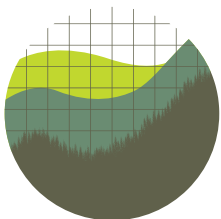




Look Before You Lease

*Reducing Fossil Fuel Dominance on Public Lands
by Accounting for Option Value*



Institute for
Policy Integrity

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Executive Summary

The Department of the Interior's (Interior) practice of leasing public lands for energy development has been criticized in recent years for failing to deliver a fair return to taxpayers, for unduly prioritizing fossil fuel development over environmental preservation, and for contributing to climate change. During the Trump administration, Interior's flawed fossil fuel leasing system has also led to an uptick in speculative leasing, whereby private oil and gas companies purchase leases at very low cost, enabling them to time production decisions to be privately optimal, as opposed to publicly optimal.¹ Speculative leasing ties up federal land for mineral resource production, often making that land unavailable for other beneficial uses including wildlife protection, ecosystem conservation, recreation, reforestation, and renewable energy production.

In 2017, more than 25 million acres of onshore federal land were devoted to oil and gas leases,² but fewer than 13 million acres were actually in production.³ Moreover, nearly one-quarter of all acres leased by Interior's Bureau of Land Management (BLM) in the past decade were obtained through noncompetitive leasing, for just \$2 per acre.⁴ Private oil and natural gas companies engage in the practice of speculative leasing, at least in part, because they account for option value in their leasing and production decisions. Option value is the informational value gained by delaying decisions that are characterized by uncertainty and irreversibility, such as when and on what terms to sell or develop mineral resources. While private energy companies routinely account for option value, which explains the phenomenon of speculative leasing, the federal government currently fails to account for option value in its public land management processes, resulting in suboptimal environmental, social, and economic outcomes for the American public, to whom these lands belong.

The Trump administration's goal of "energy dominance" has increased the rate and amount of public lands available for oil and gas development, but without any effort to modernize the leasing system.⁵ BLM's mineral resource leasing program has long been criticized for lack of competition for leases, low bid prices, low royalty rates, and failure to account for the option value of leasing.⁶ The nearly 12 million acres of land made available for bidding in fiscal year 2017 was more than *three times* the average acreage from the last four years of the Obama administration.⁷ At the same time, the American West is losing natural lands at a rapid clip: a football-field-sized natural area every two and a half minutes.⁸ And nearly a quarter of the country's total greenhouse gas emissions come from public lands, due to fossil fuel extraction, transportation, and consumption of those resources.⁹

The environmental and social effects of the recent escalation in oil and gas leasing are myriad, and often, the full extent of these effects is uncertain. As just one example, recent analysis found that 60 percent of oil and gas leases offered in the West by the Trump administration are in areas of high water stress, posing a potential threat to the water security of farmers, ranchers, and local communities.¹⁰ And continuing to lease public lands for fossil fuel extraction exacerbates climate risks, including more frequent and severe droughts and floods, accelerated melting of glaciers, and sea level rise.¹¹ Yet, even as leading scientific reports warn of the severe dangers of continuing a "business as usual" approach to fossil fuel production and consumption, BLM—under the Trump administration—is irrationally rushing to sell even more public land for mineral extraction.

This report explains how option value can and should be factored into BLM's land use planning and lease sale processes. By being far more strategic about timing and resource tradeoffs, BLM could significantly improve its public land stewardship, better protect environmental values, and regain some of the economic and strategic advantages that it has ceded to private developers. This report proceeds in five parts.

Part I introduces the concept of option value and elaborates on its relevance in the context of natural resources policy. Notably, while Interior's Bureau of Ocean Energy Management (BOEM) has taken initial steps to account for option value in offshore leasing, BLM has yet to do the same for onshore leasing. However, there are a number of ways in which option value is relevant to BLM's decisionmaking and land use management.

Part II summarizes the statutory framework that informs BLM's onshore energy leasing, focusing on the Federal Land Policy and Management Act's (FLPMA) principles of multiple use and fair market value and its regional planning requirements; lease sales held pursuant to the Mineral Leasing Act (MLA); and the parallel environmental review processes mandated by the National Environmental Policy Act (NEPA).

Part III examines the current state of BLM's land management program. Under the Trump administration, the federal government has dramatically expanded its public land lease sales, without modernizing its antiquated bidding and valuation process, and without adequately considering countervailing public land values, such as land and water conservation, carbon sink status, wilderness values, and renewable energy development.¹² At the same time, speculative leasing by private developers—many of which are multinational corporations—is on the rise, and underscores how private developers account for option value, whereas BLM fails to do so in its regional planning and lease sale processes, with undesirable consequences for the environment and federal taxpayers.

Part IV proposes recommendations for how BLM should address the foregoing issues. Accounting for option value at the regional planning stage would require BLM to make only high-potential lands, if any, available for leasing, update its regulations concerning areas of critical environmental concern (ACECs), and more robustly account for other environmental and social considerations, including managing public lands for carbon sink potential, wilderness characteristics, and energy reserves. To improve its lease sale procedures, in the event it continues leasing public lands for oil and gas extraction, BLM should account for option value when setting the fiscal terms of any new leases and setting lease stipulations, and when evaluating lease renewals, extensions, and suspensions. As a result, taxpayers would be better compensated for their relinquished public option to devote the land to an alternative use or delay leasing altogether, and companies would have less incentive to hold speculative tracts, as they would pay more for the right to do so.

Finally, Part V explores a series of case studies that illustrate the value of accounting for option value at both the regional planning and lease sale stages. The regional management plan (RMP) examples demonstrate the need for option value to be incorporated into regional planning at the outset, in order to protect environmental and social values, especially in contexts of uncertainty. For example, BLM should have considered the uncertainty surrounding potential permanent damage to paleontological resources within the Kanab Escalante Planning Area if mineral development is allowed to proceed. And in preparing its Carlsbad, New Mexico RMP, the agency should have considered the irreversible and costly consequences of opening up areas to oil and gas drilling that are already susceptible to sinkhole collapse and groundwater contamination, each of which may far outweigh the potential benefits of drilling. The lease sale case studies highlight the nearly irreversible nature of leases and the myriad costs that can be avoided if BLM were to consider option value before granting or renewing leases. For instance, in the Badger-Two Medicine case study, BLM acknowledged that it erred in leasing the parcels without more environmental analysis and cancelled them after 30 years of suspension, but the prospective developer lessees embarked on a protracted legal challenge to keep the leases. These case studies underscore the need to “look before you lease,” in order to manage public lands in the public interest, as BLM is statutorily directed to do.

I. Option Value: The Informational Value of Delay

Option value is the informational value gained by waiting to make an irreversible decision. Option value arises in situations that are characterized by two features: uncertainty and irreversibility. *Uncertainty* is present when the expected value to be derived from a given action may change, or when the costs and benefits associated with the action are subject to doubt. *Irreversibility* is present when the action cannot be undone, or when the action entails sunk costs that make the prospect of reversal highly improbable. Under these conditions, the passage of time will often reduce uncertainty about the expected value of the irreversible action, by revealing more precise details regarding its costs and benefits.¹³

Option value is present in a wide variety of settings. The concept is firmly established in economic literature,¹⁴ and a number of economists have examined its relevance to natural resources policy, specifically.¹⁵

Option value can and should play an important role in the government's approach to leasing federal lands for fossil fuel development, which is characterized by both uncertainty and irreversibility. The extraction and use of nonrenewable resources, such as coal, oil, and natural gas, cannot be undone; destruction of habitat for an endangered or threatened species may have irreparable consequences; and heat-trapping greenhouse gases released during fossil fuel extraction and consumption persist in the atmosphere for thousands of years, contributing to planetary warming and weather changes.¹⁶

BLM holds, on behalf of the American public, a perpetual option to lease its fossil fuel resources to private developers for mineral extraction. When the government sells the right to develop a tract to a private lessee, it extinguishes the perpetual option that it holds on behalf of the American people, and sells a time-limited option to a private actor, valid for the duration of the lease. A typical lease term is 5 to 10 years for the initial term of an oil or natural gas lease, and even longer if the lease is extended; moreover, producing leases are extended automatically, pursuant to regulation.¹⁷ The value associated with the option to delay can be large, especially when there is a high degree of uncertainty about price, extraction costs, and the social and environmental costs imposed by drilling.

The uncertainties associated with designating and leasing public lands for mineral resource production are numerous, and include:

- Competing uses of the public lands, including recreational activities, conservation, management as carbon sinks, renewable energy development, and cultural and tribal use;
- Environmental conditions and risks from drilling, including local pollution, greenhouse gas emissions, water use and shortages, and habitat effects;
- Future resource prices in the United States and in global energy markets;
- Current and expected effects of climate change on the ecosystem, which influence environmental sensitivities;
- Safety, pollution-capture, and other drilling technologies;
- Information on the cost of drilling in the region and bringing resources to market;
- Energy efficiency, energy conservation, and fuel economy standards that affect fossil fuel demand; and
- Laws and regulations governing drilling and development on public lands, air pollution, climate change, endangered species, and other environmental and social concerns.

