Alaska Venture Fund

Managing Alaska's Federal Public Lands for Climate Benefit

Pathways to reduce carbon emissions and increase carbon sequestration on federal public lands in Alaska

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Abstract

Alaska is a globally significant carbon sink, containing more than half of the United States' total carbon in its forests, soils, permafrost, and peatlands. The vast majority of these carbon stores are located on public lands, which comprise nearly 90% of the state's landmass.[1] The management of millions of acres of federal public lands in Alaska will play a critical role in adapting to climate change and mitigating its impacts. Yet at present, there is no legal framework for federal land management directing for the management of public lands for climate benefit. Simultaneously, the country and state's carbon sinks are decreasing and emissions are not declining quickly enough — between 1990 and 2022, the county's carbon sink decreased by 12.5%.[2] Meanwhile, a study from the US Geological Survey estimates that about 25% of national emissions come from federal lands.[3] As a result, federal land managers often grapple with how to prioritize the need for climate strategy without clear directive or incentive to do so. This grey area thus demands the question, "What existing US laws and authorities could or have been used to help reduce or avoid emissions on public lands?" In synthesizing existing literature, and speaking with Alaska-specific public land and climate experts, this paper seeks to lay a foundation for managing Alaska's public lands for climate benefit. Key informants are experts with previous experience in land management, federal land law, and public lands conservation, each of whom has experience working on these issues in Alaska specifically. Interviewees include:

- **Susan Jane Brown,** Principal & Chief Legal Counsel, Silvix Resources; Former Senior Attorney, Western Environmental Law Center.
- **Steven Cohn,** Former Alaska State Director, Bureau of Land Management.
- **Karen DiBari,** Principal, Karen DiBari Consulting; Former Vice President of Collaboration and Community Partnerships, National Forest Foundation.
- **Karen Hardigg,** Principal, Hardigg Consulting, LLC; Former Tongass Transition Framework Coordinator.
- **Meryl Harrell,** Former Deputy Under Secretary for Natural Resources and Environment, U.S. Department of Agriculture.
- **Natalie Landreth,** Partner, Nashoba Consulting; Former Deputy Solicitor for Land Resources, Department of the Interior.
- **Maija Lukin,** Executive Director, Alaska Nannut Co-Management Council; Former Alaska Native Tribal Affairs Manager for the Alaska Region and Superintendent of Western Arctic National Parklands, NPS.
- **Peter Nelson,** Principal, Overstory Strategies; Former Director of Federal Lands Program, Defenders of Wildlife.
- **Jimmy Fox,** Retired USFWS Refuge Manager.

Introduction

Alaska is a globally significant carbon sink, containing more than half of the United States' total carbon in its forests, soils, permafrost, and peatlands. The vast majority of these carbon stores are located on public lands, which comprise nearly 90% of the state's landmass. In the age of climate change, these carbon reserves are more critical to protect than ever. At the same time, Alaska is among the fastest warming regions in the world, which poses unprecedented vulnerabilities to its carbon stores. Northern latitudes are warming two to four times as fast as the rest of the planet, and in warmer, drier conditions wildfires have increased in frequency and severity, burning on average 1 million acres annually in Alaska, with some peak years burning over 6.5 million acres (greater than the size of Vermont).[4] Direct emissions from wildfire and subsequent permafrost thaw have become the two largest drivers of carbon loss in the state.[5,6] As one interviewee for this project aptly stated, in Alaska, public lands and climate change are inextricable largely because of this specific issue.

Alaskan wildfires are threatening some of the most intact, carbon-rich ecosystems in the world. Alaska has more intact ecosystems than any other state, with 95% of its ecosystems considered highly intact.[7] These intact ecosystems play an outsized role in carbon sequestration, especially those in Alaska's boreal forests and temperate rainforests. Due to poor drainage and cold climates, Alaska's ecosystems have sequestered outsized amounts of carbon for millennia and today, over 90% of the state's carbon (totalling 77 Gt) resides below ground in its soils and permafrost.[7] Of particular concern is Yedoma, an ancient, carbon-dense permafrost which can release significant amounts of methane, one of the most potent greenhouse gases.[8,9] Yedoma is also ice-rich, which means that it is particularly vulnerable to post-fire thaw. On a global scale, permafrost holds roughly twice the amount of carbon as the atmosphere, and four times the amount of carbon that humans have emitted since the industrial revolution.[10]

As wildfire intensity and severity increases, they burn deeper into soil, stripping away duff – the layer of organic matter above mineral soil which acts as insulation for permafrost. Without duff, permafrost becomes exposed to increasingly warmer temperatures and begins to thaw, releasing trapped greenhouse gases and carbon into the atmosphere. As a result, the impacts will likely be intense, unpredictable, and irreversible if even a fraction of carbon trapped in permafrost is released. Scientists at Woodwell Climate Research Center estimate that wildfire and permafrost emissions across the Arctic could cut the Intergovernmental Panel on Climate Change's (IPCC) remaining carbon budget for limiting warming to 1.5-2°C by about 5-10%.[11]

Given the enormous climatic stakes, the management of millions of acres of federal public lands in Alaska will play a pivotal role in adapting to climate change within Alaska, and mitigating its impacts globally. However, at present, there are no federal land laws that direct the management of public lands for climate benefit. The United States' decades-old public land laws — the National Environmental Policy Act (1969), the Endangered Species Act (1973), the National Forest Management Act (1976) and the Federal Land Policy and Management Act (1976), and the National Park Service Organic Act, among others — still dictate public land use decision making despite all being passed over 50 years ago. These laws require federal land managers to consider factors like environmental impacts, endangered species livelihoods, and protecting multiple land uses and sustained yields, which involves methodical, lengthy decision-making review, environmental assessments and community feedback. Despite their

thoroughness, they fail to mention climate change specifically, as they came about while climate change science was in its infancy. These laws and the agencies they govern thus prioritize methodology over nimblessness and adaptability, and are not equipped to make decisions in the face of rapid evolutions in climate change science and worsening impacts of climate change. Therefore, land managers tasked with stewarding public lands for broad goals like sustainable yield and multiple use mandates may grapple with how to prioritize broad sweeping climate goals alongside other, more specific, legally enforceable land use interests: from mining, drilling, and timber harvesting to habitat for endangered species and water quality protection.

