIBERATE INDIFFERENCE, PLACE PLAINTIFFS' LIVES AND SECURITY IN DANGER[16]

A "state-created danger" claim under the Due Process Clause arises where: (1) "the state affirmatively places the plaintiff in danger"; and (2) "act[s] with 'deliberate indifference' to a 'known or obvious danger'. . . ." *Pauluk v. Savage*, 836 F.3d 1117, 1122 (9th Cir. 2016) (citations omitted). Here, given Defendants'

[16] Plaintiffs are likely to succeed on the merits of their other Fifth Amendment claims as well, as illustrated by the district court's orders. For brevity, Plaintiffs address this singular claim in this Motion as it is tied closely to the urgency of the moment and the irreparable harm Plaintiffs face.

longstanding knowledge of the profound dangers of climate change, as well as the economically and technologically feasible alternatives to the present fossil fuel energy system, unless immediately enjoined, Defendants will affirmatively place Plaintiffs in further peril of worsening climate-induced harms by entering into new leases and new infrastructure projects.

1. Defendants' Historic and Ongoing Affirmative Conduct Has Placed Plaintiffs in Danger

Plaintiffs must show "the state engaged in 'affirmative conduct' that placed him or her in danger." *Pauluk*, 836 F.3d at 1124 (quoting *Patel v. Kent Sch. Dist*, 648 F.3d 965, 974 (9th Cir. 2001)). Affirmative conduct is conduct that creates, exposes, or increases a risk of harm Plaintiffs would not have faced to the same degree absent such conduct. *Hernandez v. City of San Jose*, 897 F.3d 1125, 1134-35 (9th Cir. 2018); *DeShaney v. Winnebago Cnty. Dep't of Soc. Servs.*, 489 U.S. 189, 196 (1989).

Here, Defendants have substantially caused and contributed to dangerous climate destabilization and the already-occurring and imminently threatened harms Plaintiffs face. Hansen Decl. ¶¶35-37; Erickson Decl. ¶28, *passim*. Plaintiffs do not contend Defendants are the sole contributors to climate change, nor do they need to be for Plaintiffs to prevail. Defendants admit they affirmatively "permit, authorize, and subsidize fossil fuel extraction, development, consumption, and exportation;" D. Ct. Doc. 98, ¶7; that "emissions from such activities have increased the

atmospheric concentration of CO_2[;]" that "the United States is responsible for more than a quarter of global historic cumulative CO_2 emissions;" that "current and projected atmospheric concentrations of CO_2[] threaten the public health and welfare of current and future generations; and that this threat will mount over time as GHGs continue to accumulate in the atmosphere and result in ever greater rates of climate change." *Id.* ¶¶7, 213.

Defendants' affirmative conduct with respect to fossil fuels is resulting in greater CO_2 emissions levels and concentrations than would occur absent such conduct. Erickson Decl. at ¶¶20-21, 28; Hansen Decl. ¶35-37, Ex. 1 at 41-43; Olson Decl. Ex. 4, at 112-115 (Speth Report). Excess CO_2 emissions resulting from Defendants' conduct continue to destabilize the climate, resulting in mounting injuries to Plaintiffs. Hansen Decl. ¶38-55, Ex. 1, 26, 41-43; Hoegh-Guldberg Decl. at ¶¶16-23; Erickson Decl. at ¶¶28, *passim*; Olson Decl. Ex. 5 (Wanless Report). "Cumulative emissions by the United States substantially exceed those of any other nation. Thus, the United States is, by far, more responsible than any other nation for the associated increase of global temperature." Hansen Decl. ¶35; Erickson Decl. ¶8 ("energy-related U.S. CO_2 emissions from fossil fuel combustion grew by about 3.4% in 2018."). Defendants' affirmative conduct has thereby placed Plaintiffs "in a situation more dangerous than the one" they would otherwise face. *DeShaney*, 489 U.S. at 196; Hansen Decl. ¶9 ("Plaintiffs are already being harmed by Defendants'

conduct, past and present, in causing substantial amounts of GHG emissions, but the harm continues to worsen with increasing amounts of fossil fuel development and promotion of fossil fuel energy."); Olson Decl. Ex. 1, 2, 20-21 (Ackerman Report); Gunn Decl. *passim*.

2. Defendants Have Acted With Deliberate Indifference to the Known Or Obvious Dangers to Which They've Exposed Plaintiffs

To establish "deliberate indifference," Plaintiffs must show: (1) Defendants' actual knowledge of or willful blindness to; (2) an unusually serious risk of harm; and (3) Defendants either failed to take obvious steps to address the risk or exposed a claimant to the risk. *L.W. v. Grubbs*, 92 F.3d 894, 900 (9th Cir. 1996).[17] Defendants' long-standing knowledge of the profound risks of climate destabilization from continued fossil fuel use, and the resulting harms to Plaintiffs, is extensively recorded in federal government documents spanning decades and corroborated by expert reports in this case. *See* Olson Decl. Ex. 4, 3-7, 16-26, 31-41, 45-54, 66-74, 79-86, 94-100 (Speth Report); *id.* Ex. 3, 28 (Robertson Report); Hansen Decl. ¶51 ("The great danger for young people, is that they are being handed a situation that is out of their control, a situation made more egregious due to the fact

[17] *See also Farmer*, 511 U.S. at 843 ("[I]t does not matter whether the risk comes from a single source or multiple sources, any more than it matters whether a [claimant] faces an excessive risk. . . for reasons personal to him or because all [others] in his situation face such a risk.").

that the Defendants have a complete understanding of precisely how dangerous the situation is that they are handing down to these Plaintiffs."), ¶¶76-79, ¶84, Ex. 1, at 7-24, 38-39; Gunn Decl. ¶44.

With respect to the third component of deliberate indifference, Defendants have refused for decades to take obvious steps to address the profound harms and unprecedented dangers, ignoring technologically- and economically-feasible alternative energy pathways. Olson Decl. Ex. 4, 50-54, 79-80, 85-87, 100-101 (Speth Report); Stiglitz Decl. ¶¶10-11, Ex. 1, ¶¶44-50; *County of Sacramento v. Lewis*, 523 U.S. 833, 853 (1998) ("When such extended opportunities to do better are teamed with protracted failure even to care, indifference is truly shocking."); Williams Decl. ¶23; Jacobson Decl. ¶¶7-13 (describing how transitioning to 100% renewable energy will cost less than the current fossil fuel-based energy system).

Beyond their failures to mitigate dangerous climate change, Defendants continue to affirmatively double-down on the use of fossil fuels. Olson Decl. Ex 4, 26-28, 29-31, 41-46, 54-67, 75-80, 87-95, 101-111 (Speth Report); Stiglitz Decl. ¶¶8-9, 11-12, Ex. 1, ¶¶51-52; Erickson Decl. ¶¶10-16. The U.S. is among the world's largest producers of fossil fuels, and is the world's single largest producer of both oil and gas. *Id.* ¶9. A staggering amount of GHG emissions is caused by Defendants' leasing of federal public lands for fossil fuel extraction and production. *Id.* ¶¶10-11,12 (GHG emissions from fossil fuels produced on federal lands and waters in

2014 were 1,279 million metric tons of CO_2, and 23% of total national CO_2 emissions). From 2008 through 2017, U.S. petroleum and natural gas production increased by nearly 60%. *Id.* ¶13. Since 2017, Defendants have opened vast areas of federal lands and waters for fossil fuel exploration and production. *Id.* ¶¶14, 15 ("The United States is expanding oil and gas extraction on a scale at least four times faster and greater than any other nation and is currently on track to account for 60% of global growth in oil and gas production. If this trajectory is maintained, drilling into new U.S. oil and gas reserves is projected to unlock the equivalent of the lifetime cumulative CO_2 emissions of nearly 1,000 coal-fired power plants."). Presently, Defendants have "plans to allow new offshore oil and gas drilling in virtually all (98%) of U.S. coastal waters during 2019-2024." *Id.* ¶14. Defendants are also poised to lease even more federal public lands for fossil fuel extraction and permit upwards of 60 new oil and gas pipelines, 32 liquefied natural gas and coal terminals, and one deepwater port oil export facility as part of the national fossil fuel energy system. *Id.* ¶16,18.

Defendants' present conduct recklessly disregards the substantial risk of harm to Plaintiffs and the Nation. *See Farmer v. Brennan*, 511 U.S. 825, 836 (1994) ("acting or failing to act with deliberate indifference to a substantial risk of serious harm . . . is the equivalent of recklessly disregarding that risk."); Trenberth Decl. ¶13 (calling Defendants' actions "extremely reckless"); Erickson Decl. ¶15 ("It is

my opinion that expanding U.S. fossil fuel extraction is a reckless course of conduct."); Hansen Decl. ¶82; Stiglitz Decl. Ex. 1, ¶¶9, 40; Olson Decl. Ex. 4, 68 (Speth Report). Plaintiffs are thus likely to succeed and, at a minimum, have raised "serious questions," on the merits of their state-created danger claim. *Alliance for the Wild Rockies*, 632 F.3d at 1135.

VII. THE BALANCING OF EQUITIES FAVORS AN INJUNCTION

Plaintiffs are being irreparably harmed *today* by the accelerating increase in U.S. GHG emissions caused in significant part by Defendants' conduct and because Plaintiffs' ability to seek a full remedy in their case is quickly slipping away. In contrast, Defendants will suffer minimal harm because the injunction merely puts a temporary pause on components of an unconstitutional energy system. *See* Stiglitz Decl.¶27 ("there would be no harm imposed on our economy or society in any way (e.g., security or the environment) by a delay"); Gunn Decl. ¶¶3, 4, 43, 45. "To determine which way the balance of the hardships tips, a court must identify the possible harm caused by the preliminary injunction against the possibility of the harm caused by not issuing it." *Univ. of Hawaii Professional Assembly v. Cayetano*, 183 F.3d 1096, 1108 (9th Cir. 1999).