As the foregoing list illustrates, a full accounting of option value incorporates economic, environmental, and social considerations.¹⁸

While private companies routinely account for option value, timing their purchasing and development decisions to be privately optimal, BLM fails to account for option value in its land use planning and lease sale processes. As a result, BLM relinquishes its option value to private developers, which gain a windfall, to the public's detriment. Option value explains the routine practice of companies purchasing tracts and waiting years to develop them, when conditions are optimal from their perspective, if they ever do develop them.

In *Center for Sustainable Economy v. Jewell*, the United States Court of Appeals for the D.C. Circuit affirmed the applicability of option value to the U.S. Bureau of Ocean Energy Management's (BOEM) offshore leasing planning process, stating:

More is learned with the passage of time: Technology improves. Drilling becomes cheaper, safer, and less environmentally damaging. Better tanker technology renders oil tanker spills less likely and less damaging. The true costs of tapping [outer continental shelf] energy resources are better understood as more becomes known about the damaging effects of fossil fuel pollutants. Development of energy efficiencies and renewable energy sources reduces the need to rely on fossil fuels. As safer techniques and more effective technologies continue to be developed, the costs associated with drilling decline. There is therefore a *tangible present economic benefit to delaying the decision to drill for fossil fuels to preserve the opportunity to see what new technologies develop and what new information comes to light*.¹⁹

The Court ultimately held that the methodology for quantifying option value was not yet “sufficiently established” to require BOEM to undertake a quantitative analysis,²⁰ but stated, “[h]ad the [quantitative] path been well worn, it might have been irrational for Interior not to follow it.”²¹ Three months before the D.C. Circuit's opinion was published, BOEM began devoting a full section of its five-year plan for offshore drilling to option value.²² And in its proposed offshore leasing plan for 2017-2022, BOEM again endorsed the use of environmental option value, and applied it extensively to future offshore lease sales in a qualitative manner.²³

The logic of the D.C. Circuit's decision is equally applicable to onshore leasing. Yet, BLM currently fails to account for option value in any manner, resulting in leasing too much public land too soon, and for too low of a price. As a result, BLM relinquishes option value to private developers who gain a windfall, to the public's detriment.

II. Background: Leasing Fossil Fuels on Federal Land

The statutory framework that controls the leasing of public lands for energy development is informed by the concepts of multiple use and fair market value. This framework directs Interior to account for environmental protection of public lands, even while fostering some mineral resource development. Yet for well over a decade, Interior has struggled to balance competing resource uses on public lands, and has too often prioritized mineral extraction over conservation and other equally important (if not more important) land uses.

A. Multiple Use and Fair Market Value Requirements

Enacted in 1976, the Federal Land Policy and Management Act (FLPMA) directs that federal land management adhere to the principles of multiple use and sustained yield.²⁴ FLPMA explains that “multiple use” requires “harmonious and coordinated management of the various resources without permanent impairment of the productivity of the land and the quality of the environment with consideration being given to the relative values of the resources and not necessarily to the combination of uses that will give the greatest economic return or the greatest unit output.”²⁵ The statute also mandates that Interior “shall, by regulation or otherwise, take any action necessary to *prevent unnecessary or undue degradation of the lands.*”²⁶

FLPMA also requires that the United States “receive fair market value of the use of the public lands and their resources unless otherwise provided for by statute.”²⁷ While “fair market value” is not defined in the statute, BLM’s economic valuation handbook defines the term as “the most probable price . . . for which the specified property rights should sell after reasonable exposure in a competitive market under all conditions requisite to fair sale, with the buyer and seller each



The Chaco Culture National Historical Park in New Mexico is rich in cultural, historical, and scientific importance. In March 2018, BLM announced that it would hold an oil and gas lease sale that included dozens of parcels close to the Park. See Part V.B.

acting prudently, knowledgeably, and for self-interest, and assuming that neither is under undue duress.”²⁸ In 1982, when Interior last convened a working group to assess its “fair market value” procedures, that group resolved that the term comprised the “value of ‘the right’ to explore and, if there is a discovery, to develop and produce the energy resource,” not merely the value of the energy resource alone.²⁹

In light of its multiple use and fair market value mandates, one might reasonably assume that BLM, acting knowledgeably and in its self-interest, would weigh economic, environmental, and social considerations in determining the value of federal lands—including option value.³⁰

Similarly, the Mineral Leasing Act of 1920 (MLA) authorizes the Secretary of the Interior to implement lease terms as deemed “necessary to insure the sale of the production of such leased lands to the United States and to the public at reasonable prices, for the protection of the interests of the United States, for the prevention of monopoly, and for the safeguarding of the public welfare.”³¹ The MLA describes a policy of fostering private enterprise in the “orderly and economic development of domestic mineral resources,”³² while also authorizing the Secretary of the Interior to issue regulations preventing “undue waste.”³³ The legislative history of MLA reveals that Congress was concerned with the waste of oil and gas. In *Boesche v. Udall*, the Supreme Court observed, “The committee reports reveal that one of the main congressional concerns was the prevention of an overly rapid consumption of oil resources that the Government, particularly the Navy, might need in the future. . . . Conservation through control was the dominant theme of the debates.”³⁴

Together, FLPMA and MLA create an oil and gas leasing framework that directs Interior to account for both environmental protection and energy development, and to pay close attention to fair market value and the prevention of waste of resources. As Part IV describes, BLM could better carry-out these statutory duties by accounting for environmental, social, and economic option value in managing public lands.

B. Land Use Planning Requirements

In order to advance the principles of multiple use and fair market value, FLPMA directs BLM to develop and revise land use plans. The statute establishes nine broad criteria that BLM must consider during this process while leaving the details to agency discretion.³⁵ BLM carries out this responsibility by crafting resource management plans (RMPs), which “are designed to guide and control future management actions and the development of subsequent, more detailed and limited scope plans for resources and uses.”³⁶

BLM must manage its lands for a variety of uses, not primarily for oil and gas development.³⁷ One of the stated goals of FLPMA is to “preserve and protect certain public lands in their natural condition.”³⁸ As the Tenth Circuit has held, “[i]t is past doubt that the principle of multiple use does not require BLM to prioritize development over other uses.”³⁹ The Court further noted, “[a] parcel of land cannot both be preserved in its natural character and mined.”⁴⁰

BLM regulations describe the objective of resource management planning as adhering to the multiple use framework:

The objective of resource management planning . . . is to maximize resource values for the public through a rational, consistently applied set of regulations and procedures which promote the concept of multiple use management and ensure participation by the public, state and local governments, Indian tribes and appropriate Federal agencies. Resource management plans are designed to guide and control future management actions and the development of subsequent, more detailed and limited scope plans for resources and uses.⁴¹

Although BLM regulations give some shape to these statutory directives, they also allow for considerable discretion.⁴² The regulations call for a decentralized process in which BLM field managers prepare and revise RMPs, with the agency's state directors providing limited oversight.⁴³

BLM's Land Use Planning Handbook supplies additional details on the steps that staff should take to produce or amend RMPs, which include the following: prepare to plan, conduct scoping, analyze the management situation, formulate and analyze the effects of alternatives, select a preferred alternative, prepare a draft RMP and draft environmental impact statement (EIS), prepare a proposed RMP and final EIS, and prepare a record of decision for an approved RMP.⁴⁴ "Multiple use" is also a guiding principle for RMPs as described in the BLM handbook.⁴⁵

Because the RMP process requires extensive coordination with state and local governments and conversations with various stakeholders, an RMP can require years to complete.⁴⁶ The planning process is "middle tier" in nature: RMPs are subordinate to national policy, but they control lower-level plans.⁴⁷

New RMPs and revisions to RMPs require BLM to prepare an EIS, as they are deemed "major Federal actions significantly affecting the quality of the human environment," which must comply with the National Environmental Policy Act (NEPA).⁴⁸ More modest amendments to RMPs require either an EIS, or more commonly, a shorter environmental assessment (EA), often followed by a finding of no significant impact (FONSI).⁴⁹

New and revised RMPs are proposed as a "Draft RMP/Draft EIS," which pursuant to NEPA, must include: 1) the proposed action's environmental impact; 2) unavoidable adverse effects of the proposed action; 3) alternatives to the proposed action; 4) the relationship between local short-term environmental uses and long-term productivity; and 5) any irreversible resource commitment the proposed action entails.⁵⁰ There is generally a 90-day comment period for the Draft RMP/Draft EIS. BLM then releases a Proposed RMP/Final EIS, and BLM must allow for a short protest period (generally 30 days) and 60-day Governor's Consistency Review period. Finally, BLM prepares a Record of Decision/Approved RMP.⁵¹

Because the RMP revision process is so closely intertwined with EIS preparation, it is an important opportunity for BLM to consider the informational value of delaying mineral development in certain areas if, for example, BLM finds that there are environmental, social, or cultural risks, uncertainties, or disadvantages to allowing resource extraction. Indeed, NEPA expressly calls for identification of any "irreversible resource commitment," as well as consideration of short-term versus long-term environmental uses and productivity. However, while commenters have requested that BLM consider a "delayed leasing" alternative in the draft RMP/Draft EIS process, BLM has yet to adopt such an approach.⁵²

Instead, in past RMPs, BLM has designated large amounts of land—including land with low or no oil and gas potential—as open to leasing. The resulting speculative leases prevent conservation of environmentally valuable areas, as well as other valuable public land uses like renewable energy development, recreation, and long-term mineral reserves.