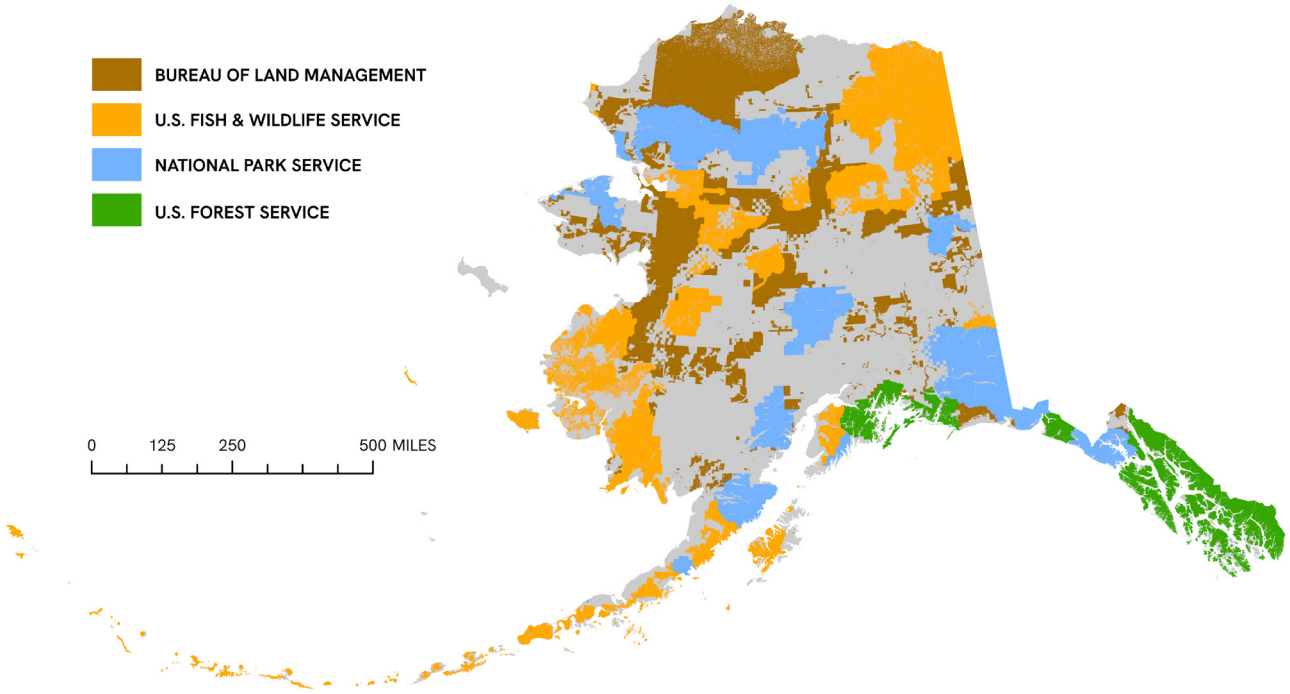
Simultaneously, the past year has seen major rollbacks in federal land protections and efforts to limit public engagement in the land use decision process. The unified federal government is pressuring multiple development proposals on public lands in Alaska at the same time, placing Alaskan public lands prominently in the international spotlight. For the first time in its 30 year history, the Congressional Review Act is being used to conduct a massive overhaul of federal lands protections. The Trump administration has also revoked the endangerment finding, and rolled back the process for calculating the social cost of carbon which together form the basis for climate mitigation policies.[12] The government has also cut about 35% of funding for public lands agencies, significantly reducing their capacity to comply with existing, statutory goals of ecological integrity outlined in decades-old land laws, as well as newer, agency-level guidance directing for climate change adaptation.[13]

This heated political moment combined with intensifying climate impacts on Alaska's public lands — from temperature rise, wildfires, permafrost thaw, landslides, glacier melt and more — represents an unprecedented collision that demands innovative public lands policy that incorporates the realities of climate change while acknowledging the reality of the federal policy landscape. At its core, this combination presents one central question: are existing US laws and authorities sufficient to address mounting climate concerns? If not, how might policymakers go about restructuring foundational public lands laws? If so, what existing US laws and authorities could or have been used to help reduce or avoid emissions on public lands? Further, if federal land managers agree that climate change is occurring, what barriers do they face in climate decision making in their roles?

An abundance of literature exists assessing the opportunities for carbon emissions sequestration and emissions reductions on public lands across the four major land management agencies — the Bureau of Land Management (BLM), the National Forest Service (USFS), the National Park Service (NPS), and the U.S. Fish and Wildlife Service (USFWS) — and multiple studies have assessed the factors causing federal land managers to prioritize climate change, or not, in decision making. However, most of these studies focus on public lands in the lower 48, and fail to adequately address the scale, potential, and nuance of climate action on Alaska's public lands. In synthesizing existing literature, and speaking with Alaska-specific public land and climate experts, this paper seeks to lay a foundation for managing Alaska's public lands for climate benefit. Key informants are experts with previous experience in land management, federal land law, and public lands conservation, each of whom has experience working on these issues in Alaska specifically.

Overview of Federal Land Agencies

Within the United States government, several agencies manage land, but four — the Bureau of Land Management, the United States Forest Service, the National Parks Service, and the United States Fish and Wildlife Service — manage 95% of federal land, totalling about 640 million acres.[14]



Timeline of Federal Public Land Legislation		
1916	National Park Service Organic Act	Calls for the conservation of scenery, conservation of historic objects and wildlife, and to leave them unimpaired for the enjoyment of future generations.[15]
1960	Multiple-Use Sustained Yield Act	Mandates that national forests be administered for multiple use and sustained yield of the several products and services including recreation, range, timber, watershed, and wildlife and fish.[16]
1964	Wilderness Act	Established the National Wilderness Preservation System, giving Congress the authority to designate public land as wilderness, under which basically all uses are restricted.[17]
1966	National Wildlife Refuge System Administration Act	Established a National Wildlife Refuge System with the mission of conserving wildlife, but permits the use of system lands for other uses if compatible with the purpose for which those areas were established.[18]

1969	National Environmental Policy Act (NEPA)	Requires federal actions that are likely to have an adverse impact on the human environment report the potential environmental impacts and those of reasoned alternatives that could be pursued instead.[19]
1971	Alaska Native Claims Settlement Act	Largest land claims settlement in U.S. history, extinguishing aboriginal land titles in Alaska in exchange for roughly 44 million acres of land and $962.5 million in compensation. It established 12 for-profit regional corporations and over 200 village corporations to manage these assets for Native shareholders.[20]
1973	Endangered Species Act (ESA)	Requires federal agencies to consider the effect of any proposed action on threatened or endangered species or its habitat.[21]
1976	National Forest Management Act	Directs the Forest Service to follow a host of substantive standards in its activities, to formulate and review national, regional, and forest plans in cooperation with the public and local, state, and other federal agencies.[22]
1976	Federal Land Policy and Management Act (FLPMA)	Establishes multiple-use, sustained yield as the guiding principle for Bureau of Land Management (BLM) lands and ends the long-standing assumption that public lands would eventually be privatized. Includes requirements for land-use planning and public participation.[23]
1980	Alaska National Interest Lands Conservation Act (ANILCA)	Protects 104 million acres in Alaska (national parks, refuges, wilderness), making it the largest land conservation act in U.S. history. Established rural subsistence priority for rural and Indigenous communities. Established 10 new national park units, seven new National Wildlife Refuges and created new guidelines establishing the purpose of NWRs to conserve fish and wildlife populations and habitats in their natural diversity.[24]

Bureau of Land Management

The BLM manages the largest share of federal lands — approximately 244 million acres, about 70 million of which are in Alaska's interior and North Slope.[14,25] In this region, wildfire in boreal forests, permafrost thaw, and fossil fuel drilling are the most prominent sources of emissions, and hold the greatest opportunity for emissions reduction. In fact, fossil fuels extracted from BLM lands in Alaska and elsewhere generate approximately 24% of national carbon dioxide emissions.[3]

The BLM's mission is dictated by FLPMA, which requires the agency to manage its lands for "multiple use and sustained yield".[26] The statute lists "recreation, range, timber, minerals, watershed, wildlife and fish, and natural scenic, scientific, and historical values", as well as the need to manage land for "domestic sources of minerals, food, timber, and fiber" as its purpose. FLPMA requires BLM to

implement regulations and plans for the protection of "areas of critical environmental concern", which are defined as areas where special management is required to protect historic, cultural, or scenic values, fish and wildlife resources, and other natural systems and processes. FLPMA also requires BLM to prevent "unnecessary or undue degradation" and protect "air and atmospheric" values.[27]

Although conservation and environmental protection are not listed explicitly as "multiple uses" under FLPMA, a couple of federal circuit cases have held that conservation is a "use" in FLPMA. In 2023, the BLM proposed a Conservation and Landscape Health Rule, known as the Public Lands Rule, which effectively added conservation to the list of multiple use priorities. The rule recognizes that ecosystem resilience is essential to realizing the BLM's core goals of multiple uses and sustained yield, and it formalizes regulatory tools for protecting intact, functioning ecosystems, restoring degraded ecosystems, and using science and data as the foundation for management decisions across all plans and programs. The BLM finalized the Public Lands Rule on April 18, 2024, but under the Trump administration, in September 2025, it announced its intention to rescind the rule in its entirety.[28,29] As of May 2026, the rule has been rescinded.[30]

A unique component of BLM lands in Alaska is that a large portion are explicitly protected from extractive activities. In 1971, the federal government passed the Alaska Native Claims Settlement Act (ANCSA), which was primarily designed to settle Alaska Native land claims. In section 17(d)(1) of the law, Congress ordered for the temporary withdrawal of all 57 million unreserved federal lands in Alaska from mining, oil, and gas development, to allow the Secretary of the Interior to determine whether the land, much of which serves a critical role in subsistence livelihoods, cultural, and historical preservation, should remain withdrawn for the public interest.[31] These lands became known as "d(1) lands" or "D-1 lands". These lands have remained the center of land rights and land conveyance issues. The state of Alaska has over selected almost 12 million acres as "priority lands" for eventual conveyance to the state of Alaska. However, as BLM lands, they provide federal subsistence priority for rural Alaskan communities. Many rural and Alaska Native communities continue to use these lands for traditional hunting, fishing and gathering activities.