Courts regularly maintain the *status quo* while the government litigates the extent of its authority or legality of its conduct. *See, e.g.*, *Nat'l Ass'n of Mfrs. v. Dep't of Def.*, 138 S. Ct. 617, 627 (2018) (nationwide stay of the Waters of the

United States Rule); *Gonzalez v. O Centro Espirita Beneficente Uniao do Vegetal*, 546 U.S. 418, 423 (2006) (Controlled Substances Act); *see also Hills v. Gautreaux*, 425 U.S. 284 (1976) (approving permanent, affirmative structural injunction correcting federal agency's systemic due process violations). The balance of equities favors an injunction here "because the 'government suffers no harm from an injunction that merely ends unconstitutional practices and/or ensures that constitutional standards are implemented.'" *Doe v. Kelly*, 878 F.3d 710, 718 (9th Cir. 2017) (quoting *Rodriguez v. Robbins*, 715 F.3d 1127, 1145 (9th Cir. 2013)); *Ariz. Dream Act Coal.*, 757 F.3d at 1069 (when a plaintiff establishes a constitutional violation, plaintiff also establishes that "the balance of equities favor a preliminary injunction."); *Melendres*, 695 F.3d at 1002 (the balance of equities favors "prevent[ing] the violation of a party's constitutional rights.").

An injunction will pose no real harm to employment, the economy, energy security, or the national treasury. Stiglitz Decl. ¶27. In fact, an injunction will prevent fiscal harm by temporarily halting public and private investments in new fossil fuel energy before the full risks of those collective investments and use of public resources has been evaluated in light of the constitutional holdings by the third branch of government. Stiglitz Decl. ¶¶13, 15, 19. Even if there were minimal financial repercussions, "[f]aced with such a conflict between financial concerns and preventable human suffering, we have little difficulty concluding that the balance of

hardships tips decidedly in plaintiffs' favor." *Lopez v. Heckler*, 713 F.2d 1432, 1437 (9th Cir. 1983); *Hernandez*, 872 F.3d at 995-96; *Golden Gate Rest. Ass'n*, 512 F.3d at 1126 (balance of hardships tips in favor of party seeking to prevent human suffering). Similarly, any purported claims of administrative burdens caused by the injunction are insufficient to outweigh the harms to Plaintiffs. *Hernandez*, 872 F.3d at 995. "[P]hysical and emotional suffering shown by plaintiffs . . . is far more compelling than the possibility of some administrative inconvenience or monetary loss to the government." *Lopez*, 713 F.2d at 1437.

VIII. THIS PRELIMINARY INJUNCTION PROMOTES THE PUBLIC INTEREST

This injunction *advances* the public interest in several important ways. "Courts of equity have much greater latitude in granting injunctive relief 'in furtherance of the public interest . . . than when only private interests are involved.'" *City of Los Angeles*, 461 U.S. at 133 (quoting *Virginian Ry. Co. v. Sys. Fed'n No. 40*, 300 U.S. 515, 552 (1937)).

This case involves important public interests that can only be served by an injunction in this case. *First*, "public interest concerns are implicated when a constitutional right has been violated, because all citizens have a stake in upholding the Constitution." *Preminger v. Principi*, 422 F.3d 815, 826 (9th Cir. 2005); *Arizona Dream Act Coal.*, 757 F.3d at 1069 (the public interest favors an injunction when a plaintiff establishes "a likelihood that Defendants' policy violates the U.S.

Constitution"); *Sammartano v. First Judicial Dist. Court*, 303 F.3d 959, 974 (9th Cir. 2002). *Second*, "[t]he 'general public has an interest in the health' of state residents." *Stormans, Inc.*, 586 F.3d at 1139 (citing *Golden Gate Rest. Ass'n*, 512 F.3d at 1126). This is particularly true with respect to the protection of children who are being physically and psychologically harmed by their government's conduct.[18] *See generally* Paulson Decl.; Van Susteren Decl. *Finally*, the injunction would serve the public interest by promoting economic and national security. Stiglitz Decl. ¶¶13-28 (discussing public economic benefit of injunction). One of our nation's leading retired military officers and experts on energy, climate, and security, Vice Admiral Lee Gunn, USN (Ret.), stated "climate change is *the* most serious national security threat facing our Nation today" and "poses unprecedented risks to our Nation's economic prosperity, public health and safety, and international stability." Gunn Decl. ¶2.

> The current status quo in our Nation with increasing greenhouse gas emissions and no plan to mitigate them is already causing irreparable harm to many parts of society in our Nation and promises irreparable injury to our Nation as a whole without comprehensive, coordinated action by the U.S. government to stabilize the climate system. … It is vital to the public interest and national security of our Nation that we

[18] The Supreme Court has consistently recognized the need to protect children from government action that harms them. *See*, *e.g.*, *In re Gault*, 387 U.S. 1, 13 (1967); *Brown v. Bd. of Educ.*, 347 U.S. 483 (1954); *Plyler v. Doe*, 457 U.S. 202, 220 (1982); *Levy v. Louisiana*, 391 U.S. 68, 71 (1968); *Weber v. Aetna Cas. & Sur. Co.*, 406 U.S. 164, 175 (1972); *Obergefell v. Hodges*, 135 S. Ct. 2584, 2590 (2015); *Windsor v. U.S.*, 570 U.S. 744, 772 (2013).

> reverse the current status quo of the U.S. government's pursuance and promotion of a national fossil-fuel based energy system.
> . . .
> The U.S. Navy has long understood the threat climate change poses to our oceans and our national security. To ignore those threats today and to continue supporting the source of those threats, through further extraction and development of fossil fuels, is folly given the dangerous state of our climate system today and the abundant threats it poses to our national security.

Gunn Decl. ¶¶43-44; *see also id.* ¶¶3, 4, 12, 14, 16, 18, 23, 45; Stiglitz Decl. ¶9.

IX. THE SCOPE OF THIS PRELIMINARY INJUNCTION IS LIMITED

Finally, the scope of Plaintiffs' requested injunctive relief is limited "to the necessities of the particular case." *Weinberger v. Romero–Barcelo*, 456 U.S. 305, 312 (1982). The requested injunctive relief seeks nothing more than to preserve during the pendency of the interlocutory appeal Plaintiffs' ability to obtain their ultimate remedy. This requested relief is confined to *new* fossil fuel activities on federal lands and in federal waters, and *new* fossil fuel infrastructure, the permitting and authorization of which is *directly* within the control of Defendants. The threat to Plaintiffs' rights posed by these new actions is significant, as it would lock-in additional CO_2 emissions and jeopardize the feasibility of the relief Plaintiffs will seek at trial. Given the systemic nature of Defendants' danger-creating conduct, enjoining actions that further entrench that system is the minimum effective relief that Plaintiffs could seek. Plaintiffs' requested relief thus achieves a "nice adjustment and reconciliation between the competing claims" in this case,

Weinberger, 456 U.S. at 312, and is minimally commensurate with the scale of the violations to Plaintiffs' Due Process rights. The relatively-narrow scope of Plaintiffs' requested injunctive relief, which is "no broader than [that] required by the precise facts" of this case, militates strongly in Plaintiffs' favor. *Friends of the Earth, Inc. v. Laidlaw Envtl. Servs. (TOC), Inc.*, 528 U.S. 167, 193 (2000).

X. PLAINTIFFS SHOULD NOT BE REQUIRED TO POST A BOND

When a party shows that it is likely to succeed on the merits, no bond should be required. *Van De Kamp v. Tahoe Reg'l Planning Agency*, 766 F.2d 1319, 1326 (9th Cir. 1985), *amended by* 775 F.2d 998 (9th Cir. 1985). These Youth Plaintiffs do not have significant resources at their disposal to protect their constitutional rights. Furthermore, Plaintiffs are pursuing this litigation in the public interest. A court has the discretion to dispense with the security requirement where giving security would effectively deny access to judicial review. *See Save Our Sonoran, Inc. v. Flowers*, 408 F.3d 1113, 1126 (9th Cir. 2005) (citation omitted); *Tenakee Springs v. Clough*, 915 F.2d 1308, 1314 n.4 (9th Cir. 1990). Under these circumstances, a bond should not be required.

XI. CONCLUSION

For the foregoing reasons, this Court should issue a preliminary injunction during the pendency of this interlocutory appeal. As the Supreme Court noted in the civil rights context, "[t]he reconciliation of competing values in a desegregation case

is, of course, a difficult task with many sensitive facets but fundamentally no more so than remedial measures courts of equity have traditionally employed." *Swann v. Charlotte-Mecklenburg Bd. of Ed.*, 402 U.S. 1, 31 (1971). Based on the foregoing evidence, this Court has "the necessary predicate for the entry of a remedial order," structured to address the nature and scope of relief appropriate under the circumstances. *Hills v. Gautreaux*, 425 U.S. at 297 ("Once a right and a violation have been shown, the scope of a district court's equitable powers to remedy past wrongs is broad, for breadth and flexibility are inherent in equitable remedies."). This Court has assumed full jurisdiction of this critical constitutional case and it is now in this Panel's hands to preserve Plaintiffs' rights, and minimize further irreparable harm to these young people, during the pendency of this interlocutory appeal.