For example, even if oil and gas tracts are not developed, the mere presence of leases often precludes BLM proactively managing the area for wilderness characteristics or important wildlife habitat. Section 201 of FLPMA requires BLM to maintain an inventory of all public lands and their resources and other values, which includes wilderness characteristics.⁵³ Land management for wilderness characteristics entails closure to motorized vehicles, timber production, roads, and mineral resource production.⁵⁴ When conducting a wilderness characteristics inventory—sometimes as part of an RMP revision process—, BLM assesses parcels for the presence or absence of wilderness characteristics including their

size (roadless areas with over 5,000 acres of contiguous BLM lands are preferred), naturalness, and outstanding opportunities for either solitude or primitive and unconfined recreation.⁵⁵ Yet in several instances, the presence of mineral leases has foreclosed BLM from managing parcels for wilderness characteristics.⁵⁶

C. Lease Sale Process

Based upon the management framework developed in the applicable RMP, BLM decides which (if any) parcels to offer to private energy developers in lease sales. If BLM decides to hold a lease sale, it must follow the requirements of MLA and all other applicable laws and regulations, including NEPA.

BLM usually prepares EAs for oil and gas lease sales, as opposed to more in-depth EISs.⁵⁷ These EAs generally have 30-day public comment windows. In preparing for a lease sale, the applicable BLM state office sends a list of land parcels, based on land nominated by the public, to the district where the parcels are located. The district staff prepares an EA, describing the affected environment and environmental consequences of each alternative considered. This analysis includes estimates of air pollutants and effects on water resources, wildlife, cultural resources, and more.⁵⁸ However, EAs are not as detailed as EISs. BLM uses reasonably foreseeable development scenarios to project the expected number of wells; acreage disturbed; emissions; and other environmental and social effects for BLM's proposed lease sale, as well as the alternatives considered in the EA, including the "no action" alternative (in which a lease sale is not held). The EAs prepared for lease sales gives BLM another opportunity to evaluate option value, including by assessing the environmental, social, and economic costs and benefits of a delayed lease sale alternative; however, BLM has not yet embraced this approach.

Based on the nominated parcels and the EA, BLM decides which parcels to make available for leasing and which protective stipulations, if any, should be attached to each parcel.⁵⁹ BLM conducts additional, site-specific NEPA analysis when an exploration or development proposal is submitted.

BLM implements the previously described "fair market value" requirement at the lease sale stage.⁶⁰ As amended in 1987, MLA sets a national minimum bid price of \$2 per acre for onshore oil and gas leases.⁶¹ BLM is obligated to accept the highest bid on a tract of land put up for auction, so long as the bid meets the national minimum.⁶² Although MLA enables the Secretary of the Interior to establish a higher national minimum bid price,⁶³ this authority has never been exercised.⁶⁴ The developer that submits the highest bid in a competitive leasing process pays the given amount, commonly called the "bonus bid," in exchange for an exclusive lease. A company in possession of a non-producing, onshore lease on public land must pay an annual rental fee of at least \$1.50 per acre during each of the first five years of the rental term, and at least \$2 per acre each subsequent year.⁶⁵ Current BLM regulations set annual rents at these statutorily provided minimums.⁶⁶ When resource production begins, the rent requirement gives way to royalty payments.⁶⁷

III. The Problem: Leasing Low-Potential Land Is a Bad Deal for the Environment and Taxpayers

With a notable exception for parcels known or suspected to possess high development potential, the fiscal terms attached to federal leases are typically undemanding, such that most lease sales bring in very modest returns for the federal government. Nonetheless, after several years of steady decline in lease offerings, the federal government has drastically expanded the availability of public lands for energy development. This shift has further incentivized the phenomenon of speculative leasing—leasing by entities with little to no expectation of producing oil or gas in the short term. Private actors engage in speculative leasing largely because they account for option value, the informational value of delay, whereas BLM does not. This failure on the part of BLM manifests in both the planning and lease sale phases, with undesirable consequences for the environment and federal taxpayers, alike.

A. Federal Onshore Leasing Practices and Recent Trends

Under BLM's federal leasing program for oil and gas development, a firm's decision whether to acquire the mineral rights for a tract of land is primarily shaped by two fiscal components: bids and annual rental payments. Using data from BLM, a 2016 report by the Congressional Budget Office offered some insight into bidding trends:

Auction results indicate that parcels vary widely in their attractiveness to bidders. Of the more than 25,000 federal leases issued between 2003 and 2012, approximately 85 percent were leased competitively, yielding bonus bids. Of those competitive leases, slightly more than one-quarter were leased at the minimum of \$2 per acre. For the other three-quarters, the median bonus bid was \$37 per acre, and the average bonus bid was \$300 per acre; the average is much higher than the median because some parcels were leased at bids above \$5,000 per acre.⁶⁸

These figures indicate that while some parcels attracted sizable bonus bids, most leases were obtained for relatively modest amounts, with approximately 20 percent of leases going for the statutory minimum of \$2 per acre. Speculative leasing is common at the low end of the price spectrum. For some developers, a low, one-time bonus bid followed by annual rental payments of \$1.50 or \$2 per acre is a small price to pay for even a small chance at discovering economically recoverable oil and gas, or at least preserving the option to explore and drill later.

The existence of speculative leasing under BLM's current leasing program is revealed by recent data. As of the end of fiscal year (FY) 2017, more than 25 million acres of federal land were locked up in oil and gas leases,⁶⁹ but fewer than 13 million acres were actually in production.⁷⁰ Thus, more than half of the land out on lease was lying idle. Industry developed only 8 percent of parcels that were leased for \$10 per acre or less in one eight-year period, compared to 25 percent of parcels that were leased for more than \$10 per acre.⁷¹

Moreover, the Trump administration's goal of "energy dominance" has entailed a significant increase in the availability of public lands for energy development.⁷² After the Obama administration steadily curtailed federal lease offerings over the course of his second term, the current administration has unequivocally reversed course: the nearly 12 million acres of land made available for bidding in FY 2017 was more than three times the average acreage from the last four years of



Proposed leasing in the Coastal Plain of the Arctic National Wildlife Refuge entails numerous risks and uncertainties, including climate change consequences, effects on endangered species, and negative effects on the Alaskan Native Gwich'in population. See Part V.B.

the Obama administration, though fewer than 800,000 acres actually received bids—less than the respective historical average from the same preceding four-year period.⁷³

Moreover, the percentage of leases being given away through noncompetitive sales surged in the first year of the Trump administration to the highest levels in over a decade.⁷⁴ In Nevada, more land is offered for lease at auction than in any other state except Alaska, but only 11% of leased parcels sold competitively in the last five years, and just 36 leases, covering 2.7% of leased acres, were producing at the end of 2018.⁷⁵ Speculative leasing is detrimental to both the environment and taxpayers, and the recent uptick in the practice of non-competitive leasing only exacerbates these issues.

B. Speculative Leasing Reveals that Private Actors Account for Option Value Where the Government Does Not

Private actors engage in speculative leasing—acquiring land that is unlikely to be developed in the near future, if ever—largely because they consider option value, whereas BLM does not. The *New York Times* recently explained the surge in speculative leasing as follows:

The plots of land the speculators bid on typically sell for such dirt-cheap prices because there is little evidence that much oil or gas is easily accessible. The buyers are hoping that the land will increase in value nonetheless, because of higher energy prices, new technologies that could make exploration and drilling more economical or the emergence of markets for other resources hidden beneath the surface.