In its final days, the first Trump administration moved to end D-1 protections and lift the federal withdrawal status.[32] Later, the Biden administration ruled this action unlawful, citing a BLM analysis that found that lifting all or even some of the withdrawals could have lasting negative impacts on wildlife, vegetation, subsistence and permafrost. Subsequently, in 2024, the Biden administration finalized a decision to retain all D-1 protections for the 28 million acres.

CURRENT ISSUES FACING BLM LANDS

Like other agency lands, BLM lands have been subject to political turmoil in recent years. As for Alaska's D-1 lands, which the Biden administration took steps to protect, the second Trump administration has signaled interest in reversing many of those actions, and since the lands are not protected by congressional statute, they continue to exist in a precarious legal situation, subject to shifting administrations.[33]

The National Petroleum Reserve-Alaska (NPR-A), an Indiana-sized portion of Alaska's North Slope, is the focus of much of this tension.[34] Whereas the Biden administration placed a temporary moratorium on oil leases in the National Petroleum Reserve-Alaska (NPR-A), in October 2025, the BLM under the

Trump administration began accepting nominations for areas in NPR-A for future lease sales. The call for nominations coincided with rollbacks on protections in the area under a Congressional Review Act resolution. By spring of 2026, the sale had generated $163 million in bids, beating the $104 million mark set during 1999 during the Clinton administration.[35] According to Kevin Pendergast, Alaska State Director of the BLM, the results were the strongest the NPR-A has ever seen by every measure. However, much of the land auctioned off during the sale has been protected for decades, including the area around Teshekpuk Lake, the world's largest thermokarst lake which provides critical habitat for caribou and migratory bird populations.[36]

The area around Teshekpuk lake has been hotly contested in recent years with the planning of the Willow project. The Willow Project, as proposed by ConnocoPhillips, would be the single largest oil extraction project proposed on federal lands, estimated to add more than 250 million metric tons of CO2 to the atmosphere over the next 33 years — the equivalent of 66 coal fired power plants.[37] The Biden administration approved the Willow Project in 2024, with the inclusion of provisions that would protect Teshekpuk Lake. The BLM granted a 1-million-acre right-of-way to Nuiqsut Trilateral Inc. to protect the Teshekpuk Caribou Herd and provide both Kuupik Corporation and Village of Nuiqsut rights to access lands for caribou hunting and other harvesting activities.[38]

In early 2026, the Department of the Interior approved ConocoPhillips' proposal for a one-year exploration program which included areas within the right-of-way area, posing threats to wildlife and subsistence livelihoods.[39] Iñupiat-led grassroots organizations and conservation groups have filed a lawsuit seeking to overturn the Trump administration's approval of the program.

Fossil fuel extraction on BLM lands in Alaska continually attracts overwhelming amounts of national and international attention. In 2023, the "Stop Willow" campaign protesting the Biden administration's imminent approval of the Willow Project garnered over 5.6 million comments to federal decision makers.[40] Despite receiving so much support, the campaign took place too late, as one interviewee described, when the decision had already effectively been made. Timing aside, the campaign framed the issue as binary, limiting room for negotiation and compromise.

While the fight against climate change often focuses on stopping fossil fuel extraction, which offers a clear and sympathetic narrative with easily identified 'villains,' the real emissions magnitude and accelerating potential of wildfires on BLM lands is often overlooked. Much of Alaska's carbon-rich, boreal forests in the interior are located on BLM lands, USFWS, and NPS lands, giving the three agencies outsized power in preserving critical carbon stores. For instance, according to one interviewee, the carbon released through emissions and loss of carbon sequestering vegetation during a single severe fire season could exceed the total lifetime emissions of a project like Willow. Despite promising research using initial attack resources to safeguard Yedoma permafrost and avoid compounding carbon emissions in the Yukon Flats National Wildlife Refuge, currently, permafrost and carbon are not required to be deliberately protected by the BLM Alaska Fire Service, the State of Alaska Division of Forestry & Fire Protection Alaska, or the US Forest Service — the three entities charged with firefighting in different regions of the state which together operate under the Alaska Interagency Fire Management Plan. The interagency plan outlines wildfire management options based on specific Values at Risk (VAR) which communities deem valuable and which are expected to be negatively impacted by wildfire.[41] Currently, carbon and permafrost are not considered VAR, and areas with the most carbon rich permafrost — by virtue of their low population and property densities — tend to rank low on the Alaska Interagency Fire

Management Plan's priority areas.[42] Thus, wildfire protection agencies are not incentivized to protect carbon and permafrost against wildfires, however detrimental their loss may be to the climate, unless their location happens to align with other VAR, such as human life or property.

Alaska is severely limited in its firefighting capacity relative to the high risk that fire poses to communities and ecosystems. Because of the size and remote locations of many of Alaska's biggest wildfires, the state is heavily dependent on firefighting resources from the air. The current BLM fire planning facility is on Fort Wainwright near Fairbanks, which means that firefighting planes compete with the military for the airstrip. One interviewee described that oftentimes, when firefighting planes need to leave to fight a fire, they have to wait because the military has an operation or training planned.

U.S. Forest Service

The USFS manages approximately 193 million acres of land, about 22 million of which are in Southcentral and Southeast Alaska.[14,43] The Tongass National Forest in Southeast Alaska is the largest U.S. National Forest, and the largest intact temperate rainforest at nearly 17 million acres. The Forest Service was originally established in 1905, with the goal of protecting forests for future harvesting. Similarly to FLPMA for the BLM, the National Forest Management Act of 1976 established a multiple use mandate for national forests.[21] Today, the main uses of Forest Service land include timber production, recreation, watershed protection, wildlife habitat, and protected areas. In the United States as a whole, forest loss due to timber harvesting is a primary driver of the country's shrinking carbon sink.[44] In Alaska, the largest threat to carbon storage on Forest Service lands is also timber harvesting, since wildfire is less prevalent in the wetter Southeast and Southcentral parts of the state.

Like the BLM, the USFS also lacks clear guidance on how carbon and climate management fit into the USFS's multiple use mandate.

In 2011, the Forest Service published the National Roadmap for Responding to Climate Change which outlines non-enforceable pathways for the Forest Service to take action on climate change.[45,46] Along these lines, in 2012, the Forest Service passed the legally enforceable Forest Service Planning Rule, which requires the Forest Service to work with state, local, and tribal partners to create plans that meet a wide range of community needs.[47] The rule requires consideration of the best readily available information concerning climate change stressors, including climate vulnerability assessments and climate change reporting, in the forest planning process. The rule acknowledges that without accommodating for, and then adapting to, climate impacts, forests will not realize their full potential of ecosystem services.