DATED this 7th day of February, 2019, at Eugene, OR.

Respectfully submitted,

s/ Julia A. Olson
JULIA A. OLSON

PHILIP L. GREGORY

ANDREA K. RODGERS

Attorneys for Plaintiffs-Appellees

STATEMENT OF RELATED CASES

These cases were previously before this Court and each is a related case within the meaning of Circuit Rule 28-2.6: Defendants' four prior Petitions for Writs of Mandamus and a Petition for Permission to Appeal pursuant to 28 U.S.C. § 1292(b). *In re United States*, 884 F.3d 830 (9th Cir. 2018) (No. 17-71692); *In re United States*, 895 F.3d 1102 (9th Cir. 2018) (No. 18-71928); *In re United States*, No. 18-72776 (denied as moot Nov. 2, 2018); *In re United States*, No. 18-73014 (denied as moot Dec. 26, 2018); and *Juliana v. United States*, No. 18-80176 (granted petition for permission to appeal Dec. 26, 2018).

CERTIFICATE OF COMPLIANCE

I certify that this Motion is accompanied by a motion for leave to file an overlength brief pursuant to Circuit Rule 32-2 and contains 40 pages and 10,153 words, excluding the portions exempted by Federal Rule of Appellate Procedure 27(a)(2)(B),. The Motion's type size and type face comply with Federal Rule of Appellate Procedure 32(a)(5) and (6).

s/ Julia A. Olson
Julia A. Olson

CERTIFICATE OF SERVICE

I hereby certify that I electronically filed the foregoing with the Clerk of the Court for the United States Court of Appeals for the Ninth Circuit by using the appellate CM/ECF system on February 7, 2019.

I further certify that on this date, an electronic copy of the foregoing has been provided via e-mail to the following counsel for Defendants, who have consented in writing to such service pursuant to Federal Rule of Appellate Procedure 25(c)(2):

Eric Grant
Eric.Grant@usdoj.gov

Andy Mergen
Andy.Mergen@usdoj.gov

Sommer Engels
Sommer.Engels@usdoj.gov

Robert Lundman
Sommer.Engels@usdoj.gov

s/ Julia A. Olson
Julia A. Olson

Exhibit C:

Government Climate and Energy Actions Must Target <350 ppm Atmospheric CO_2 by 2100 to Protect Children and Future Generations (March 2021)

Government Climate and Energy Policies Must Target <350 ppm Atmospheric CO_2 by 2100 to Protect Children and Future Generations (March 2021)

INTRODUCTION

Human laws can adapt to nature's laws, but the laws of nature will not bend for human laws. Government climate and energy policies **must** be based on the best available science to protect our climate system and vital natural resources on which human survival and welfare depend, and to ensure the fundamental rights of young people and future generations are protected.

Because carbon dioxide (CO_2) is the primary driver of Earth energy imbalance (EEI), climate destabilization, and ocean warming and acidification, all government policies regarding CO_2 emissions and CO_2 sequestration should be aimed at reducing global CO_2 concentrations **below 350 parts per million (ppm) by 2100**. Global mean atmospheric CO_2 levels, as of 2020, are approximately 412 ppm and rising.[1] With timely action, an emission reductions and sequestration pathway back to <350 ppm could limit peak warming to approximately 1.3°C this century and stabilize long-term heating this century at ~1°C above pre-industrial temperatures with further reductions next century. The temperature of the Earth, much like sea level rise, is a measurable indicator of the CO_2 problem, but it is not a good metric for solving it. EEI and CO_2 levels provide measurable standards, with CO_2 emission reductions and sequestration the measurable means to meet those standards.

As explained in more detail below, there are numerous scientific bases and lines of evidence supporting setting <350 ppm by 2100 as the uppermost safe limit for atmospheric CO_2 concentrations and global warming. Beyond 2100, atmospheric CO_2 may need to return to well below 350 ppm and closer to the preindustrial level of ~280 ppm to prevent the complete melting of Earth's ice sheets and protect coastal cities from sea level rise. Fortunately, it is still not only technically and economically feasible to return to <350 ppm by 2100, but transitioning to clean energy sources will provide significant economic and public health benefits and improve quality-of-life.

WHY GOVERNMENTS MUST AIM FOR <350 PPM AND RESTORING EARTH ENERGY BALANCE

Three lines of robust and conclusive scientific evidence, based on the paleo-climate record and real-world observations, show that above an atmospheric CO_2 concentration of 350 ppm there is: 1) significant Earth energy imbalance; 2) massive ice sheet destabilization and sea level rise; and 3) ocean warming and acidification resulting in the bleaching death of coral reefs and other marine life.

[1] Ed Dlugokencky & Pieter Tans, NOAA/GML, www.esrl.noaa.gov/gmd/ccgg/trends/.

1) Earth Energy Imbalance

Scientists say the "Earth energy imbalance (EEI) is the most critical number defining the prospects for continued global warming and climate change."[2] "Stabilization of climate, the goal of the universally agreed United Nations Framework Convention on Climate Change (UNFCCC) in 1992 and the Paris Agreement in 2015, requires that EEI be reduced to approximately zero to achieve Earth's system quasi-equilibrium."[3] Earth's energy flow is significantly out of balance. Because of a buildup of CO_2 (and to a lesser extent other greenhouse gases) in our atmosphere, due to human activities, primarily the burning of fossil fuels and deforestation,[4] more solar energy is retained in our atmosphere and less energy is released back into space.[5] (Figure 1.)[6] The measured imbalance from 2010-2018 (0.87±0.12 Wm^{-2}) was approximately double the imbalance from 1971-2018.[7]

Returning CO_2 concentrations to below 350 ppm would restore the energy balance of Earth by allowing as much heat to escape into space as Earth retains, an important historic balance that has kept our planet in the sweet spot for the past 10,000 years, supporting stable sea levels and coastlines, enabling productive agriculture, and allowing humans and other species to thrive.[8] The paleo-climate record shows that CO_2 levels, temperature, and sea level all move together (see Figure 2). Humans have caused CO_2 levels to shoot off the chart (circled in red), rising to levels unprecedented over the past 3 million years, and causing the Earth energy imbalance.[9]

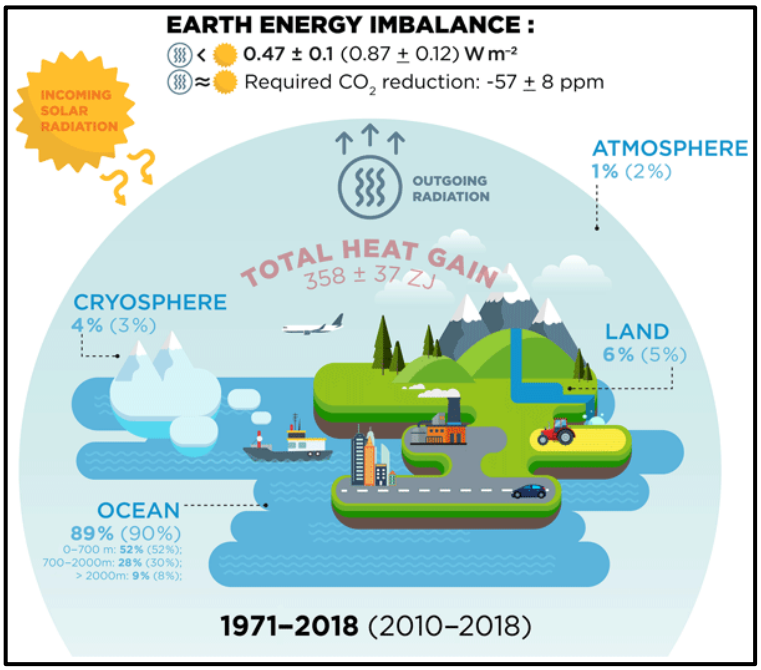

Figure 1: Earth heat inventory for Earth energy imbalance at the top of the atmosphere.

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[2] Karina von Schuckmann et al., *Heat Stored in the Earth System: Where Does the Energy Go?*, 12 Earth Syst. Sci. Data. 2013 (2020) [hereinafter *Heat Stored in the Earth System*] (written by 38 international experts, including lead IPCC authors).
[3] *Id.*
[4] IPCC, *Summary for Policymakers, in* Climate Change 2014: Synthesis Report (2014).
[5] James Hansen et al., *Assessing "Dangerous Climate Change": Required Reduction of Carbon Emissions to Protect Young People, Future Generations and Nature*, 8 PLOS ONE e81648 (2013) [hereinafter *Assessing "Dangerous Climate Change"*].
[6] von Schuckmann, *Heat Stored in the Earth System.*
[7] *Id.*
[8] James Hansen, *Storms of My Grandchildren* 166 (2009).
[9] M. Willeit et al., *Mid-Pleistocene Transition in Glacial Cycles Explained by Declining CO_2 and Regolith Removal*, 5 Science Advances eaav7337 (2019).