In some cases they hope to resell access to deep-pocketed oil companies at a premium. In others they are hoping to raise money to search for oil or gas on their own. Either way, they are the latest in a long line of speculators willing to take a shot — sometimes a very long shot — at a big payoff in America's oil fields.⁷⁶

In circumstances steeped with uncertainty, speculators recognize that there is significant informational value to be gained by delay. Developers are even willing to incur costs for the benefits that additional information may afford, especially where these costs (rental fees and bonus bids) are negligible compared to the expensive prospect of drilling. Based on its examination of expired leases, the Congressional Budget Office remarked, “[m]ost leaseholders do not choose to return the lease to BLM early but instead pay the rental fee and wait to see if new information becomes available that increases the likelihood that the parcel contains oil or gas.”⁷⁷

The game of speculation is risky for private developers,⁷⁸ but perhaps more detrimental to the public. Typically, the term of a lease will expire with relatively little in the way of new information, in which case low-potential land has been excluded from playing a more beneficial environmental or social role. In the occasional cases where delay proves to enhance the value of a lease, this additional value accrues disproportionately to the private developer. In fact, the government may have been better served by waiting to lease until a later date, when more information or other intervening factors, like higher resource prices or lower exploration costs, made it more valuable.

Option value aside, additional financial incentives can also spur oil and gas companies to purchase undeveloped federal land. In a 2018 report, the Center for American Progress detailed three reasons why companies may benefit from obtaining federal land, even with little or no intention of developing it: (1) to increase their booked undeveloped reserves, which can play a role in executive compensation; (2) to secure a higher acquisition price by listing a high value of undeveloped reserves on their balance sheet; and (3) to receive more favorable lending terms on long-term loans.⁷⁹ With such incentives, and in the face of BLM indifference, public lands become a mere poker chip for private developers, to the detriment of the public interest.

C. BLM Fails to Account for Option Value in Regional Planning, at the Expense of the Environment

Despite a statutory background that requires robust attention to environmental protection, current BLM practices suggest that, in reality, development considerations often take precedence in the planning process, to the detriment of preservation. BLM often treats undeveloped leases and even mere development potential on federal lands as foreclosing action that would benefit other uses, like recreation and conservation;⁸⁰ by contrast, areas acknowledged to have significant environmental or cultural value must satisfy demanding criteria in order to be ruled off-limits for energy development due to, for example, designation as an Area of Critical Environmental Concern (ACEC) or an area with wilderness characteristics.⁸¹

FLPMA defines ACECs as follows:

[A]reas within the public lands where special management attention is required (when such areas are developed or used or where no development is required) to protect and prevent irreparable damage to important historic, cultural, or scenic values, fish and wildlife resources or other natural systems or processes, or to protect life and safety from natural hazards.⁸²

In a 2017 article, Karin Sheldon and Pamela Baldwin juxtapose the congressional vision of ACECs as a powerful conservation tool with BLM’s inconsistent treatment of this environmental designation, which results in undervaluation of ACECs in the RMP process.⁸³ The authors identify the Reagan administration’s issuance of new FLPMA regulations in 1981 as a principal source of the problem: ACECs were not yet firmly established in BLM’s land management policy at

this point, and the new regulations weakened or removed many of the relevant substantive provisions set out in the original 1979 regulations.⁸⁴ The enduring effect of the 1981 regulations is reflected in both significant deficiencies in current regulations and guidance⁸⁵ and by highly variable treatment of ACECs by BLM staff in the field.⁸⁶

BLM's apparent bias towards development is all the more problematic in light of the fact that areas with low or no potential for oil and gas development are not only frequently available for leasing in RMPs, but often *are* leased by speculators hoping to turn a profit based on the possibility that the future unfolds in their favor.⁸⁷ BLM's own guidelines suggest a presumption towards non-development uses in such areas. But in fact, BLM "tends to set less protective conditions for leasing in areas with no or low development potential" than for areas of higher potential.⁸⁸

The state of affairs appears to have further deteriorated since the Trump administration came into office, with private parties obtaining leases for large swaths of land in relatively low-potential regions like Nevada and eastern Montana, for instance.⁸⁹ These leases preclude potentially more valuable uses, such as renewable energy production or management for wilderness characteristics, while the land sits idle.

For instance, the presence of mineral leases and access roads have foreclosed areas from being managed for wilderness characteristics. In 2015, BLM released a Wilderness Characteristics Inventory Review of the Vale and Lakeview Districts. BLM found that one 15,785-acre unit was, "found to be in an unnatural condition [and therefore lacking wilderness characteristics] due mainly to mineral exploration and mining within the western portion of the unit. No attempt was made to isolate this unnatural portion of the unit from what on the map appears to be a remaining natural portion that is greater than 5,000 acres."⁹⁰ And in the Grand Junction Proposed Resource Management Plan in Colorado, BLM noted that even *undeveloped* leases on low-potential lands could interfere with management for wilderness characteristics, stating:

139,900 acres of lands with wilderness characteristics have been classified as having low, very low, or no potential. . . . While there is no potential for fluid mineral development in most of the lands with wilderness characteristics units, the majority of the areas, totaling 101,100 acres (59 percent), are already leased for oil and gas development. While stipulations for fluid mineral development may apply to these leases under Alternative A, stipulations under Alternatives B, C, and D would not retroactively apply to the existing leases, just as closing the areas to fluid mineral leasing would not apply to existing leases.⁹¹

In other words, because BLM had already leased the land for mineral development, the land might not be suitable for wilderness protection. BLM has made similar statements in other RMP processes.⁹²

In short, current BLM practices suggest that development considerations often take priority in the planning process, running counter to the "multiple use," public interest, and fair market value mandates in FLPMA and MLA.

D. BLM Fails to Account for Option Value at the Lease Sale Phase, Short-changing Taxpayers

When public lands are leased and proceed to go undeveloped, taxpayers receive payment only from the initial bid and very low annual rental payments. And, as previously discussed, bids are often trivial.⁹³ Indeed, the Congressional Budget Office determined that royalties accounted for 90 percent of the government's gross income from onshore leasing from 2005 to 2014.⁹⁴ In this light, leasing zero- and low-potential land is not in the public interest and fails to provide "fair market value" or a "reasonable price" for the use of public lands and their resources, as outlined by FLPMA and MLA, respectively.



The decades-long controversy over the Badger-Two Medicine area in Montana illustrates that leases can be challenging and costly to reverse. See Part V.B.

As amended, MLA requires that all public lands available for oil and gas leasing first be offered in a competitive sale; however, if no bids are received for the land, or the highest bid is less than the national minimum acceptable bid, the land must be offered within 30 days for noncompetitive leasing.⁹⁵ In a noncompetitive sale, the first qualified applicant is entitled to the lease upon payment of an application fee of at least \$75, with the lease to be issued within 60 days.⁹⁶ The noncompetitive leasing process deprives BLM of any bonus bid.

Recent developments suggest that noncompetitive leasing is reaching new heights. Because energy companies can nominate public lands for development, a company can nominate land, refrain from submitting a competitive bid, and then acquire the same land more cheaply in a noncompetitive sale. Leases being awarded through noncompetitive sales reportedly surged in the first year of the Trump administration to the highest levels in over a decade.⁹⁷ For example, in December 2017, a London-based oil and gas company purchased 67,000 acres of Montana land noncompetitively, paying merely annual rent of \$1.50 per acre.⁹⁸ It is likely that the public will never see any financial return on this capitulation of its natural resources to private actors; the rate of production is low even on competitively leased lands. Yet unsurprisingly, the rate of production on non-competitive leases is lower yet: the Congressional Budget Office found that “[f]or parcels leased between 1996 and 2003, all of which have reached the end of their 10-year exploration period, only about 10 percent of onshore leases issued competitively and 3 percent of those issued noncompetitively entered production.”⁹⁹

IV. BLM Should Account for Option Value in Order to Protect Federal Land and Taxpayers

By modernizing its practices to account for option value, BLM can improve public land management and better adhere to its statutory mandates. While the agency's current failure to consider option value generates negative consequences in the planning and lease sale phases, the agency can and should consider option value at each of these phases, and can do so using existing legal authority. Accounting for option value would confer a broad range of public benefits at all phases.

A. BLM Should Account for Option Value in the Resource Management Planning Process

Land use planning provides the first opportunity for BLM to weigh whether public lands should be offered for energy development leasing, and if so, on what scale. An appraisal of option value at this stage would help BLM account for the uncertainty and irreversibility that characterize leasing for energy development. Such an approach would entail at least the following three changes from current practice: (1) make only high-potential lands available for leasing, if any; (2) reform ACEC practices to give environmental protection a fair stake in planning; and (3) actively explore other means of accounting for environmental and social considerations from the outset, such as valuing carbon sink attributes in land use planning, and reserving more sites for conservation and renewable energy development.