While long term carbon storage is coherent with some multiple use goals, in practice, climate goals are not likely to be considered at the order of other priorities under current guidelines, even with the existence of the 2012 Planning Rule and the Roadmap. Experts have argued that in order to achieve greater climate resilience and climate mitigation, forest carbon sequestration goals must align with related goals for ecological sustainability, ecological integrity, and resilience, because climate alone is not a great enough concern to prioritize above other interests.[48]

CURRENT ISSUES FACING USFS LANDS

The 1997 Tongass Management Plan was written during an era when Southeast Alaska's economy still centered around clear-cut logging. Since then, the region's economic interests have shifted to tourism, government services, fishing, and small businesses, and at the same time, Southeast communities and ecosystems have begun to witness the impacts of climate change — a factor that wasn't mentioned in the first Tongass Management Plan. Development of the new plan began in 2024 and should conclude in 2027. At the end of 2025, the Forest Service published its assessment for the Tongass Forest Plan Revision, which, as required by the 2012 Planning Rule, includes assessments of several ecological components, including carbon stocks.[49] At the end of 2025, the Trump administration's trade deal with China reopened the Tongass to international exports, creating a new market for newly harvestable trees.

One interviewee who is currently working on the Tongass Forest Plan Revision, explained that although the new assessment includes carbon stock measures, the agency is not required to optimize or focus on carbon in forest management. In 2025, the Forest Service fired over 3,400 workers, reducing the agency's workforce by about 10%.[50] The interviewee predicts that this decrease in capacity will result in the neglect of certain tasks such as climate change adaptation and mitigation, which are already discouraged by the Trump administration.

Reductions in staffing are not the only action of the Trump administration impacting the Forest Service. In March of 2025, President Trump signed Executive Order 14225 directed expanded timber production, and in April, Secretary of Agriculture Brooke Rollins announced a Secretarial Memorandum to increase timber production and designate an emergency situation on national forest system lands.

In June, Rollins announced that the federal government would rescind the Roadless Rule.[51] Since 2001, the Roadless Rule has protected millions of acres of intact forest, limiting access to timber harvesting. The decision to rescind the rule would open 9 million acres of the Tongass (92% of the forest) to road-building, and subsequent development and logging, thereby reducing the forest's ability to sequester substantial amounts of carbon.[52] The Rule was initially rolled back in 2020 during the first Trump administration and reinstated by the Biden administration in 2023.[53] A draft environmental impact statement is set to come from the US Department of Agriculture in March of 2026 and the rule-making process is set to conclude by the end of the year.

Since then, the EPA has expanded the 2022 Construction General Permit to all Lands of Exclusive Federal Jurisdiction, making it easier to provide permits subject to Clean Water Act requirements.

U.S. Fish and Wildlife Service

The USFWS manages 89 million acres of land, 78 million acres of which are in Alaska across 16 wildlife refuges.[54,55] Unlike BLM and USFS lands, USFWS lands are exclusively managed to conserve, protect, and enhance fish, wildlife, plants, and their habitats, as mandated by the National Wildlife Refuge System Administration Act of 1966. The law includes a deference clause, which outlines that in cases where the conservation mandate conflicts with original founding missions of specific refuges, the founding mission of specific refuges should take precedence. The Endangered Species Act and the Migratory Bird Treaty Act are also directly relevant to the management of refuges.

A 2022 study by Zhu et al. quantified the enormous carbon stores of Alaska wildlife refuges.[56] At 48,643 grams of carbon per square meter, Alaska's refuges collectively hold by far the most carbon stores of any region (the second most carbon-rich region is the Northeast, at 19,287 gCm^{-2}. Within Alaska, older refuges hold significantly more carbon than newer refuges, suggesting that long-term federal protection has contributed to a stabilization, and in some cases accumulation, of carbon stocks over time. The study also analyzes the economic cost of carbon emission. Notably, by this metric, Yukon Flats is the country's single largest carbon emitter, emitting enough carbon each year to cause an estimated $285 million in climate damages annually. Conversely, Alaska Peninsula National Wildlife Refuge sequesters the most carbon of any refuge in the country, amounting to an estimated $130 million in avoided damages.

CURRENT ISSUES FACING USFWS LANDS

In President Trump's first term, his administration became the first to open the coastal plain of the Arctic National Wildlife Refuge to oil and gas drilling. In January 2021, the BLM held the first lease sale for the region, though industry interest was limited — seven leases went to the Alaska Industrial Development and Export Authority, a state-owned investment bank, bringing in a fraction of projected revenues. When Biden took office later that month, he placed a 60-day moratorium on new oil and gas leasing on public lands and subsequently moved to cancel those leases outright. In 2024, the Biden administration passed a leasing plan which placed 1.6 million acres of the Arctic National Wildlife Refuge off-limits to potential drilling development; a second lease sale held in January 2025 drew no bids.[57,58]

Upon returning to office, Trump issued an executive order rescinding the Biden-era rules, and Interior Secretary Doug Burgum announced plans to open the entire coastal plain to leasing. Using the Congressional Review Act, in December 2025, the Senate voted to strip the protections, opening new areas to drilling, and Trump signed the measure into law. Conservation groups and the Gwich'in people, whose communities border the refuge, have mounted ongoing legal challenges.[59]

Like the BLM, fossil fuel extraction on National Wildlife Refuges receive abundant public attention, yet wildfire on USFWS lands represents an equal, if not greater threat to the agency's carbon stores and the global climate.

National Park Service

The NPS manages 80 million acres of land, 52 million of which are in Alaska across eight parks.[14] More than 90% of those lands have some wilderness protection, limiting what types of activities can occur on them.[60] The Park Service, as directed by the National Park Service Organic Act, operates under a dual mandate: to conserve natural and cultural resources and scenery, provide for their enjoyment by the public, and provide for the same enjoyment by future generations.[14]

CURRENT ISSUES FACING NPS LANDS

So far, Alaska's national parks have not faced threats from the Trump administration to sell off portions of parks or open new areas to development. Regardless, parks face major capacity and funding

challenges, especially as they face intensifying climate impacts. As of 2020, it was estimated that national parks had accrued a maintenance backlog amounting to an estimated $24 billion and about $122 million in Alaska alone.[61,62]

Since the park system operates under a dual mandate, its anthropogenic emissions are minor compared to land agencies that allow timber harvesting, mining, and fossil fuel development. The emissions from buildings, transportation, and other human activities in Alaska's national parks are negligible compared to the substantial emissions caused by wildfire and subsequent permafrost thaw. However, like the rest of the state, parks face intensifying impacts of climate change.

Denali National Park, Alaska's most frequented national park, offers a clear example of climate change's effects on public lands. The Pretty Rocks landslide, which lies at mile 45 of the Denali Park Highway has been active since the 1960s.[63] The landslide, caused by thawing permafrost, caused minor, reparable cracks in the road until 2014, when accelerating permafrost thaw caused the landslide to move increasingly quickly. By 2021, the slide began moving at a rate of inches per hour and in August of that year, 300 feet of the road dropped suddenly, rendering the road unusable. Since then, the road has only been open to mile 45, leaving the remaining 47 miles off limits to cars and buses, which has decreased tourism.[64] The estimated cost of repairs (as of November 2023) for the bridge is significant, reaching $150 million, which does not include expenses for other projects to protect vulnerable nearby parts of the road.[65] After several delays, in September 2025, construction teams pulled the final pieces of the bridge across the slide, and complete bridge construction is scheduled to conclude in July 2026.[66]

Since so much national park land in Alaska has some form of wilderness protection, parks are constricted in their attempts to adapt to climate change compared to other agencies in Alaska, and compared to other parks outside of Alaska where a lower percentage of park lands are designated as wilderness. Due to the extensive wilderness protections covering most national park land in Alaska, parks are less equipped to adapt to climate change compared to other agencies.[56] One interviewee described this as a major challenge for Denali specifically. For thousands of years, Indigenous caretakers of the land that is now the park have used the best available methods to thin the area to prevent fire spread. Today, wilderness protections prohibit use of power tools like chainsaws and motor vehicles like ATVs in most of the park.