2) Ice Sheets and Sea Level Rise

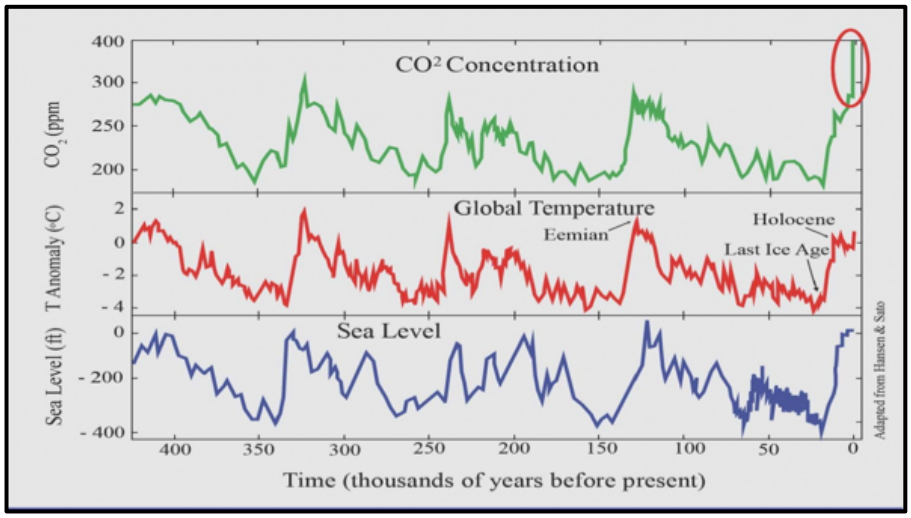

Figure 2: Evidence from the paleo-climate record showing the relationship between CO_2 concentration, global temperature, and sea level.

The last time the ice sheets appeared stable in the modern era was in the 1980s when the atmospheric CO_2 concentration was below 350 ppm. The consequences of >350 ppm and >1°C of warming are already visible, significant, and dangerous for humanity. With just over a global average 1°C of warming, glaciers in all regions of the world are shrinking, and the rate at which they are melting is accelerating.[10] Large parts of the Greenland and Antarctic ice sheets, which required millennia to grow, are teetering on the edge of irreversible disintegration, a point that, if reached, would lock-in major ice sheet mass loss, sea level rise of many meters, and worldwide loss of coastal cities – a consequence that would be irreversible on any timescale relevant to humanity (see Figure 3).[11] Greenland's ice sheet melt is currently occurring faster than anytime during the last three and a half centuries, with a 33% increase alone since the 20th century.[12] From 1994 to 2017, the Earth lost 28 trillion tonnes of ice, with the rate of ice loss increasing by 57% compared to the 1990s.[13] The paleo-climate record shows the last time atmospheric CO_2 levels were over 400 ppm, the seas were **70 feet higher** than they are today and heating consistent with CO_2 concentrations as low as 450 ppm may have been enough to melt almost all of Antarctica.[14] While many experts are predicting multi-meter sea level rise this century, even NOAA's modest estimate of 5-8.2 feet (1.5-2.5 m) global mean rise by 2100[15] would impact millions of Americans (see Figure 4).[16]

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[10] M. Zemp et al., *Global Glacier Mass Changes and their Contributions to Sea-Level Rise from 1961-2016*, 568 Nature 382 (2019); B. Menounos et al., *Heterogeneous Changes in Western North American Glaciers Linked to Decadal Variability in Zonal Wind Strength*, 46 Geophysical Research Letters 200 (2019).

[11] Hansen, *Assessing "Dangerous Climate Change*," at 13; *see also* James Hansen et al., *Ice Melt, Sea Level Rise and Superstorms; Evidence from Paleoclimate Data, Climate Modeling, and Modern Observations that 2 °C Global Warming Could be Dangerous*, 16 Atmos. Chem. & Phys. 3761 (2016) [hereinafter *Ice Melt, Sea Level Rise and Superstorms*].

[12] L.D. Trusel et al., *Nonlinear Rise in Greenland Runoff in Response to Post-industrial Arctic Warming*, 562 Nature 105 (2018).

[13] T. Slater et al., *Earth's Ice Imbalance*, 15 The Cryosphere 233 (2021).

[14] James E. Hansen, *Declaration in Support of Plaintiffs, Juliana v. United States*, No. 6:15-cv-01517-TC, 14 (D. Or. Aug. 12, 2015); IPCC, *Chapter 6.3.2, What Does the Record of the Mid-Pliocene Show?, in* Climate Change 2007: The Physical Science Basis (2007); Dowsett & Cronin, *High Eustatic Sea Level During the Middle Pliocene: Evidence from the Southeastern U.S. Atlantic Coastal Plain*, 18 Geology 435 (1990); N.J. Shackleton et al., *Pliocene Stable Isotope Stratigraphy of Site 846*, 138 Proceedings of the Ocean Drilling Program, Scientific Results 337 (1995).

[15] NOAA, *Global and Regional Sea Level Rise Scenarios for the United States* (2017) (intermediate-high to extreme global mean sea level rise scenarios).

[16] NOAA, Examining Sea Level Rise Exposure for Future Populations, https://coast.noaa.gov/digitalcoast/stories/population-risk.html.

Figure 3: Antarctic melt water from the Nansen ice shelf.

Many climate models represent sea level rise as a gradual linear response to melting ice sheets, but the historic climate record shows something very different. In reality, seas do not rise slowly and predictably but rather in pulses as ice sheets destabilize.[17] Scientists believe we still have a chance to preserve the large ice sheets of Greenland and Antarctica and most of our shorelines and ecosystems if we restore Earth's energy balance and return to below 350 ppm, thereby limiting longer-term warming by the end of the century to no more than 1°C above pre-industrial levels (short-term warming will inevitably exceed 1°C but must not exceed 1°C for more than a short span of years rather than multiple decades or centuries).

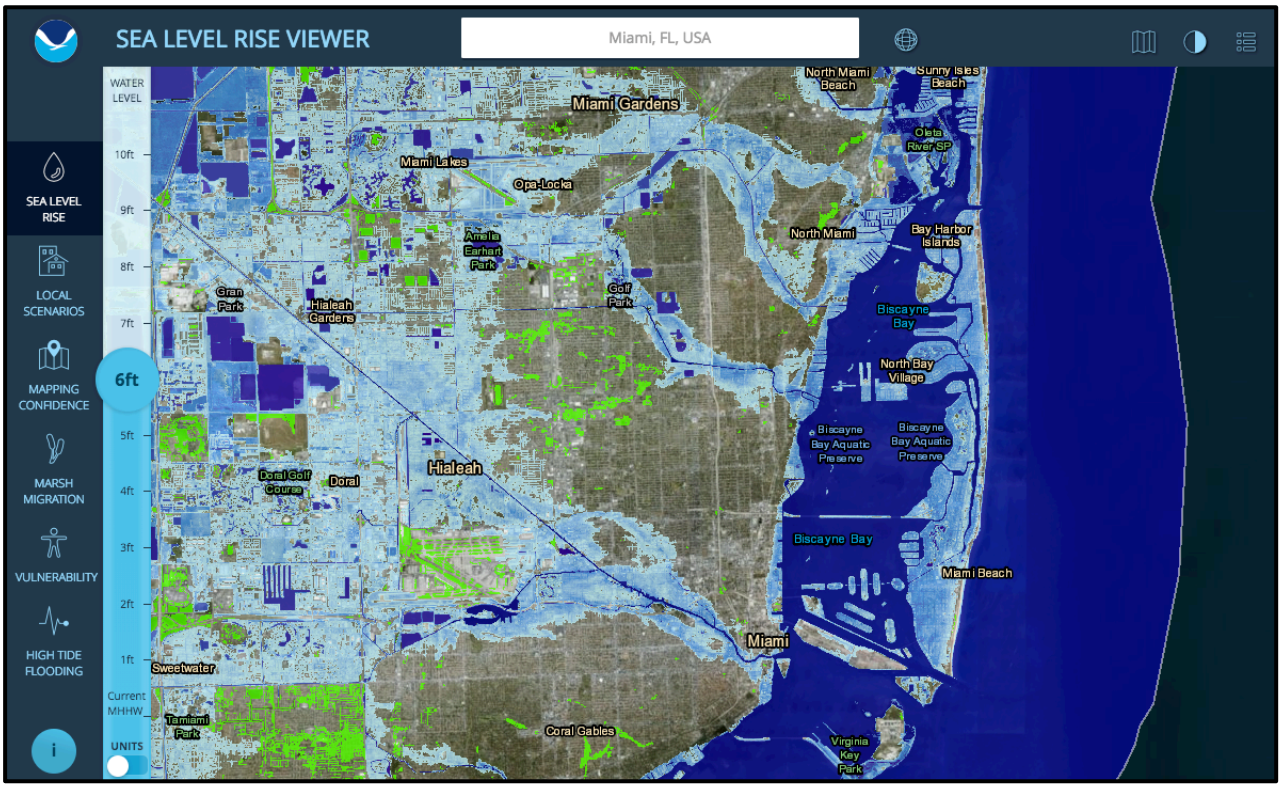

Figure 4: South Florida, including Miami, will face significant inundation with 6 feet of sea level rise.

[17] H.R. Wanless, et al., *Dynamics and Historical Evolution of the Mangrove/Marsh Fringe Belt of Southwest Florida, in Response to Sea-level History, Biogenic Processes, Storm Influences and Climatic Fluctuations*. Semi-annual Research Report (June 1993 to February 1994); Hansen, *Ice Melt, Sea Level Rise and Superstorms*, at 3761; Hansen, *Assessing "Dangerous Climate Change,"* at 20.