1. *BLM Should Make Only High-Potential Lands Available for Leasing, If Any*

In order to comply with its statutory obligation to manage lands for multiple use, BLM must refrain from making zero- and low-potential lands available for energy development. These lands would then be available for more beneficial uses, such as ecosystem conservation, carbon sink purposes, renewable energy development, watershed protection, and recreation. If at some point lands believed to possess zero- or low-development potential were discovered, in fact, to have high potential, BLM could then assess whether to amend an RMP to open them for leasing, based on a higher expected resource valuation. In such a scenario, the American public would have gained by retaining the valuable option to wait to decide whether to lease the lands at a later time. Notably, BLM can adopt this recommendation under its existing authority for RMPs and land use planning, without any statutory changes.¹⁰⁰

Another benefit of eliminating zero- and low-potential lands from designation for mineral development is that doing so would be expected to curb non-competitive leasing by making far fewer acres available for lease in any one lease sale. The MLA currently mandates noncompetitive leasing when land does not receive any bids at auction,¹⁰¹ but changing the characterization of land at the RMP phase would take it off the table for future leasing – whether competitive or noncompetitive.

2. *BLM Should Account for ACECs*

BLM can help restore environmental concerns to their proper stature in the land use planning process by better accounting for ACECs, a step that would simultaneously facilitate consideration of option value. Drawing on the results of both legal research and field review, Sheldon and Baldwin offer a series of recommendations that revolve around the dual objectives of recognizing ACECs as a land management program and improving agency implementation. Because ACECs can be any size, they could protect entire landscapes or small but critical corridors, providing the agency with flexibility and serving as a complement to congressionally designated areas that the agency is charged with managing.¹⁰²

On the implementation front, BLM should rectify the fact that limited existing data on ACECs is scattered across multiple sources by promulgating new regulations and guidance that carry out FLPMA's mandate that the environmental designation receive priority in the land management process.¹⁰³ To fulfill Congress's robust vision of ACECs, national guidance should promote uniformity across offices on topics such as early identification of potential ACECs in the planning process, resource- and value-specific data collection, detailed discussion of ACEC considerations in draft and final RMPs and Federal Register notices, management to achieve the heightened protection required by FLPMA, facilitation of public participation, and compliance with the annual reporting requirement.¹⁰⁴

Effective management and administration of ACECs would establish greater balance in the overall land management scheme, where current practices suggest that development considerations play an outsized role.¹⁰⁵ The greater protection required for lands with ACEC designations would likely exclude them from consideration for leasing early in the RMP process, furthering FLPMA's principles of multiple use and sustained yield. In the event that an ACEC overlapped with a region possessing high potential for energy development, a rigorous resource inventory process and environmental review would provide ample environmental and social information needed for an approximation of option value.



The Boundary Waters Canoe Area in Minnesota is the most visited wilderness in the United States. BLM should have accounted for option value before leasing land in the area to mining company Twin Metals. See Part V.B

By bringing increased uniformity to ACEC practices across the agency and elevating the importance of the environmental designation, BLM's adoption of a formal program approach would also help secure more funding for ACECs, strengthen their defensibility in review processes, and enhance their significance in regional planning.¹⁰⁶

Congress voted to rescind updated BLM land use planning regulations issued in December 2016—the final product of an initiative that included review of ACEC regulations and guidance, and which spanned more than two years—through an exercise of the Congressional Review Act.¹⁰⁷ BLM could still attempt to update its ACECs regulations administratively, either by rulemaking or by amending the guidance provided in its handbooks and policy manuals. When the Congressional Review Act is used to eliminate rules, it prohibits agencies from reissuing substantially similar rules; thus, to the extent that any ACEC rules desired by BLM bear a strong resemblance to rules that were overturned by the Congressional Review Act, they could only be issued pursuant to an authorizing law passed after the Joint Resolution.¹⁰⁸ Updating guidance and policy documents poses no such hurdle, but these types of documents are less durable across different administrations.

3. *BLM Should Account for Myriad Other Environmental and Social Uncertainties*

As previously discussed, natural resource managers must often grapple with a wide range of uncertainties when weighing the costs and benefits of development, many of which pertain to environmental and social considerations.¹⁰⁹ BLM should incorporate these considerations in its efforts to account for option value. It is not enough for BLM to simply venture that an area boasts sufficiently high development potential to automatically justify leasing. At the RMP phases, these uncertainties include:

- Current and expected resource prices in the United States and in global energy markets;
- Environmental conditions and risks from drilling including local pollution, habitat effects, water use and shortages, and greenhouse gas emissions;
- Current and expected effects of climate change on the ecosystem, which affect environmental sensitivities;
- Information on the cost of drilling in the region and bringing those resources to market;
- Safety, pollution-capture, and other drilling technologies;
- Energy efficiency, energy conservation, and fuel economy standards that affect fossil fuel demand;
- Laws and regulations governing drilling and development on public lands, air pollution, endangered species, and other environmental concerns; and
- Competing uses of the public lands, including recreational activities, conservation, renewable energy development, cultural and tribal use

The more sources and extent of uncertainty and irreversibility, the greater the option value associated with the action is likely to be.

High option value weighs in favor of delaying development in any case, but should BLM elect to contemplate development in an RMP process, it must still undertake a full analysis of option value. As stated by the U.S. Court of Appeals for the D.C. Circuit in *Center for Sustainable Economy v. Jewell*, BLM should strive to undertake a quantitative analysis; where this is not possible, BLM should complete a qualitative analysis.¹¹⁰ For instance, BLM might determine that although a region is not designated as an ACEC, environmental sensitivities, carbon sink value, renewable energy potential or other factors make the option value associated with waiting to lease significant, and place it off-limits to leasing in an RMP.

BLM could also adopt a “hurdle price” technique, like the one BOEM uses in its five-year plan for offshore leasing, to evaluate parcels where leasing could potentially be in the public interest if resource prices rise to certain levels and exceed likely environmental and social effects, including climate effects.¹¹¹ BOEM defines the hurdle price as, “the market price below which the social value of delaying to a future program exploration of a large field in the sale area would exceed the value of immediate exploration of those fields.”¹¹² However, BOEM’s hurdle price analysis quantifies only the uncertainty surrounding oil prices, and discusses other uncertainties only qualitatively.¹¹³ BLM could improve upon this process by quantifying uncertainty for environmental and social factors, as well.¹¹⁴ More staff experience with the resource inventory processes, such as that envisioned for ACECs, would facilitate the agency’s more robust consideration of option value.

Further, as part of its parallel NEPA requirements at the RMP phase, BLM must consider several alternatives to its proposed action. Among these alternatives, BLM should consider a delayed leasing alternative that would make certain land areas unavailable for leasing now, pending more information on the environmental sensitivities of the area, climate change costs, and/or potential competing uses, such as renewable energy development and carbon sink value. BLM should also use option value to help define more environmentally and culturally-protective alternatives, and ideally, select such alternatives as the “preferred” alternative because of the wisdom of delaying irreversible decisions imbued with risk and uncertainty.

B. BLM Should Account for Option Value at the Lease Sale Stage

In addition to accounting for option value during the regional planning process, BLM should consider option value in the more precise factual context presented by specific lease sales, assuming some such sales continue even in the face of mounting climate costs. If BLM learns new information regarding, for instance, environmental or safety hazards, developmental value, carbon sink value, or cultural significance,¹¹⁵ it is much more difficult to act on this information when land is already leased.¹¹⁶ In light of the uncertainty and near-irreversibility associated with leases for mineral development, BLM should account for option value at the lease sale stage in the following ways: (1) offering only high-potential lands, if any, in lease sales; (2) modifying the fiscal terms of leases to reflect option value; (3) setting lease stipulations; (4) setting more stringent standards for lease extensions and renewals; and (5) standardizing procedures for lease suspensions.

1. BLM Should Offer Only High-Potential Lands, If Any, in Lease Sales

At the lease sale stage, BLM has another opportunity to determine which, if any, tracts to make available to private energy developers. Just because a given tract is eligible for mineral leasing pursuant to an existing RMP does not mean that BLM must offer it for lease. In fact, it may be advantageous for BLM to defer a lease sale altogether, pending more comprehensive environmental information, completion of a relevant cultural or scientific study, or more community input.

As discussed in Part V, the BLM Pecos District Office deferred thirty-one parcels from a September 2018 lease sale due to concerns about potential water contamination from oil and gas activity.¹¹⁷ And for a series of BLM oil and gas lease sales near the Chaco Culture National Historical Park, lease sale protests and public opposition led BLM to defer some parcels until it could conduct more analysis on cultural sites within the proposed leasing area.¹¹⁸

Moreover, if BLM does hold a lease sale, it should offer only high-potential lands, if any, in such a sale. As discussed above in Part IV, the presence of leased tracts on BLM lands often forecloses BLM managing those areas for wilderness values,

important wildlife habitat, ACECs, and myriad other public uses. In light of its multiple use mandate, BLM should never offer low potential lands for leasing, and must manage some public lands for distinct (and potentially more important) land uses.