Barriers to Federal Land Management for Climate Change

Facing shifting public views on climate change, contradictory directives, competing land management priorities, and all the while witnessing on-the-ground impacts of climate change, federal land managers face tensions over if, and how, to prioritize climate change in land management planning. While public forests hold higher average carbon stocks than private lands, there remains a lack of comprehensive assessment regarding the full carbon sequestration potential of U.S. public lands.[44] Furthermore, realizing the potential for increasing sequestration or reducing emissions requires navigating a complex web of economic, biological, and sociopolitical factors. An abundance of literature, largely focused on the Western continental United States, has sought to understand how agency staff grapple with these priorities in practice.

Extensive surveys and interviews conducted by Lisa Dilling, a climate adaptation expert, and colleagues, with federal land managers across Colorado, Utah, and Wyoming reveal that while agency staff are generally aware of the carbon sequestration potential of public lands and the need for both climate adaptation and mitigation, they are constrained in their ability to integrate climate considerations into land management by systemic barriers.

In order to assess the progress of different agencies in implementing climate change adaptation strategies, climate adaptation experts Susanne Moser and Julia Ekstrom developed a framework, which places agencies in one of three stages: understanding, planning, and management.[67] The understanding phase is defined by problem recognition and awareness. The planning phase involves the development, assessment, and selection of adaptation options. The management phase involves implementation of the chosen options, and monitoring and evaluating the outcomes of those choices.

In their 2012 article, Archie et al. apply Moser and Ekstrom's adaptation process framework to federal land management agencies.[68] Their findings demonstrate that federal agencies, at the time, were scattered across the "understanding" and "planning" phases, with implementation of actual climate plans remaining remarkably rare. Their findings suggest the USFWS appears the furthest along in the planning stage, while agencies like the NPS remain in the understanding phase, and the BLM's efforts land in the planning phase.

Across these studies, researchers identify several consistent barriers preventing federal land managers from actively managing public lands for climate benefit. The interviewees for this project tended to echo the primary hurdles presented by Dilling et al. which are as follows:

The Multiple-Use Mandate and Competing Interests

A primary challenge for the BLM and USFS is balancing carbon management against the backdrop of multiple-use mandates established by laws like the Federal Land Policy and Management Act (FLPMA) and the National Forest Management Act (NFMA), both of 1976. In their 2012 article, "Managing United States public lands in response to climate change", Ellenwood et al. note that public land managers operate in a decision space filled with competing and often incompatible land uses, such as timber, oil and gas extraction, and recreation.[69] Any impetus for carbon storage must be weighed against these legally enforceable values and understood in terms of necessary tradeoffs. Furthermore, their research reveals that some managers perceive prioritizing carbon storage might conflict with other ecological goals, such as returning forests to a healthy state.

Interviewees who have experience working on forest plans cited this as one of the main barriers to integrating climate planning. When asked about the prevalence of 'climate' and 'carbon' mentions in forest planning convenings and roundtables, interviewees expressed that for the majority of their careers, the topics were never mentioned. Even today, as increasing numbers of Americans express concern over climate change, Ellenwood et al found that the topics are rarely mentioned in Forest Service land management plan meetings, a theme echoed by multiple interviewees for this project.[70]

There is no doubt that many forest planning practitioners and stakeholders are concerned about climate change and recognize the role that national forests could play in mitigating its impacts. However, interviewees, alongside existing research, suggested that other more concrete, special interests related

to conservation almost always take precedence. Concerns like the protection of a specific species or ecosystem service are more granular, have more actionable steps and objectives, and usually have a more immediate impact on local populations, relative to the broader goal of slowing the impacts of climate change. These values are not necessarily more important or impactful, but since they are more singular and sometimes more immediately tangible, they tend to take precedence. They also have greater representation — one interviewee said that while several local nonprofits may advocate on behalf of old growth forests, water quality, and wildlife protections, there are rarely local stakeholders devoted to climate specifically.

Local economic concerns also often take priority. One interviewee recently conducted a survey of stakeholders in the North Western United States, and found that many respondents were more concerned with pressing issues, like local economic resilience, than climate and conservation. The same interviewee said that they try not to mention climate and carbon in planning convenings because the topics are perceived as conceptual, intellectual, and overwhelming.

Ultimately, economic resilience, species protection, and other conservation values all depend on a sustainable climate future, but that in forest planning, that intersection rarely takes precedence over the immediacy of more specific concerns. One interviewee said that when their forest conservation-focused organization was advocating for the protection of an insect that can only live at cooler, higher altitudes, a funder questioned their approach, arguing that with the progression of climate change, the insect may have no habitat at all. Instead, the funder argued, the organization should be focused on climate adaptation strategies, such as introducing nonnative climate adapted species. The interviewee was surprised by this critique, because it challenged the notion that conservation is inherently beneficial to the climate.

Lack of Clear Agency Directives and Federal Policy Signals

Without distinct policies, mandates, or incentives promoting carbon management, Ellenwood et al. observed that managers are hesitant to incorporate climate considerations into their decision-making. Because federal public land managers are career civil servants, Dilling and Failey explain in their 2013 article that they are often reluctant to "stick their necks out" without the protection and guidance of a clear federal policy framework.[71] Staff across all agencies consistently point to a lack of specific agency direction as a major hurdle to implementation.

At the Forest Service and the BLM, confusion over multiple use mandates and lack of a clear policy directive go hand in hand. One interviewee said that the main factor that causes climate interests to be ignored in Forest Service planning convenings is the lack of a tangible directive from the federal government. Although the Forest Service has published its National Roadmap for Climate Change, the interviewee, who has worked on forest convenings for over 20 years, said they had never heard of the road map, much less heard of it mentioned in a planning working group.

On the other hand, a different interviewee said that the 2012 Forest Service Planning Rule, which is an enforceable regulation, has had a tangible impact in the way that plans are created, specifically thanks to its prioritization of "ecological integrity".[46]

Often, the existence and subsequent successes of certain interest groups is because of landmark federal environmental laws — the Endangered Species Act, the Clean Air Act, and the Clean Water Act

— that validated their concerns and made their priorities legally enforceable. The Inflation Reduction Act, the largest single source of public funding for climate projects thus far, allocated resources for climate impact, but did not create a legal framework that could support ongoing climate advocacy.[72]

Scientific Uncertainty and the Need for Usable Science

Federal agencies rely heavily on the "best available science" to make robust decisions, particularly under the requirements of the National Environmental Policy Act (NEPA). However, a frequent complaint among land managers, as documented by Dilling and Failey, is that scientific research is often produced without an awareness of the actual regulatory decision space or coordination with land managers themselves, making the information difficult to apply. Land managers emphasized that there is a critical need for usable science created in collaboration with agency managers.

Multiple interviewees echoed this concern. Within the Forest Service, special interest groups at forest planning convenings advocating for the protection of specific species or ecosystem value often bolster their arguments with years of localized studies. Carbon and climate advocacy groups often lack the same depth and specificity of scientific evidence. Instead, climate advocates come off as too conceptual, and often it's easier for forest planning to accommodate specific interests.

At the BLM, one interviewee emphasized the potential impact of greater scientific understanding of permafrost reserves in Alaska's interior. They mentioned that in the past, when scientific evidence of the impact of permafrost thaw from wildfire has been brought to state and federal administrators, the scientific evidence has left a strong impression on government officials.

Financial Constraints and Lack of Personnel

Ellenwood at al. identify funding and staff resource limitations as severe internal constraints. Proactive climate management strategies, such as forest thinning and prescribed burns to reduce wildfire fuels, are very costly and may exceed agency resources. Furthermore, choosing where to administer these treatments is financially risky due to the unpredictability of wildfires and the low market value of the thinned timber.

In addition, fire suppression for permafrost protection adds to the existing high costs of fire control in Alaska. One interviewee mentioned that in his work advocating for the Alaska Fire Service to consider permafrost in the values they protect, some members of the Fire Service were most concerned with the added risk to human life that comes with fighting more, larger fires.