3) Ocean Warming and Acidification

Less than 350 ppm is the best scientific standard to protect oceans and marine life. Our oceans have absorbed about 90% of the excess heat in the atmosphere trapped by greenhouse gases (see Figure 5) as well as approximately 30% of CO_2 emitted into the atmosphere, causing ocean temperatures to surge and the ocean to become more acidic.[18] Indeed, our oceans are warming much more rapidly than previously-thought.[19] In 2020, the oceans absorbed 20 sextillion joules of heat due to climate change and warmed to record levels. The quantity of warming, 20,000,000,000,000,000,000,000 joules, is equivalent to the amount of energy from 10 Hiroshima atomic bombs being released every second of the year or to heat 1.3 billion kettles of water.[20] Many marine ecosystems, and particularly coral reef ecosystems, cannot tolerate the increased warming and acidity of ocean waters that result from increased CO_2 levels.[21] At today's global mean CO_2 concentration, around 412 ppm, critically important ocean ecosystems, such as coral reefs, are rapidly declining and will be irreversibly damaged from high ocean temperatures and repeated mass bleaching events if we do not quickly curtail emissions (see Figures 6 and 7).[22] According to the Intergovernmental Panel on Climate Change (IPCC), bleaching events are occurring more frequently than the IPCC previously projected and 70-90% of the world's coral reefs could disappear as soon as 2030 (the IPCC also predicts >99% of coral reefs will die with 2°C warming).[23] The 2018 National Climate Assessment acknowledged that coral reefs in Florida, Hawaii, Puerto Rico, and the

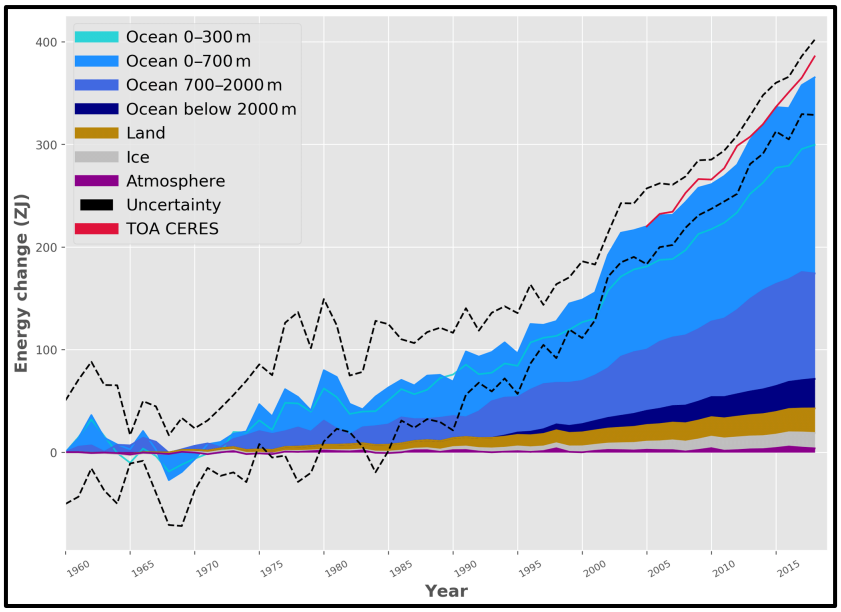

Figure 5 . Earth energy accumulation relative to 1960.

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[18] von Schuckmann, *Heat Stored in the Earth System*; Hansen, *Assessing "Dangerous Climate Change*," at 1; IPCC, *Climate Change 2013: The Physical Science Basis. Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change* (Cambridge University Press, 2013); L. Cheng et al., *How Fast are the Oceans Warming?* 363 Science 128 (2019) (as of 2019, about 93% of the energy balance accumulates in the ocean); NOAA, *What is Ocean Acidification?,* https://oceanservice.noaa.gov/facts/acidification.html.

[19] L. Cheng et al., *How Fast are the Oceans Warming?*, 363 Science 128 (2019).

[20] https://www.abc.net.au/news/2021-01-18/ocean-temperatures-reached-record-high-in-2020-study-finds/13062628; https://www.cambridgenetwork.co.uk/news/world-continued-warm-2020.

[21] T. P. Hughes et al., *Global Warming Impairs Stock-Recruitment Dynamics of Corals*, 568 Nature 387 (2019).

[22] K. Frieler et al., *Limiting Global Warming to 2 ℃ is Unlikely to Save Most Coral Reefs*, 3 Nature Climate Change 165 (2013); J. Veron et al; *The Coral Reef Crisis: The Critical Importance of <350ppm CO_2*, 58 Marine Pollution Bulletin 1428 (2009); T. P. Hughes et al., *Spatial and Temporal Patterns of Mass Bleaching of Corals in the Anthropocene*, 359 Science 80 (2018); T. P. Hughes et al., *Global Warming Impairs Stock–Recruitment Dynamics of Corals*, 568 Nature 387 (2019).

[23] Ove Hoegh-Guldberg et al., *Impacts of 1.5℃ Global Warming on Natural and Human Systems, in* Global Warming of 1.5°C. An IPCC Special Report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty, at 225-226 (2018); IPCC, *Summary for Policymakers, in* Global Warming of 1.5°C (2018).

U.S. Virgin Islands have been harmed by mass bleaching and coral diseases and could disappear by mid-century as a result of warming waters.[24] Scientists believe we can protect marine life and prevent massive bleaching and die-off of coral reefs only by rapidly returning CO_2 levels to below 350 ppm.[25]

No scientific institution, including the IPCC, has ever concluded that the Earth energy imbalance, which exists with >350 ppm, and 1.5-2°C warming would be safe for ocean life. According to Dr. Ove Hoegh-Guldberg, one of the world's leading experts on ocean warming and acidification, and a Coordinating Lead Author on the "The Ocean" chapter of the IPCC's Fifth Assessment Report and on the "Impacts of 1.5ºC Global Warming on Natural and Human Systems" of the IPCC's Special Report on Global Warming of 1.5°C:

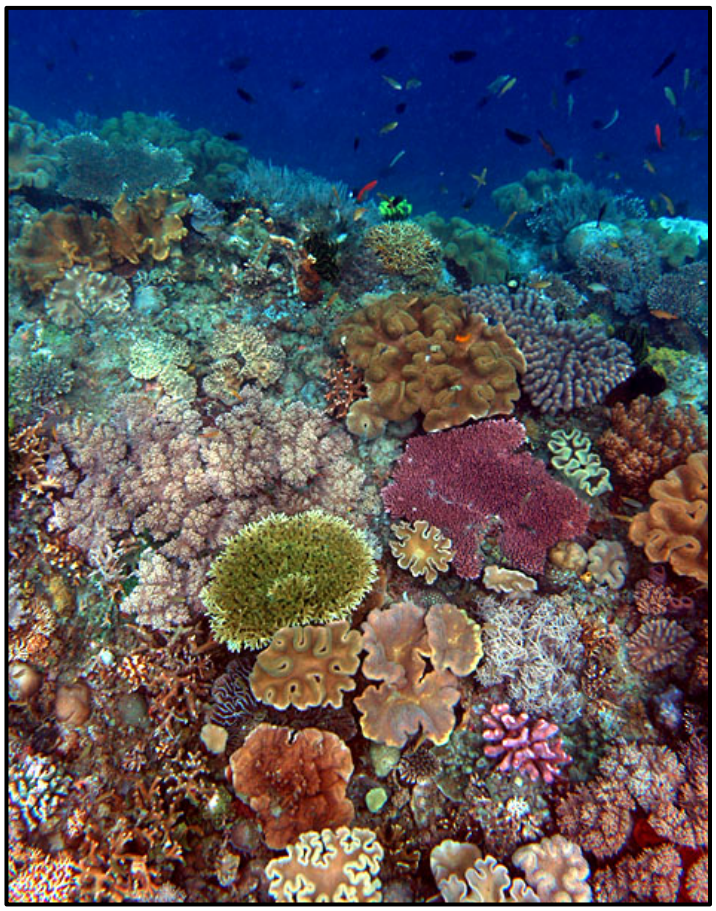

Figure 6: Healthy coral like this are already gravely threatened and will likely die with warming of 1.5°C.

"Allowing a temperature rise of up to 2°C would seriously jeopardize ocean life, and the income and livelihoods of those who depend on healthy marine ecosystems. Indeed, the best science available suggests that coral dominated reefs will completely disappear if carbon dioxide concentrations exceed much more than today's concentrations. Failing to restrict further increases in atmospheric carbon dioxide will eliminate coral reefs as we know them and will deny future generations of children from enjoying these wonderful ecosystems."[26]

Figure 7: Bleached coral from warmer ocean temperatures.

IPCC's Special Report on Global Warming of 1.5° states that "[w]arming of 1.5ºC is not considered 'safe' for most nations, communities, ecosystems, and sectors and poses significant risks to natural and human systems as compared to current warming of 1°C (*high confidence*)."[27]

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[24] A.J. Pershing et al., *Oceans and Marine Resources, in* Impacts, Risks, and Adaptation in the United States: Fourth National Climate Assessment, Vol. II (USGCRP, 2018).

[25] J. Veron et al., *The Coral Reef Crisis: The Critical Importance of <350 ppm CO_2*, 58 Marine Pollution Bulletin 1428 (2009).

[26] Ove Hoegh-Guldberg, *Declaration in Support of Petitioners, Foster v. Wash. Dep't of Ecology*, No. 14-2-25295-1 SEA (Wash. Super. Ct. Aug. 24, 2015).