2. The Fiscal Terms of Leases Should Reflect Fair Market Value, Including Option Value

Interior should account for option value in setting the fiscal terms of any leases that are offered in order to lease land at fair market value, as required by FLPMA.¹¹⁹ Specifically, minimum bids and rents should be raised to prices that reflect the public's relinquishment of an option for future alternative uses of the leased land.¹²⁰

First, minimum bids should be increased so that the public is fairly compensated for its forgone option value. The Secretary of the Interior has never exercised its authority to increase minimum bids,¹²¹ despite the fact that many winning bids are made at or near the national minimum. The Secretary should exercise his or her existing authority to increase minimum bids to better capture the full value of the government option,¹²² and to reduce speculation.¹²³

BLM should also increase rental rates beyond the statutory minimum. Its current rates of \$1.50 or \$2 per acre have not been updated since 1987,¹²⁴ and rent is the only payment that the government receives when land is acquired non-competitively and proceeds to go undeveloped. Moreover, the public should be compensated for externalities that arise after leases begin, but before royalty-producing quantities are generated.¹²⁵ Increasing rental rates will require Interior to change its regulations to allow BLM more flexibility in accounting for option value and externalities in setting future leases.¹²⁶

3. BLM Should Consider Option Value When Setting Lease Stipulations

BLM should also account for option value when determining whether to attach stipulations to leases, and the content of such stipulations. Stipulations are a "necessary modification of the terms of the lease," that identify specific resource values to be protected in specific geographical areas.¹²⁷

RMPs can provide some guidance for when stipulations should apply, but the decision to apply them is made at the lease sale for specific parcels.¹²⁸ Under existing authority, BLM can apply stipulations (such as those in the categories of 'no surface occupancy' or 'limited surface use') to parcels in order to protect ACECs, municipal watersheds, and other areas of concern to the public interest.¹²⁹ BLM can reduce some of the environmental and social risks and uncertainties that it uncovers through its option value assessment by requiring lease stipulations, such as "no surface occupancy" or methane capture stipulations, at the lease sale phase. BLM should consider the uncertainties and irreversibility of developing land in attaching lease stipulations, and account for the full range of externalities that affect the American public. Where the balance of factors weighs toward development, stipulations can allow for some protection and preservation of areas with environmental, social, and economic uncertainty (while offering less protection than simply not leasing in the area).

4. *BLM Should Have More Stringent Standards for Lease Renewals and Extensions*

BLM should consider option value at the end of every lease term instead of automatically granting renewals and extensions. This will require changing current BLM regulations. Currently, a lease “shall” be extended by BLM so long as oil or gas is produced from the lease in paying quantities.¹³⁰

The criteria for when a lease renewal is granted differs based on whether a well has been drilled and hydrocarbons have been discovered. With a discovery of hydrocarbons, BLM may approve a ten-year lease renewal after the fifth year of the lease’s primary term, even if BLM has determined that the well is *not* capable of producing oil or gas in paying quantities.¹³¹ One must question the current wisdom of this regulation, as it allows private developers to effectively lock up public land for private use, without BLM having any expectation of royalty payments. Without discovery of oil or gas, a renewal application will be granted if BLM determines that the lessee has provided sufficient evidence of diligent pursuit of “exploration that warrants continuation of the lease with the intent of continued exploration or future potential development,” or if the lease is part of a unit agreement that qualifies for renewal without discovery.¹³²

Recent technological advances allow for more accurate predictions of where and to what degree parcels might reasonably yield developable assets. BLM should update its regulations to require greater certainty of production to justify a lease renewal or extensions. Moreover, BLM should revise its regulations to allow for far more discretion in determining whether to renew or extend a lease at all, whether producing or non-producing. There may be new countervailing risks, such as climate or water-related risks, which weigh strongly against lease renewals. BLM would recover some of its forfeited option value by amending its regulations to allow for a far more balanced review of leases up for renewal, rather than automatically signing off on more development, regardless of the net social benefits.

5. *BLM Should Standardize Procedures for Lease Suspensions*

BLM may approve a request for, or require, a suspension of activity under a lease. Like the cases of formal extension and renewals, suspension has the consequence of artificially extending the term of the lease.¹³³ BLM should consider option value before deciding to suspend a lease.

Suspensions can last indefinitely, and the time of the suspension does not count against the initial lease term.¹³⁴ Lease suspensions fall into three categories: suspensions of operations, of production, or of operations and production, the third being the most common.¹³⁵ Examples of reasons to suspend operations and production include: protecting or conserving natural resources, initiating environmental studies that prohibit the use of the lease, allowing for more time to decide on a proposal, or ongoing environmental litigation. Examples of reasons to suspend operations include: actions by other federal or state agencies, litigation, or BLM’s denial of a proposal to operate for reasons other than for conservation of natural resources.¹³⁶ Many of these reasons involve uncertainty that could have, and ideally should have, been accounted for at earlier stages. In addition, the leaseholder can apply for a suspension if the failure to produce was due to circumstances beyond the lessee’s control, even if the lease has a well that has not produced oil or gas despite being deemed capable of production.¹³⁷

Members of Congress requested that the Government Accountability Office (GAO) review the lease suspension process, especially for leases that have been suspended for more than ten years. This stemmed from concerns that suspensions stymie oil and gas production or hinder alternative uses for the land, such as recreation.¹³⁸ As of September 2016, about 2,750 of approximately 41,000 oil and gas leases were suspended for various lengths of time, with the suspensions



President Trump removed nearly 2 million acres from the Grand Staircase-Escalante National Monument, pictured above, in 2018, rendering it a potential site for mineral lease sales. While litigation on the legality of the President's removal continues, BLM has sought to open the area to mineral leasing, despite paleontological, environmental, and economic uncertainties and risks. See Part V.A.

applying to about 3.4 million acres of land.¹³⁹ During suspensions, the land in question generally cannot be dedicated to other uses, such as conservation or renewable energy development.

BLM concurred with GAO's recommendations and responded that it would implement "improved lease suspension monitoring practices" in written policies and handbooks.¹⁴⁰ However, in some instances, lease suspensions are meant to address environmental and legal risks that arise during the lease term, and thereby underscore the need to consider option value earlier, at the RMP and lease sale stages. For example, in November 2019, BLM withdrew 130 oil and gas leases covering more than 175,000 acres in Utah, in response to a lawsuit filed by environmental groups claiming that the agency did not adequately consider the impacts of climate change from its leases.¹⁴¹ As of November 2019, BLM Utah has suspended over 300,000 acres of leases in response to litigation.¹⁴²

BLM should make lease suspension procedures and outcomes more transparent, as recommended by GAO in 2018.¹⁴³ In the meantime, the discrepancies and opacity in BLM's lease suspension procedures point to both the existence of uncertainty associated with leasing—including future negative impacts from developing the land—and the near-irreversibility of leasing, as suspensions can extend leases far beyond term limits.¹⁴⁴

V. Case Studies

Option value is not merely an academic or theoretical exercise. As the following case studies demonstrate, accounting for option value at the regional planning and lease stage stages would result in more protection of environmental and social values, and help avoid costly mistakes. These case studies underscore the need to “look before you lease,” in order to manage public lands in the public interest, as FLPMA requires.

A. The Importance of Option Value at the Regional Planning Phase

When BLM fails to account for uncertainties in its public lands planning process, it increases the potential for environmental, social, and economic harm and exposes itself to legal risk. It is crucial to account for option value during regional planning because risks and uncertainties affecting an entire region should be considered before opening up any constituent land to development. The case studies of the Kanab Escalante Planning Area and the Permian Basin in southeastern New Mexico illustrate the myriad uncertainties that should to be considered at the RMP phase.

1. *Kanab Escalante Planning Area*

The Kanab Escalante Planning Area (KEPA) constitutes 1.86 million acres of land in southern Utah that President Trump removed¹⁴⁵ from the Grand Staircase-Escalante National Monument (GSENM) in 2018, rendering it a potential site for mineral lease sales.¹⁴⁶ Debates over whether to make portions of KEPA available for leasing highlight (i) the many uncertainties around the economic, paleontological, and environmental impact of leasing the area, and (ii) the potential irreversibility of both known and unknown consequences of mineral leasing.

BLM’s Preferred Alternative in its proposed RMP would open up 547,102 acres to mineral leasing with “moderate constraints” and another 104,972 acres to leasing subject to “major constraints.”¹⁴⁷ BLM states that its Preferred Alternative “conserves the least land area for physical, biological, and cultural resources,” designates no ACECs, and “is the least restrictive to energy and mineral development in KEPA.”¹⁴⁸ The Preferred Alternative is also the most likely to increase the impacts on land adjacent to the Planning Area. BLM’s endorsement of this alternative emphasizes the use of resources such as livestock grazing, timber harvesting, and even “casual surface collection of . . . paleontological resources for personal use without permits.”¹⁴⁹ BLM did not analyze a delayed leasing alternative in its environmental review process for the RMP revision. Moreover, BLM’s planning process failed to discuss or analyze several economic, scientific, and environmental uncertainties that are highly relevant to optimal management of the region.