These concerns are particularly pertinent in 2026, following federal budget cuts and the termination of thousands of agency positions. Interviewees expressed that this reduction in capacity across agencies will likely diminish the attention given to particular issues deemed unimportant by the Trump administration, of which climate change is one. Multiple interviewees predicts that recent decreases in capacity across agencies will result in the neglect of certain tasks such as climate change adaptation and mitigation, which are already discouraged by the Trump administration.[49]

Public Controversy and the Threat of Litigation

Public land management is highly susceptible to constituent pressure and litigation. Dilling, Birdsey, and Pan highlight that decisions are frequently challenged in court, leading agencies to make choices primarily to avoid legal battles. While public involvement in decision-making is mandated and generally viewed positively, it can also prevent the application of nuanced management strategies if public perception does not align with the scientific necessity of the action, such as opposition to tree thinning. Furthermore, Dilling and Failey indicate that deeply held values, rather than a mere lack of education, drive public opposition to these changes.Archie et al. reinforce these findings, confirming that hurdles to implementation are heavily tied to public demand, budget constraints, and risk aversion consistent with the findings of other Dilling publications.[67]

None of the interviewees consulted for this project expressed a specific concern of their agencies being sued for incorporating climate considerations, however, almost every interviewee mentioned the contentious nature of the current political environment, and the way that it has and will continue to impact decision making, by instilling a fear of retribution in the form of terminating workers. In response to this, some interviewees expressed a preference for using existing legal frameworks to advocate for carbon and climate values, an approach that they described as 'surgical'. Others expressed a preference for waiting for a new presidential administration to take action, and in the meantime, convening experts to brainstorm innovative public land policies with climate at the center.

Paths Forward for Alaska's Federal Lands

Given evidence from prior research alongside themes and ideas derived from interviews for this project, there are multiple approaches to managing Alaska's public lands for climate adaptation and mitigation. These approaches fit broadly into two categories: agency-specific, pragmatic, realistic, and specific strategies that make progress using current regulatory and legislative frameworks; and visionary, imaginative, overhauling, and idealistic approaches that would require major changes to the decades-old policies that govern federal lands decision making in the United States.

Agency-Specific Opportunities

BUREAU OF LAND MANAGEMENT

Legal scholars have argued that BLM has not only the authority, but a legal duty under FLPMA to incorporate climate science into its permitting decisions. In their 2021 article, Jamie Pleune, John Ruple, and Nada Culver argue that FLPMA's requirements to avoid "permanent impairment" and "unnecessary or undue degradation" obligate the BLM — as an asset manager with a multigenerational investment horizon — to account for climate risk in oil and gas permitting. Rather than calling for a leasing ban outright, the authors propose four pathways to limiting emissions on BLM lands: a net-zero requirement as a condition of operational approval, a leasing moratorium, updates to land use plans, and mitigation at the permitting stage.[26] They also argue that under NEPA, the BLM should be required to analyze the cumulative effects of its decisions, including downstream combustion emissions, rather

than disregarding them as speculative. The authors propose four pathways to limiting emissions on BLM lands: a net-zero proposal, a leasing moratorium, updating land use plans, and mitigation at the permitting stage.

Multiple interviewees expressed the need for more funding for firefighting on BLM lands, from fuels reduction and thinning in high vulnerability areas, to on-the-ground capacity building, and scientific research. One interviewee mentioned that creating more permafrost vulnerability maps for lands in Alaska is a critical next step in identifying specific areas of concern. Once there are robust vulnerability maps that illustrate the stakes of wildfire in the interior, the interviewee predicts that public understanding and valuation will follow. In tandem, the vulnerability maps can launch conversations about how to govern for permafrost protection.

In Alaska, firefighting duties are split between the federal government, which is responsible for firefighting in the northern parts of the state including the interior, and the state, which is responsible for fighting fires in the southern parts of the state. This collaborative structure is unique to Alaska. Since Alaska's state government faces ongoing fiscal challenges, funding for firefighting infrastructure is rarely prioritized. Thus, the BLM often steps in to fight fires outside of its region when the state is strapped for capacity. The state's constrained fiscal situation heightens the importance of federal support for firefighting.

As to what federal funding could support, one interviewee mentioned the potential impact of building a new facility for the Alaska Interagency Coordination Center, also referred to as the 'fire hub'. The current BLM fire planning facility is on Fort Wainwright, which means that firefighting planes compete with the military for the airstrip. The BLM has eyed a parcel of undeveloped land near Fairbanks International Airport for a new building, which is currently owned by the state Department of Transportation, where they could build a new fire planning facility, which would cost $300 million — a large sum, but potentially one that, if given enough political attention and advocacy (spurred and supplemented by science in the form of vulnerability maps, for example) could feasibly be passed.

U.S. FOREST SERVICE

One interviewee, who advocated for a "surgical" approach to integrating climate policy in U.S. forest planning, expressed that an overhaul of federal land policy would be polarizing and inefficient. Just as other legal scholars have argued that "multiple use" can and should take on a new meaning in the age of climate change, this interviewee proposes that the "ecological integrity" clause of the 2012 Forest Service Planning Rule should be used as a "handhold" for climate action. One interviewee stressed the importance of including climate directly into the National Environmental Policy Act (NEPA) "Purpose and Need" statements as a solution to this grey area.

Multiple interviewees also emphasized the importance of forest collaboratives in incorporating non-agency opinions and expertise into forest planning processes. Interviewees also mentioned that especially with the Forest Service's capacity reduced, outside organizations can supplement scientific expertise and knowledge around specific issues that would otherwise be left to agency staff

In 2025, the 9th American Forest Congress took place in Washington, DC, convening hundreds of experts in conversation about the future of American forests.[73] Multiple interviewees cited this event as critical in beginning to reimagine agency-specific opportunities and responses to climate change and carbon management.

U.S. FISH AND WILDLIFE SERVICE

Although the Alaska Interagency Fire Management Plan does not broadly consider permafrost a value at risk for firefighting purposes, in the Yukon Flats National Wildlife Refuge, scientists and land managers have taken steps to incorporate permafrost into fire planning.

In 2022, Woodwell Climate Research Center researchers, alongside colleagues at the Union of Concerned Scientists, published a study quantifying the threat boreal wildfire poses to global carbon budgets.[74] Working in collaboration with the Alaska Fire Science Consortium and the USFWS Regional Fire Ecologist, refuge managers used that research to justify a pilot covering 1.6 million acres of intact Yedoma, under which Alaska Fire Service crews respond to fires within designated polygons only when 100% containment within 72 hours is judged achievable. According to another interviewee, the total possible emissions from those mapped areas, including direct wildfire emissions and emissions from permafrost loss, would be greater than the lifetime emissions from the Willow Project.

The Woodwell study also found that targeted fire suppression in boreal Alaska could cost less than thirteen dollars per ton of CO2 avoided — competitive with onshore wind and utility-scale solar.[75] Like the Zhu et al study, which estimated the cost of climate damages due to carbon lost in Yukon Flats to be $285 million per year, these quantifications of the social costs of carbon loss have a potentially critical role to play in setting the stakes for permafrost-integrated wildfire policymaking.

The initial permafrost map was produced by refining a global Yedoma distribution map to the specific topography and fire history of Yukon Flats, layering permafrost vulnerability with fire history and operational feasibility to identify where protection is both ecologically justified and logistically viable. That methodology represents a model for the kind of usable, decision-relevant science that interviewees across agencies consistently identified as missing in operational decision making. While possible, expanding this methodology to other areas of the state is less feasible due to several reasons.

One interviewee was a refuge manager at Yukon Flats at the time, and helped lead the project on the agency side. They described that in order to expand beyond Yukon Flats, the first step would be creating a detailed, statewide Yedoma map that establishes a scientific basis for prioritization. Once a priority is established, the Alaska Fire Service would need to dramatically increase capacity. Currently, the service cannot absorb additional suppression mandates without corresponding investments in both personnel and aviation. The interviewee also said that one of the main points of concern from the Fire Service during the Yukon Flats project was regarding safety and risk to firefighters, who would be required to fight a growing number of large fires.