[27] J. Roy et al., *Sustainable Development, Poverty Eradication and Reducing Inequalities, in* Global Warming of 1.5°C,

ADDITIONAL OBSERVATIONS ILLUSTRATE THE DANGERS OF INCREASED WARMING

In addition to the evidence discussed above which illustrates the necessity of ensuring that the atmospheric CO_2 concentration returns to no more than 350 ppm, based on present day observations about climate impacts occurring **now**, it is clear that the present level of 412 ppm and resulting heating of 1.1°C (as of 2020) is already causing significant climate impacts and additional warming will exacerbate these already dangerous impacts. Climate impacts that are already being experienced today include:

- Declining snowpack and rising temperatures are increasing the length and severity of drought conditions, especially in the western United States and Southwest, causing problems for agriculture users, forcing some people to relocate, and leading to water restrictions.[28]
- In the western United States, the wildfire season is now almost three months longer (87 days) than it was in the 1980s.[29] 10.3 million acres burned in 2020, well above the 2011-2020 average of 7.5 million acres.[30]
- Extreme weather events, such as intense rainfall events that cause flooding, are increasing in frequency and severity because a warmer atmosphere holds more moisture.[31] What are supposedly 1-in-1000-year rainfall events are now occurring with alarming frequency – in 2018 there were at least five such events.[32]
- Tropical storms and hurricanes are increasing in frequency and intensity, both in terms of rainfall and windspeed, as warmer oceans provide more energy for the storms (as seen with Hurricanes Harvey, Irma, and Maria in 2017) [33] (Figure 8).
- Terrestrial ecosystems are experiencing compositional and structural changes, with major adverse consequences for ecosystem services.[34]

Figure 8: Flooding in Port Arthur, Texas on August 13, 2018 after Hurricane Harvey.

at 447 (2018).

[28] Steven W. Running, *Declaration in Support of Plaintiffs, Juliana v. United States*, No. 18-36082, Doc. 21-12 (9th Cir. Feb. 7, 2019).

[29] *Id.*; A. L. Westerling, *Increasing Western US Forest Wildfire Activity: Sensitivity to Changes in the Timing of Spring*, 371 Phil. Trans. R. Soc. B 20150178 (2016).

[30] Congressional Research Service, *Wildfire Statistics* (updated Jan. 4, 2021).

[31] Kevin E. Trenberth, *Declaration in Support of Plaintiffs, Juliana v. United States*, No. 18-36082, Doc. 21-3 (9th Cir. Feb. 7, 2019).

[32] F. Belles, *America's 'One-in-1,000-Year' Rainfall Events in 2018*, The Weather Channel (Sept. 27, 2018).

[33] Kevin E. Trenberth, *Declaration in Support of Plaintiffs, Juliana v. United States*, No. 18-36082, Doc. 21-3 (9th Cir. Feb. 7, 2019).

[34] C. Nolan et al., *Past and Future Global Transformation of Terrestrial Ecosystems Under Climate Change*, 361 Science

- Terrestrial, freshwater, and marine species are experiencing a significant decrease in population size and geographic range, with some going extinct and others are facing the very real prospect of extinction – the rapid rate of extinctions has been called the sixth mass extinction.[35]
- Human health and well-being are already being affected by heat waves, floods, droughts, and extreme events; infectious diseases; and quality of air, food, and water.[36] Doctors and leading medical institutions are calling climate change a "health emergency."[37] Children are uniquely vulnerable to climate change health effects due to their higher respiratory rate, lung growth and development, immature immune system, higher metabolic demands, and immature central nervous system.[38]
- In addition to physical harm, climate change is causing mental health impacts, ranging from stress to clinical disorders such as anxiety, depression, and suicidality, due to exposure to climate events, displacement, loss of income, chronic stress, and other impacts of climate change.[39]

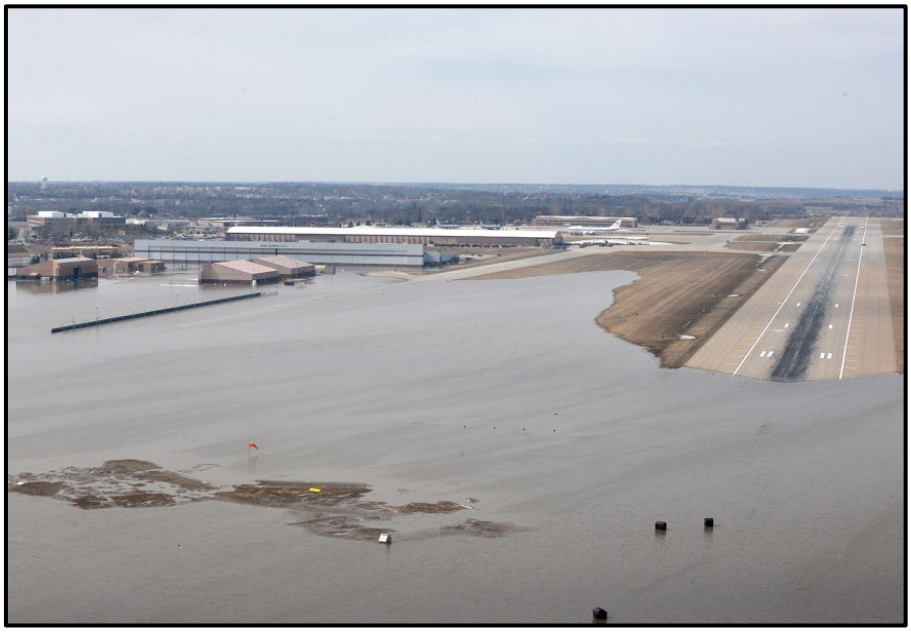

Figure 9: Offutt Air Force Base was impacted by flood waters during flooding in Nebraska during spring 2019.

- As Congress has recognized, "climate change is a direct threat to the national security of the United States and is impacting stability in areas of the world both where the United States Armed Forces are operating today, and where strategic implications for future conflict exist."[40] Senior military leaders have called climate change "*the* most serious national security threat facing our Nation

920 (2018).

[35] G. Ceballos et al., *Accelerated Modern Human–Induced Species Losses: Entering the Sixth Mass Extinction*, 1 Science Advances e1400253 (2015); Steven W. Running, *Expert Report, Juliana v. United States*, No. 6:15-cv-01517-TC, Doc. 264-1 (D. Or. June 28, 2018).

[36] K.L. Ebi et al., *Human Health, in* Impacts, Risks, and Adaptation in the United States: Fourth National Climate Assessment, Vol. II (USGCRP, 2018).

[37] C.G. Solomon & R.C. LaRocque, *Climate Change – A Health Emergency*, 380 N. Engl. J. Med. 209 (2019).

[38] S. Pacheco, *Catastrophic Effects of Climate Change on Children's Health Start before Birth*, 130 Journal of Clinical Investigation 562 (2020); C. May et al., *Northwest, in* Impacts, Risks, and Adaptation in the United States: Fourth National Climate Assessment, Vol. II (USGCRP, 2018); N. Watts et al., *The 2019 Report of The Lancet Countdown on Health and Climate Change: Ensuring that the Health of a Child Born Today is not Defined by a Changing Climate*, 394 The Lancet 1836 (2019); *Brief of Amici Curiae Public Health Experts, Public Health Organizations, and Doctors in Support of Plaintiffs*, No. 18-36082, Doc. 47 (9th Cir. Mar. 1, 2019).

[39] Lise Van Susteren, *Expert Report, Juliana v. United States*, No. 6:15-cv-01517-TC, Doc. 271-1 (D. Or. June 28, 2018). K.L. Ebi et al., *Human Health, in* Impacts, Risks, and Adaptation in the United States: Fourth National Climate Assessment, Vol. II (USGCRP, 2018).

[40] *National Defense Authorization Act for Fiscal Year 2018*, Pub. L. No. 115-91, 131 Stat. 1358.

today,"[41] a conclusion similarly recognized by our Nation's intelligence community.[42] Climate change is increasing food and water shortages, pandemic disease, conflicts over refugees and resources, and destruction to homes, land, infrastructure, and military assets, directly threatening our military personnel and the "Department of Defense's ability to defend the Nation" (see Figure 9).[43]

- Climate change is already causing vast economic harm in the United States. Since 1980 the United States has experienced 285 climate and weather disasters that each caused damages in excess of $1 billion, for a total cost of $1.875 trillion.[44] In 2018 alone, Congress appropriated more than $130 billion for weather and climate related disasters.[45]

These already serious impacts will grow in severity and will impact increasingly large numbers of people and parts of the world if CO_2 concentrations continue to rise. If we want our children and grandchildren to have a safe planet to live on, full of health and biodiversity rather than chaos and conflict, we must follow the best scientific prescription to restore Earth's energy balance and avoid the destruction of our planet's atmosphere, climate, and oceans.

INTERNATIONAL POLITICAL TARGETS OF 1.5°C OR 2°C ARE NOT SCIENCE-BASED AND ARE NOT SAFE

International treaties require the stabilization of the climate system to avoid dangerous anthropogenic climate change. As described above, EEI and CO_2 concentrations should be the measurable scientific metrics, adopted as legal standards, for setting emission reduction and sequestration targets to stabilize our climate, avoid danger, and protect children and future generations. Temperature targets, set higher than today's already-too-hot planet, which would mean an even greater and more dangerous EEI and greater instability, are incompatible with fundamental human rights. International, politically-established temperature targets like 1.5°C or "well below" 2°C – which are commonly associated with long-term atmospheric CO_2 concentrations of 425 and 450 ppm, respectively – have not been and are not presently considered safe or scientifically-sound targets for present or future generations.