First, it is uncertain how lucrative it will be to open KEPA to mining leases. For instance, the Preferred Alternative is projected to generate merely one additional job compared to the No Action Alternative, and identical labor income projections.¹⁵⁰ There is also debate as to the quantity of minerals KEPA could produce. The Utah Geological Survey assessment prepared for BLM states, “Future drilling is impossible to predict.”¹⁵¹ The study said that except for one play (a set of mineral resource accumulations that exhibit similar geological characteristics), the other plays surveyed presently lack one or more requirements for hydrocarbon accumulations. Therefore, “foreseeable development in these plays in the future is unlikely barring any new discoveries elsewhere in the region.”¹⁵² The survey was additionally skeptical about

the prospects for mining metallic minerals, tar sands, and coal. The region's 42.5% drop in coal production over the past decade further reduces the possibility that companies will seek to mine coal in KEPA.¹⁵³

In addition to the economic uncertainties, there are several scientific and environmental uncertainties that should have been considered at the RMP stage. First, KEPA and the surrounding Grand Staircase Escalante National Monument hold tremendous paleontological significance, boasting a “nearly complete snapshot of the Late Cretaceous Period.” Twelve dinosaur species have been named since the monument was established.¹⁵⁴ But as stated earlier, the Preferred Alternative allows for “casual collection” of fossils, and even acknowledges that “loss of [fossil] specimens other than common invertebrate and plant specimens is possible.”¹⁵⁵ Paleontological resources are non-renewable and often occur in “intermittent concentrations,” underscoring the need to preserve them from damage during mineral exploration and extraction.¹⁵⁶ Damaging paleontological resources is quintessentially irreversible.

This example also highlights the uncertainty surrounding the impact of mineral leasing in KEPA, as there is controversy over whether irreversible damage would occur. On the one hand, the Society of Vertebrate Paleontology opposed leasing permits anywhere in KEPA because “mineral extraction is one of the greatest threats to paleontological resources.”¹⁵⁷ On the other hand, some question whether “casual collection” of fossils would negatively affect crucial paleontological studies.¹⁵⁸ Nonetheless, the existence of this uncertainty in the irreversible realm of fossil excavation increases the option value associated with opening the area to mineral development. Yet BLM's Preferred Alternative would, in the agency's own words, cause “greater potential for impacts on monument objects than other alternatives by allowing for greater access and more limited development.”¹⁵⁹

Second, Grand Staircase Escalante National Monument recently gained attention for its bee population, as 660 species of bees inhabit the area. It thus has the potential to be a crucial site for scientific study, especially in light of the uncertainty about the impact of possible declining bee populations.¹⁶⁰ It has proven difficult to monitor these populations due to the lack of historic records.¹⁶¹ However, the monument is ideal for monitoring bee populations because of its natural landscapes, lack of habitat fragmentation, and wide array of bee species.¹⁶² Last year, a study of bees in Grand Staircase Escalante National Monument was “one of the largest published bee surveys both in terms of geographic area covered and consecutive years sampled.”¹⁶³ Developing KEPA will fragment this habitat and threaten a vital scientific endeavor to learn about bee populations, whose effects on ecosystems worldwide remain uncertain and a cause of anxiety.¹⁶⁴ However, the RMP and EIS do not mention the bee population or the risks to it from mineral development.¹⁶⁵ In addition to the irreversibility of harming habitats that are crucial for preserving a vulnerable animal population, the foregone opportunity for important scientific study would also be irreversible.

As BLM finalizes its RMP for KEPA, it should consider option value in the ways recommended in Part IV.A.¹⁶⁶ Specifically, it should strive to account for the myriad environmental and social uncertainties related to the land in this area. BLM should delay lease sales in order to learn more about these uncertainties, especially as the nature and extent of their associated impacts are in doubt and are likely irreversible.

2. *Fracking in Southeastern New Mexico's Permian Basin*

Another example underscoring the need for consideration of option value at the regional planning phase is that of the Permian Basin. The Permian Basin is the nation's largest oil field, extending into western Texas and southeastern New Mexico.¹⁶⁷ According to experts, the risk of water contamination associated with oil and gas activity is greater in the Carlsbad region of New Mexico than in other places where drilling occurs in the United States.¹⁶⁸ This area sits atop karst

limestone, through which water can carry pollutants farther and faster than on land with layers of sand and soil.¹⁶⁹ The area's incredibly rare geology, including its 119 underground caves, is the reason that Carlsbad Caverns was established as a national park in 1923.¹⁷⁰

BLM's Carlsbad, New Mexico field office is one of the five most active for federal onshore oil and gas permitting. In 2018, BLM proposed opening an additional 86,000 acres for oil and gas extraction.¹⁷¹ However, there are several uncertainties and risks associated with more drilling in this area, including groundwater contamination and sinkhole formation, each of which would have irreversible consequences.

New Mexico currently faces water stress equivalent to the 10th-most water-stressed country in the world, the United Arab Emirates.¹⁷² But every day, 115 million gallons of “produced water” are drained from wells in the oil field, a mix of water released from rock formations and fracking fluids, about half of which is treated and recycled, and the other half injected into the hundreds of wastewater wells in the state meant for permanent disposal of the fluid.¹⁷³ Moreover, fracking each well requires approximately 34 million gallons of freshwater.¹⁷⁴

Had option value been considered at the regional planning phase, BLM could have learned more about the rate at which drilling companies would use water, and the source of that water, particularly in water-stressed New Mexico.¹⁷⁵ Though the New Mexico Department of Energy, Minerals and Natural Resources said last year that there has never been evidence of groundwater contamination associated with fracking or wastewater disposal, there were almost 800 surface spills or leaks in Eddy and Lea Counties in 2017.¹⁷⁶

Concerns about water contamination arose prior to a September 2018 lease sale, leading the BLM Pecos District Office to defer thirty-one out of the 173 proposed parcels to complete further analysis regarding cave karst and hydrological features. These parcels are thought to be connected to the Capitan Aquifer, which is Carlsbad's primary drinking water supply.¹⁷⁷ The Pecos District action is a rare example of option value employed the right way, at least with respect to the deferred parcels.

On top of the risks for groundwater contamination and increased water stress, fracking and related operations increase the likelihood of sinkhole formation, with profound impacts for highways and other infrastructure. In February 2018, the New Mexico state legislature approved funding to stabilize Highways 62 and 285, main thoroughfares, which face the risk of collapsing due to drilling-related activities in the Permian Basin. The stabilization effort is expected to cost about \$40 million in total.¹⁷⁸ Experts estimate the bill for a collapse could be as high as \$1 billion in damages, litigation and loss of life.¹⁷⁹ And some experts say that the collapse is inevitable.¹⁸⁰ Indeed, the region is already familiar with sinkhole formations caused by drilling operations: In 2008, two such caverns collapsed twenty-two miles and twenty-nine miles northeast of Carlsbad.¹⁸¹

The irreversible consequences of opening up too much of this land for drilling—including the possibility of sinkhole collapse at any moment and potential groundwater contamination—may far outweigh the potential benefits of drilling even from a purely economic standpoint. While the Permian Basin has produced much oil for the United States, it is unclear how much longer this profitability will last due to a lack of pipelines and infrastructure, alone, setting aside the serious environmental and social risks already discussed.¹⁸² In drafting RMPs and determining whether to open up more land to oil and gas leasing, BLM must consider option value in order to reduce the risk of irreparable damage.

B. The Importance of Considering Option Value Before Leases Are Offered

Consideration of option value should not stop at the RMP phase. To reduce private speculation and confer myriad other public benefits, BLM should consider the value of learning more about uncertainties regarding specific parcels before leases are offered. The following examples demonstrate how accounting for option value before potential lease sales would reduce environmental, social, and cultural harms, as well as economic costs, including legal costs due to the nearly irreversible nature of leases.

1. Arctic National Wildlife Refuge

In December 2017, the 115th Congress, in a law signed by President Trump, directed the Secretary of the Interior to establish and administer a competitive program for oil and gas leasing in the Coastal Plain of the Arctic National Wildlife Refuge (Coastal Plain).¹⁸³ The law mandates at least two lease sales in the Coastal Plain, which must take place within four and seven years of the bill's enactment, respectively.¹⁸⁴ However, the numerous environmental, cultural, and economic uncertainties surrounding the effects of drilling in the Coastal Plain underscore the need to delay lease sales as long as possible. If lease sales must occur per the directive of the Tax Act, they should at least be delayed as long as possible so that BLM and Congress learn more about the irreversible impacts of drilling in the Coastal Plain.