One way to circumvent public funding challenges would be to solicit philanthropic support for private firefighting. One interviewee mentioned that in Yukon Flats, they have created relationships with a Canadian firefighting company who could contract to fight fires that do not threaten the fire service's values at risk.

Despite the cost and logistical challenges of fighting more fires and shifting values at risk, expanding values at risk designations is not as radical as it may seem — one interviewee emphasized that Alaska Native Corporations have been fighting a broader range of wildfires impacting values beyond what is currently identified in the Alaska Interagency Fire Management Plan on their own lands for years.

NATIONAL PARK SERVICE

The NPS faces a distinctive climate challenge in Alaska: its conservation mandate is the clearest of any federal land agency, and yet its capacity to act on that mandate is sometimes most constrained by wilderness protections. Given these constraints, legal scholars are envisioning paths forward that work within, and around the Park Service Organic Act.

Many legal scholars have argued that the National Park Service Organic Act — the 1916 law that establishes the Park Service's foundational mandate — is too rigid to accommodate the climate adaptation strategies that Alaska's parks increasingly demand. Legal scholars Eric Biber and Elisabeth Esposito (2016) argue that the Organic Act's core terms — "conserve," "unimpaired," and "wildlife" — are deliberately undefined, and that courts have consistently deferred to agency expertise in applying them, upholding NPS management decisions roughly 81% of the time.[76] However, in 2024, the Supreme Court overturned the 1984 *Chevron* ruling, which established deference towards agencies in cases of regulatory ambiguity. Now, Biber and Esposito's argument is on shakier ground; instead of deferring to the NPS's historical interpretation of the Organic Act, judges can exercise their own discretion in interpreting statutes, which may create more second-guessing of climate management strategies.

Their analysis also suggests that the Act already grants the Park Service wide discretion to pursue active management strategies, including prescribed fire, mechanical thinning, invasive species removal, and even assisted species migration, so long as these actions are framed as advancing the conservation and non-impairment mandates rather than facilitating recreational or commercial use. In Alaska's parks, this means that the legal ceiling for climate action is higher than commonly assumed. The more binding constraints are institutional and political: a lack of clear agency directives, diminished staffing capacity following 2025 cuts, and the practical friction imposed by wilderness designations that cover more than 90% of Alaska's NPS lands.[56]

They argue that park managers who document the climate risks to park resources and can articulate how a proposed management action would reduce those risks are actually on strong legal footing to present their case because the Organic Act's non-impairment standard is primarily procedural, meaning that courts don't require a substantive outcome from particular actions. In Alaska's parks, this means that fire management, invasive species control, and infrastructure relocation in response to permafrost thaw can all be pursued under existing authority, provided managers build a coherent administrative record. The Pretty Rocks landslide at Denali, where permafrost thaw has already severed the park's only road, is precisely the kind of documented, irreversible harm that satisfies the non-impairment analysis courts require. However, conducting the extent of fuel treatment that would actually control wildfire would require altering hundreds of millions of acres of park lands, which could be less permissible.

More broadly, Alaska's NPS units would benefit from a systematic effort to incorporate carbon and permafrost values into park management plans, using the same evidentiary framework that has proven effective for species and ecosystem protections in other contexts. As multiple interviewees for this project noted, climate and carbon rarely appear in purpose and need statements. This gap is especially consequential at the planning stage, where the administrative record is established and future litigation is either foreclosed or invited. Inserting permafrost vulnerability assessments and carbon stock data into NPS planning documents, as a parallel to the approach piloted at Yukon Flats National Wildlife Refuge, would be a concrete, tractable step that does not require new statutory authority — only the agency will to use what it already has.

Indigenous Co-Management and Co-Stewardship

Alaska's Indigenous peoples have stewarded the lands and waters that now constitute public lands for millenia, developing sophisticated stewardship practices calibrated to the ecological realities of the Arctic, boreal forest, and coastal rainforest. Indigenous knowledge is diverse and rooted in connection to specific ecosystems, however, all Alaska Native cultures have developed practices to sustain land for longevity and long-term sustainability through climate and ecosystem changes.

Many experts, including some of those interviewed for this project, advocate for a complete return of public lands to their ancestral caretakers. Land Back or rematriation is an Indigenous-led movement fighting to restore unceded ancestral lands to their Indigenous caretakers in the name of environmental sustainability, self determination, and economic well-being. From a climate perspective, Land Back may be the most effective way to promote climate resilience and mitigation. Within the current system, full Land Back would be a significant challenge, but other tools exist to promote Indigenous knowledge and practices in federal lands management.

One interviewee who has worked extensively on Indigenous land rights and federal land management, identified four primary tools available to tribes seeking greater authority over public lands: tribal consultation, co-management and co-stewardship agreements, cooperating agency status under NEPA, and Indian Self-Determination and Education Assistance Act (ISDEAA) contracts and compacts, known as 638 contracts.[77]

1. TRIBAL CONSULTATION

Tribal consultation is a formal, government-to-government communication, mandated by Executive Order 13175 in 2000. Tribal consultation is triggered when a federal agency's action directly affects tribes.[78]

While historically implemented inconsistently, tribal consultation has been strengthened by a growing body of case law requiring that consultation occur early in the decision-making process rather than as a procedural formality after a project has been approved. This shift has meaningfully expanded Indigenous participation in land management. In Alaska, where federal decisions about wildfire management, oil and gas leasing, and forest planning have profound consequences for Indigenous subsistence livelihoods and cultural practices and global climate stability, robust tribal consultation can serve as a mechanism for introducing carbon, climate, and ecosystem protection into agency decision-making processes where these values might otherwise be overlooked.

2. CO-MANAGEMENT AND CO-STEWARDSHIP AGREEMENTS

Co-management and co-stewardship agreements offer a more structural form of shared authority. Both frameworks allow for meaningful sharing of management responsibility over federal lands. Several co-management and co-stewardship agreements already exist between the federal government and Alaska Native Tribes.

Co-management agreements involve legal changes to land agency regulations that allow tribes decision-making power alongside the federal government. One interviewee said that the process of creating a

co-management agreement can take years to enact, which they pointed out is ironic given that Alaska Natives have, in many cases, conducted the same activities for thousands of years without need for approval from the U.S. government. Co-management agreements are supported by several federal laws, including ANILCA, and Secretarial Order 3403 of 2021.[79]

Co-stewardship agreements support the integration of Indigenous knowledge, understanding, and practices into federal land management without legal changes to federal land regulation or decision-making authority. The Biden administration formalized co-stewardship agreements with the signing of Joint Secretarial Order 3403. Since then, Tribes, Alaska Native Corporations, consortiums, and the federal government have engaged in over 400 co-stewardship agreements.[80]

3. COOPERATING AGENCY STATUS UNDER NEPA

Available to tribal governments, cooperating agency status offers a less visible but potentially powerful tool. By participating as a cooperating agency in federal planning processes, tribes gain early access to draft documents, scientific studies, and internal deliberations, allowing them to shape environmental analyses before they are finalized. In a planning landscape where carbon and permafrost rarely appear in purpose and need statements — as multiple interviewees for this project confirmed — Indigenous cooperating agencies could be among the most effective voices for inserting those values into the administrative record.

4. 638 CONTRACTS

Finally, 638 contracts have demonstrated that tribes can assume direct management responsibilities for federal lands with striking results. In Alaska, where federal agency staffing has been dramatically reduced and the Interior is under pressure to accelerate extractive permitting, 638 contracts could offer a mechanism for Indigenous communities to assume stewardship of lands and resources that federal agencies no longer have the capacity to manage adequately — and to do so in ways that center subsistence, ecological integrity, and long-term carbon protection.