Legalizing heating of 1.5°C-2°C legalizes greater dangers than we have already witnessed. It is a death sentence for young people. In fact, Sir David King, former Special Envoy for Climate Change and Chief Scientific Advisor for the United Kingdom, elaborated on the importance of 350 ppm and limiting global heating to 1°C:

> *As a key negotiator for the United Kingdom government during discussions leading up to the Paris Agreement, I advocated that 1.5°C was an acceptable level of global warming. However, I was wrong. In 2020, our planet experienced an average of 1.1°C*

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[41] Vice Admiral Lee Gunn, USN (Ret.), *Declaration in Support of Plaintiffs, Juliana v. United States*, No. 18-36082, Doc. 21-17 (9th Cir. Feb. 7, 2019) (emphasis in original); *see also* CNA Military Advisory Board, *National Security and the Accelerating Risks of Climate Change* (2014).
[42] National Intelligence Council, *Implications for US National Security of Anticipated Climate Change* (Sept. 2016).
[43] U.S. Dep't of Defense, *2014 Climate Change Adaptation Roadmap* (2014).
[44] NOAA, *Billion Dollar U.S. Weather/Climate Disasters 1980-2020* (2020), https://www.ncdc.noaa.gov/billions/events.pdf.
[45] U.S. House of Representatives Committee on the Budget, *The Budgetary Impact of Climate Change* 2 (Nov. 27, 2018).

> *of warming — much higher in some places like the Arctic -- and we experienced catastrophic weather events and climate-related disasters. These will only become more frequent, and more severe, as our emissions continue to rise. We cannot afford to negotiate what we now know is the safest level for stabilizing our climate systems: We must limit warming to less than 1.0°C as fast as possible. The 350 ppm pathways findings in studies by Jim Williams and Evolved Energy Research successfully demonstrate that the United States has clear pathways available to significantly reduce emissions, protecting the health and livelihood of their citizens while also boosting their national economies. This will crucially enable the USA to join leading nations in managing this severe challenge to humanity*.[46]

Importantly, the IPCC has never established nor endorsed a target of 1.5°C or 2°C warming as a limit below which the climate system will be stable and the energy balance restored. It is beyond the IPCC's declared mandate to endorse a particular threshold of warming as "safe" or "dangerous." As the IPCC makes clear, "each major IPCC assessment has examined the impacts of [a] multiplicity of temperature changes but has left [it to the] political processes to make decisions on which thresholds may be appropriate."[47]

Neither 1.5°C nor 2°C warming above pre-industrial levels has ever been considered "safe" from either a political or scientific point of view. The 2°C figure was originally adopted in the political arena "from a set of heuristics," and it has retained predominantly political character ever since.[48] The 2°C figure has recently been all-but-abandoned as a credible policy goal, in light of the findings in IPCC's 1.5°C Special Report, and the mounting evidence leading up to its publication, that 2°C would be catastrophic relative to lower, still-achievable levels of warming.[49]

On the other hand, the idea of a 1.5°C target was first raised by the Alliance of Small Island States (AOSIS) in the negotiations leading up to the ill-fated 2009 UNFCCC Conference of Parties in Copenhagen.[50] AOSIS, however, was explicitly advocating a *well below* 1.5°C and *well below* 350 ppm target, on the basis of the research of Dr. James Hansen and his colleagues.[51] Political compromise, including pressure from the fossil fuel industry, on this target then led to the adoption of a goal of "pursuing efforts to limit the temperature increase to 1.5°C above pre-industrial levels" in Article 2 of the Paris Agreement. Yet the 2018 IPCC Special Report on 1.5°C has made clear that allowing a temperature rise of 1.5°C:

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[46] Correspondence from Sir David King to Julia Olson (Jan. 2021) (notes on file with Julia Olson); The Do One Better! Podcast, Interview with Sir David King, https://www.lidji.org/sir-david-king.

[47] IPCC, *Climate Change 2014: Mitigation of Climate Change, Contribution of Working Group III to the Fifth Assessment Report* 125 (Cambridge University Press, 2014).

[48] S. Randalls, *History of the 2°C Temperature Target*, 1 WIREs Climate Change 598, 603 (2010); C. Jaeger & J. Jaeger, *Three Views of Two Degrees*, 11 (Suppl 1) Reg. Environ. Change S15 (2011).

[49] IPCC, *Summary for Policymakers, in* Climate Change 2014: Impacts, Adaptation, and Vulnerability, 13-14 (2014); UNFCCC, *Report on the Structured Expert Dialogue on the 2013–2015 Review*, 18 (2015), http://unfccc.int/resource/docs/2015/sb/eng/inf01.pdf; Petra Tschakert, *1.5°C or 2°C: A Conduit's View from the Science-Policy Interface at COP20 in Lima, Peru*, 2 Climate Change Responses 8 (2015); IPCC, *Global Warming of 1.5°C* (2018).

[50] *See* R. Webster, *A Brief History of the 1.5C Target*. Climate Change News (Dec. 10, 2015), http://www.climatechangenews.com/2015/12/10/a-brief-history-of-the-1-5c-target/.

[51] *Submission from Grenada on behalf of AOISIS to the Ad Hoc Working Group on Further Commitments for Annex I Parties Under the Kyoto Protocol*, U.N. Doc. FCCC/KP/AWG/2009/MISC.1/Add.1 (25 March 2009), https://unfccc.int/sites/default/files/resource/docs/2009/awg7/eng/misc01a01.pdf, citing James Hansen et al. *Target Atmospheric CO_2: Where Should Humanity Aim?* 2 The Open Atmospheric Science Journal 217 (2008).

> is **not considered 'safe'** for most nations, communities, ecosystems, and sectors and poses significant risks to natural and human systems as compared to current warming of 1°C (*high confidence*).[52]

Dr. James Hansen warns that "distinctions between pathways aimed at ~1°C and 2°C warming are much greater and more fundamental than the numbers 1°C and 2°C themselves might suggest. These fundamental distinctions make scenarios with 2°C or more global warming far more dangerous; so dangerous, we [James Hansen et al.] suggest, that aiming for the 2°C pathway would be foolhardy."[53] This target is at best the equivalent of "flip[ping] a coin in the hopes that future generations are not left with few choices beyond mere survival. This is not risk management, it is recklessness and we must do better."[54]

Tellingly, more than 80 eminent scientists from over 50 different institutions have been co-authors on publications in peer-reviewed journals finding that the maximum level of atmospheric CO_2 consistent with restoring the EEI, protecting humanity and other species is 350 ppm, and no one, including the IPCC, has published any scientific evidence to counter that 350 ppm is the maximum safe concentration of CO_2.[55]

A 1.5° OR 2°C TARGET RISKS LOCKING-IN DANGEROUS FEEDBACKS

The longer the length of time atmospheric CO_2 concentrations remain at dangerous levels (i.e., above 350 ppm) and there is an Earth energy imbalance, the risk of triggering, and locking-in, dangerous warming-driven feedback loops increases. The 1.5°C or 2°C target (linked to 425-450 ppm) reduces the likelihood that the biosphere will be able to sequester CO_2 due to carbon cycle feedbacks and shifting climate zones.[56] As Earth surface temperatures increase, forests burn and soils warm, releasing their carbon. These natural carbon "sinks" become carbon "sources" and a portion of the natural carbon sequestration necessary to drawdown excess CO_2 simply disappear. Another dangerous feedback includes the release of methane, a potent greenhouse gas, as the global tundra thaws.[57] These feedbacks might show little change in the short-term, but can hit a point of no return, even at a 1.5°C or 2°C temperature increase, which will trigger accelerated heating and sudden *and irreversible* catastrophic impacts. Moreover, an emission reduction target aimed at 2°C would "yield

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[52] J. Roy et al., *Sustainable Development, Poverty Eradication and Reducing Inequalities, in* Global Warming of 1.5°C, at 447 (2018) (emphasis added).
[53] Hansen, *Assessing "Dangerous Climate Change*," at 15.
[54] Matt Vespa, *Why 350? Climate Policy Must Aim to Stabilize Greenhouse Gases at the Level Necessary to Minimize the Risk of Catastrophic Outcomes*, 36 Ecology Law Currents 185, 186 (2009).
[55] James Hansen, et al., *Target Atmospheric CO_2: Where Should Humanity Aim?* 2 The Open Atmospheric Science Journal 217 (2008); Hansen, *Assessing "Dangerous Climate Change"*; Hansen, *Ice Melt, Sea Level Rise and Superstorms*; James Hansen, et al., *Young People's Burden: Requirement of Negative CO_2 Emissions*, 8 Earth Syst. Dynamics 577 (2017); J. Veron, et al., *The Coral Reef Crisis: The Critical Importance of <350 ppm CO_2* 58 Marine Pollution Bulletin 1428 (2009); K. Frieler, et al., *Limiting Global Warming to 2 °C is Unlikely to Save Most Coral Reefs* 3 Nature Climate Change 165 (2013); von Schuckmann, *Heat Stored in the Earth System*; Communication from James Hansen, Karina von Shuckmann to Julia Olson (2021) (notes on file with Julia Olson).
[56] Hansen, *Assessing "Dangerous Climate Change,"* at 15, 20.
[57] *Id*.

a larger eventual warming because of slow feedbacks, probably at least 3°C."[58] Once a temperature increase of 2°C is reached, there will already be "additional climate change 'in the pipeline' even without further change of atmospheric composition."[59]

THE BEST AVAILABLE SCIENCE REQUIRES US TO REDUCE CO_2 LEVELS TO <350 PPM BY 2100

There are two steps to reducing CO_2 levels to <350 ppm by the end of the century: 1) reducing CO_2 emissions; and separately 2) sequestering excess CO_2 already in the atmosphere (carbon drawdown). Carbon dioxide emission reductions of approximately 80% by 2030 and close to 100% by 2050 (in addition to the requisite CO_2 sequestration) are necessary to be on track to an atmospheric CO_2 concentration to 350 ppm, restoring energy balance, and keeping long-term warming to below 1°C above preindustrial temperatures. Politically-motivated emission reduction targets that seek to reduce CO_2 emissions by only 80% by 2050 are consistent with an atmospheric CO_2 concentration of 450 ppm and long-term warming of 2°C, which, as described above, would result in catastrophic and irreversible impacts for the climate system and oceans.