Significant barriers remain. The Public Lands Rule's enforceable tribal consultation provisions are currently targeted for rescission. The adjacency requirements that limit 638 contracting to forests near reservation boundaries are particularly ill-suited to Alaska's political geography, where many Indigenous communities hold a variety of land types such as regional and village corporation lands, townsite lands, allotments, trust lands and even fee simple lands. And the broad invocation of the non-delegation doctrine by federal agencies continues to constrain the scope of what co-management agreements can authorize in practice.

Nevertheless, these tools are available now, and tribes in Alaska have demonstrated both the legal standing and the ecological knowledge to use them effectively. In a policy environment hostile to top-down climate mandates, Indigenous co-management may represent one of the most durable and locally legitimate pathways for protecting Alaska's public land carbon stores.

Rethinking Policy

Multiple interviewees, who have across multiple federal land agencies, said that in order to make meaningful progress on climate issues, the major public land laws need to be revisited. Although the current political environment is not ripe for major reforms in the name of climate change, interviewees argued that laying the groundwork for change now will allow meaningful restructuring to take place once a new administration is established.

In February 2026, a group of public lands experts (including some of the interviewees for this project) helped to launch Ground Shift, a forum and convening platform to reimagine public land policy for the modern age.[81] As of April 2026, Ground Shift has published a series of essays exploring innovating paths for reshaping American land policy.

Many essays propose revisiting the processes that created many of the country's foundational lands policies. In 1964, following the passage of The Wilderness Act, the Public Lands Law Review Commission convened a 34-member advisory council, testimony from over a thousand people at 16 public meetings, and dozens of background reports in order to inform the next age of public lands management.[82,83] This marked the fourth time that the United States held a bipartisan convening on the management of its public lands, with previous convenings taking place in 1879, 1903, and 1930. What emerged were agencies and laws designed to follow concrete decision making methodology that is inclusive of environmental, cultural, and economic interests. The pace of these convenings over the past 150 years has not matched the rate of environmental change during the same period of time. Despite the fact that four convenings took place between 1879 and 1964, there have been no major reevaluations since 1964. Experts argue that the country is overdue for a similar convening and solicitation of public feedback on public lands management in the age of climate change.

However, one interviewee highlighted that such a commission may take too long, contradicting the climate urgency that necessitates such drastic changes. This interviewee said that instead, conversations should happen now, so that under a new administration or new congress, experts can propose a fleshed out, bipartisan proposal, with little grey area.

Land policy experts have also begun considering what changes to land policy could emerge from such a convening. For example, some argue from a shift away from multiple use mandates towards single use mandates which could streamline planning and public input processes.[84] Under FLPMA and NFMA's lengthy public input processes, several landscapes go decades without an updated land use management plan. Capacity and funding challenges exacerbate these existing inefficiencies. The Tongass is a perfect example: facing delays in updating its 1997 management plan while simultaneously confronting the impacts of climate change. Shifting to a single use system would avoid issues of inefficiency caused by FLPMA and the National Forest Management Act's multiple use and community feedback processes.

Similarly, one interviewee for this project said they are advocating for a repeal of all existing multiple use laws, and replacement with a single federal statute that centers ecological integrity as the dominant use mandate for all federal lands. These lands would all be consolidated under a single department. This interviewee argued that focusing on ecological integrity would allow for the statue to be more locally-tailorable and place-based, and would encourage practitioners to seek out the best-available science to guide their decision making. Any reforms designed to increase place-based decision making will likely benefit Alaska, the unique environment of which requires specific management strategies.

Conclusion

In Alaska, public lands span much more than an administrative category. They are essential to subsistence livelihoods, the foundation of Indigenous cultural identity, and the engine of the state's tourist economy centered around intact landscapes, and they are also the underpinning of huge segments of Alaska's resource economy — in oil, gas, and mineral development and timber harvesting. The groups who inhabit, steward, and depend on these lands are a constituency that doesn't map neatly onto national environmental politics.

This context, coupled with the intensification of climate impacts — both globally, and especially in Alaska — calls for either a reexamination, or restructuring of the laws that dictate carbon and climate management. Given accelerating climate impacts, the importance of this reevaluation is heightened in Alaska, where rapid warming, vast carbon-rich permafrost, and vast federal land holdings create high stakes and enormous opportunity for climate action. Interviews with experts have emphasized this imperative, highlighted specific constraints to climate mitigation, and outlined potential paths forward. These opportunities fall into four general categories, which could be pursued individually or combined, to chart a path forward. Further research and conversations could expand on any of these four areas.

Building on Existing Frameworks: The first strategy involves using handholds and climate-informed interpretations of clauses within existing policies. Some interviewees argued that the major federal land and environmental laws dictating federal land management are broad enough in their mandates to encompass, and guide action on evolving modern issues like climate change.

National-Scale Overhaul: The second philosophy counters the first, and rather than continuing to rely on existing policies and ideas, proposes that the United States needs an upheaval of its land policy. This camp argues that the challenges posed by climate change are too large, too urgent, and too novel to fall within the purview of existing statute. Rather than theorize new interpretations of each agency's guiding statute, these interviewees called for a new paradigm which reimagines the multiple-use vs single use mandate structure, and considers how climate might be integrated into use mandates.

These first two strategies — which aim to encourage the use of best available science to inform place-based climate and carbon decision-making, would likely serve to benefit Alaska specifically, which, at present, is overlooked by policymakers focused on the lower 48.

A New Era of Devolved Federal Management: The third group of ideas promotes a proliferation of Indigenous sovereignty and input in public lands management. Although a full return of Indigenous ownership of federal lands is less realistic, other methods like tribal consultation, co-stewardship, co-management can serve as a proxy for full land back or rematriation. Given Alaska's unique land management structure, the state has the opportunity to serve as a role model for the country with agreements and tribal consultation integrated into the management of all public land holdings.

Fit-for-Purpose Alaska Solutions: Finally, pieces of conversations with interviewees and existing projects have demonstrated the potential for Alaska-specific solutions that don't rely on federal policy, and instead imagine paths forward for Alaska that solicit private funding or internal support by demonstrating a tremendous need. The Yukon Flats permafrost mapping project and subsequent wildfire pilot project demonstrate this potential. This Alaskan-exceptionalism frame of mind could also yield a reworking of Alaska-specific land laws, like ANILCA.

Taken together, these four strategies — shaped by the experience of those living and working on Alaska's public lands — reflect two fundamental gaps at the heart of the state's public lands challenge. The first is the gap between the scale of what is at stake and the pace at which policy is evolving. The second is the gap between the lived experience of Alaskans and policymakers in Washington, D.C. The common thread running through all four , whether they pursue incremental legal interpretation, wholesale statutory reform, deepened Indigenous authority, or Alaska-specific innovation, is the need to make climate and carbon legible within the decision-making frameworks that govern these lands.

Despite the consensus emerging around these four pathways, they are each untenable in the current environment. The first, building on existing frameworks, as highlighted by interviewees, is vulnerable to administrative backlash. The second, a national-scale overhaul, would be more feasible under a different congressional and administrative context. Teams at several think tanks are working on strategies to implement it in the future. The third can be achieved through existing structures, and may be the most feasible of the three, however, many tribes are already overstretched in capacity, and may not have the resources to devote to coordinating co stewardship and co management agreements. Additionally, the current administration is less likely to agree to arrangements that explicitly champion climate, biodiversity, and other sustainability goals. The fourth pathway, fit-for-purpose Alaska solutions would require major financial investments from Congress and Alaska stakeholders, but may provide the most clear path to decouple Alaska from broader national dysfunction.

Alaska's sheer size, its disproportionate share of the country's carbon stores, and the acuity of its climate impacts make it both the most urgent and the most consequential testing ground for the next generation of American land policy. Without one obvious path forward, laying the groundwork for each one in order to take action in moments of opportunity may be the best road ahead.

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