IT IS TECHNOLOGICALLY AND ECONOMICALLY FEASIBLE TO REDUCE EMISSIONS IN LINE WITH 350 PPM BY 2100

Importantly, it is economically and technologically feasible to transition the entire U.S. energy system to a zero-CO_2 energy system by 2050 and to drawdown the excess CO_2 in the atmosphere through reforestation and carbon sequestration in soils.[60]

Deep Decarbonization Pathways Project and Evolved Energy Research recently completed research and very sophisticated modeling describing a nearly complete phase out of fossil fuels in the U.S. by 2050.[61] They describe six different technologically feasible pathways to drastically, and quickly, cut our reliance on fossil fuels and achieve the requisite level of emissions reductions in the U.S. while meeting our nation's forecasted energy needs. All of the 350 ppm pathways rely on four pillars of action: a) investment in energy efficiency; b) electrification of everything that can be electrified; c) shifting to very low-carbon and primarily renewable electricity generation; and d) carbon dioxide capture as fossil fuels are phased out. The six scenarios are used to evaluate the ability to meet the targets even absent one key technology. For example, one scenario describes a route to 350 ppm absent construction of new nuclear facilities; another illustrates getting to 350 ppm with extremely limited biomass technology; still another describes a way to 350 ppm without any carbon capture and storage. Even absent a key technology, each of these six routes are viable and cost effective.

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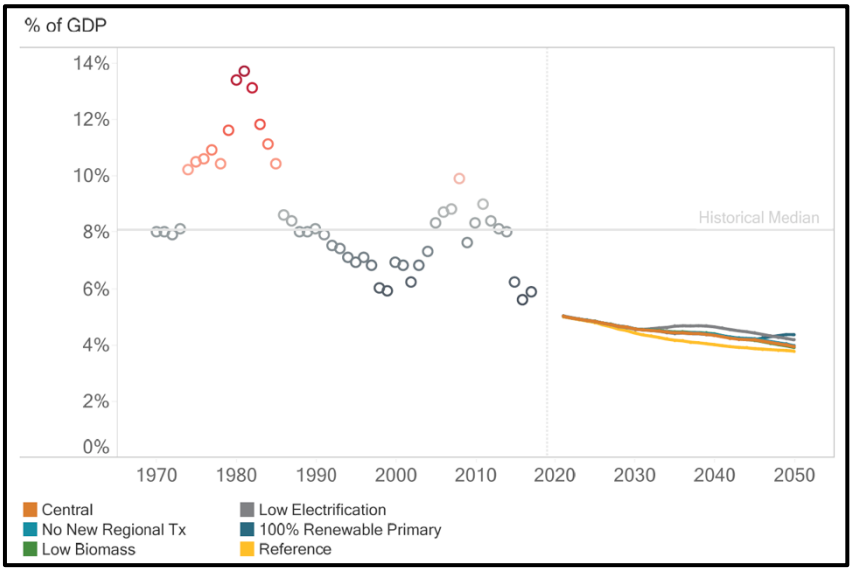
[58] *Id*. at 15.
[59] *Id*. at 19.
[60] *See* Mark Z. Jacobson et al., *100% Clean and Renewable Wind, Water, and Sunlight (WWS) All-Sector Energy Roadmaps for the 50 United States,* 8 Energy & Envtl. Sci. 2093 (2015) (for plans on how the United States and over 100 other countries can transition to a 100% renewable energy economy see www.thesolutionsproject.org); *see also* Arjun Makhijani, *Carbon-Free, Nuclear-Free: A Roadmap for U.S. Energy Policy* (2007); B. Haley et al., *350 ppm Pathways for the United States* (2019); James Williams et al., *Carbon-Neutral Pathways for the United States*, 2 AGU Advances e2020AV000284 (2021).
[61] B. Haley et al., *350 ppm Pathways for the United States* (2019).

A related 2021 study concludes that emissions reductions consistent with a 350 ppm trajectory by 2100 can be done at low net cost, substantially lower than estimates for less ambitious 80% by 2050 scenarios a few years ago due to recent declines in solar, wind, and vehicle battery prices.[62] The cost would be well below the 9.5% of GDP spent on the energy system in 2009 (not to mention well below the harm to the economy caused by climate change). (Figure 10)[63] Once the transition is complete, the cost of energy will remain low and stable because we will no longer be dependent on volatile global fossil fuel markets for our energy supplies. As Nobel Laureate Economist Dr. Joseph Stiglitz has stated: "[t]he benefits of making choices today that limit the economic costs of climate change far outweigh any economic costs associated with limiting our use of fossil fuels."[64]



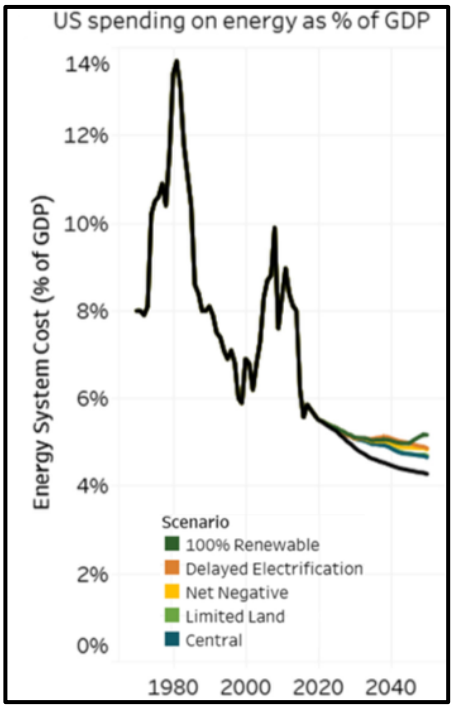


Figure 10: Historic and projected costs of energy in the U.S. as percentage of GDP.

Other experts have already prepared plans for all 50 U.S. states as well as for over 139 countries that demonstrate the technological and economic feasibility of transitioning off of fossil fuels toward 100% of energy, for all energy sectors, from clean and renewable energy sources: wind, water, and sunlight by 2050 (with 80% reductions in fossil fuels by 2030).[65]

Products already exist that enable new construction or retrofits that result in zero greenhouse gas buildings. We have the technology to meet all electricity needs with zero-emission electric generation. We know how to achieve zero-emission transportation, including aviation. These actions result in other benefits, such as improved health, job creation, and savings on energy costs.

The amount of natural carbon sequestration required is also proven to be feasible. Researchers have evaluated the potential to drawdown excess carbon dioxide in the atmosphere by increasing the carbon

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[62] James Williams et al., *Carbon-Neutral Pathways for the United States*, 2 AGU Advances e2020AV000284 (2021).
[63] *Id*., Ben Haley et al., *350 ppm Pathways for Florida, Technical Supplement* (2020).
[64] Joseph E. Stiglitz, Ph.D., *Declaration in Support of Plaintiffs, Juliana v. United States*, No. 18-36082, Doc. 21-14 (9th Cir. Feb. 7, 2019).
[65] Mark Z. Jacobson et al., *100% Clean and Renewable Wind, Water, and Sunlight (WWS) All-Sector Energy Roadmaps for the 50 United States,* 8 Energy & Envtl. Sci. 2093 (2015). For a graphic depicting the overview of the plan for the United States see: https://thesolutionsproject.org/why-clean-energy/#/map/countries/location/USA.

stored in forests, soils, and wetlands, and have found significant potential for these natural systems to support a return to 350 ppm by the end of the century.[66] We know the agricultural, rangeland, wetland, and forest management practices that decrease greenhouse gas emissions and increase sequestration.

There is no scientific, technological, or economic reason to *not* adopt a <350 ppm and 1°C by 2100 target. There are abundant reasons for doing so, not the least of which is to do our best through human laws to respect the laws of nature and create a safe and healthy world for children and future generations.

A NOTE ON "NET ZERO"

The politically popular concept of "net zero" allows governments to zero out a percentage of ongoing fossil fuel emissions by counting them as "sequestered" through removal processes, such as biogenic or natural sequestration in carbon sinks, leaving a smaller amount of source "net emissions" to be reduced. However, in order to align emissions and sequestration with a <350 ppm standard, carbon removed through natural sequestration in sinks must be used to draw down the excess CO_2 already in the atmosphere from cumulative historic emissions, not to provide a negative credit or offset for ongoing emissions. Emissions and sequestration must be accounted and inventoried separately with separate standards for each category.[67] A "net zero" emissions target is a shell game with little accountability, detached from a precise standard for protection of fundamental rights and restoration of Earth's energy balance.

[66] Benson W. Griscom et al., *Natural Climate Solutions,* 114 Proceedings of the National Academies of Sciences 11645 (2017); Joseph E. Fargione et al., *Natural Climate Solutions for the United States,* 4 Science Advances eaat1869 (2018).
[67] D. McLaren et al., *Beyond "Net-Zero": A Case for Separate Targets for Emissions Reduction and Negative Emissions*, Front. Clim. (2019).