First and foremost, drilling in what has been called “America’s Serengeti” has irreversible environmental ramifications.¹⁸⁵ The Refuge is home to forty-two fish, thirty-seven land mammal, eight marine mammal, and more than 200 migratory and resident bird species (which migrate to all fifty U.S. states).¹⁸⁶ The Coastal Plain is especially critical to polar bears’ livelihood as an increasingly popular denning site, with dens widely distributed throughout the region.¹⁸⁷ Indeed, the Refuge has the highest density of polar bear land dens in Alaska and is the only national conservation area where polar bear denning regularly occurs.¹⁸⁸ Glacier melt has recently led polar bears to abandon previous denning sites and congregate in the Coastal Plain.¹⁸⁹ With this recent trend, it would be especially risky to open this land to lease sales when the full impact of drilling activity on such a vulnerable species is unknown.¹⁹⁰



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The lives and heritage of the Alaskan Native Gwich'in are directly tied to porcupine caribou herds. Because the Coastal Plain has never experienced oil and gas production, the full effects of potential development on the caribou herd and the Gwich'in way of life are uncertain.

The uncertainty is magnified by questions concerning the effects of seismic studies on glaciers. The last seismic study in the area occurred over thirty years ago,¹⁹¹ and BLM claims that a new EIS on the effects of such studies is not needed due to the existence of previous studies.¹⁹² However, the effects of past seismic tests have endured longer than anticipated.¹⁹³ As of 2009, five percent of the trails from 1984-85 seismic exploration had not yet recovered, amounting to 125 miles. New technology brings more uncertainties as well: Modern 3-D seismic trails, made by drill, vibrator and recording vehicles, require an even denser grid of trails than the 2-D trails used in 1984.¹⁹⁴ This new technology and equipment, untested in the Refuge, heightens the uncertainties associated with development in the sensitive region.

Increased activity in the Refuge also increases the risk of melting permafrost, which has significant climate change ramifications. Permafrost contains twice as much carbon as currently exists in the atmosphere, meaning that melting permafrost releases greenhouse gases that cause even more warming.¹⁹⁵ The potential to create dangerous climate “feedback loops” increases if the permafrost melts. The tipping points at which such negative feedback loops kick in are hard to predict, underscoring the uncertainty associated with intensive activity in the Refuge.¹⁹⁶

In addition to environmental uncertainties, cultural risks and uncertainties abound. The Alaskan Native Gwich’in population is located in northeastern Alaska near the Coastal Plain. The culture and life of the Gwich’in has been based around the porcupine caribou herd for thousands of years. The Gwich’in have relied upon the caribou for food, shelter, clothing, tools and medicine, and have named the Coastal Plain “Izhik Gwats’an Gwandaii Goodlit,” which translates to “The Sacred Place Where Life Begins.”¹⁹⁷ The porcupine caribou herd migrates to the Coastal Plain each year to birth and raise their young. The lives and heritage of the Gwich’in are directly tied to the caribou herds, and without a healthy caribou population, the Gwich’in culture would be threatened.¹⁹⁸ Because the Coastal Plain has never experienced oil and gas production, the full effects on the caribou herd and the Gwich’in way of life are uncertain.

Moreover, if allowed to proceed to a lease sale, it is unclear how much revenue drilling in the Coastal Plain would even produce. The Trump administration has claimed that drilling would produce \$1.8 billion in revenues over ten years and directed the U.S. Geological Survey (USGS) to update their estimates of potential oil reserves underneath the Refuge.¹⁹⁹ However, the Center for American Progress (CAP) estimates a much more conservative \$37.5 million in revenue over ten years. According to CAP, the area’s remoteness and lack of existing oil infrastructure would not be conducive to oil production within the next ten years.²⁰⁰ Thus, almost all of the revenue would come from bonus bids instead of royalties from oil production. CAP’s conservative estimate also stems from the fact that oil companies will probably discount their bids due to uncertainty over the potential revenue from drilling, possible litigation or legislation to block drilling in the future, and the negative publicity likely to arise from drilling in the Coastal Plain.²⁰¹ Energy companies are unlikely to take costly risks, especially in the wake of Shell stopping its \$7 billion Arctic exploration in Alaska three years ago after failing to find enough crude oil.²⁰² The costs associated with drilling are also unclear, as oil is scattered among multiple smaller fields, which makes development more expensive and potentially increases its environmental impact.²⁰³

In addition to uncertainty about revenue, there are also conflicting views on how much oil is actually capable of being recovered. The Congressional Research Service said that such estimates are “based on limited data and numerous assumptions about geology, economics, and . . . climate.”²⁰⁴ The estimates of the composition of prospective energy resources have also changed over time: USGS projected eight percent oil and ninety-two percent natural gas in 2010 in contrast to sixty-five percent oil and thirty-five percent natural gas in 2017.²⁰⁵ Therefore, even factors that are taken for granted now can drastically change as technology and information evolve.

In short, there are countless good reasons for BLM to delay opening the Coastal Plain to lease sales as long as possible due to environmental, cultural, and economic value. The agency should convey these uncertainties to lawmakers and the public, rather than speed through the environmental review process, as it has been criticized for doing.²⁰⁶ The stakes are simply too high to rush into drilling in the Refuge or to pursue aggressive development scenarios as BLM has done, to-date.

2. *Badger-Two Medicine*

The decades-long controversy over the Badger-Two Medicine area in Montana illustrates that leases can be challenging and costly to reverse, even when the leases were suspended for decades while further environmental review was conducted,²⁰⁷ the land was not being developed, and most of the leases were eventually cancelled.²⁰⁸ Set within a national forest, the Badger-Two Medicine area is bordered by Glacier National Park, the Bob Marshall Wilderness and the Blackfeet Indian Reservation. The leases in the 130,000-acre area were suspended in the 1980s.

Nineteen native tribes vehemently opposed drilling sacred land in the area,²⁰⁹ leading Congress to eventually withdraw the area from mineral development in 2006 due to the surrounding land's cultural, environmental, and recreational value.²¹⁰ In 2014, the Blackfeet Tribal Business Council successfully advocated for the leases' cancellation.²¹¹ In 2016, BLM concluded that the leases were improperly issued in violation of the National Environmental Policy Act and the National Historical Preservation Act, and that irreparable impacts could result from oil and gas development in the area.²¹²

But the final two leaseholders, Solenex and Moncrief, filed suit and were granted reinstatement of the leases in November 2018.²¹³ In 2019, Moncrief reached a settlement with The Wilderness Society allowing for retirement of the disputed lease.²¹⁴ The sole remaining lease is held by Solenex; the federal government appealed the 2018 district decision reinstating that lease, and the appeal is pending in the D.C. Circuit as of November 2019.

Had BLM initially considered the informational value of delaying lease sales, it would have better understood the cultural, economic, and environmental risks of leasing the land, and in the end, could have saved significant legal costs. The fact that BLM suspended the leases for such a long period of time also factored into the *Solenex* court's decision to reinstate the leases despite the pre-lease violations of law. The U.S. District Court for the District of Columbia reinstated the leases because of the thirty-year suspension, for agencies must rescind decisions made by predecessors "within a reasonable amount of time" and "consider the substantial reliance interests at play."²¹⁵

In the Badger-Two Medicine case, it became abundantly clear that there were better uses for the land than oil and gas development. The U.S. Forest Service, Advisory Council on Historic Preservation, and other government officials pushed to cancel the leases.²¹⁶ And yet, the reliance interests established in granting the leases rendered them nearly irreversible.²¹⁷ As such, it is crucial for BLM to consider what information might be gained through *before* a lease sale is finalized.²¹⁸ Preparation of an EIS or EA with a delayed leasing alternative could have assisted BLM in reaching this conclusion.

This case study also shows that even where a lease has already been granted, BLM should not automatically renew or extend leases, so as not to reinforce the leaseholder's reliance interests.²¹⁹ Finally, this case study exemplifies the need for transparency in the lease suspension process, for lack thereof can make a lease cancellation potentially more challenging.²²⁰

3. *Boundary Waters Canoe Area Wilderness*

The Boundary Waters Canoe Area (Boundary Waters) is the most visited wilderness in the United States, comprising 1,098,000 acres and more than 1,000 lakes in northeastern Minnesota.²²¹ It has also been a recent source of litigation against BLM. It was originally leased for mining in 1966 before NEPA was enacted, but environmental uncertainties increasingly arose as BLM contemplated whether to renew the leases.²²² Nonetheless, BLM renewed mining company Twin Metals' lease in May 2018, reversing a prior 2016 decision to decline renewal.²²³ BLM faced fierce opposition after renewing the leases;²²⁴ two lawsuits were filed the following month.²²⁵

One of the most pressing environmental uncertainties related to copper and nickel mining in the Boundary Waters is the impact of acid mine drainage on the waters, which was cited by the Forest Service when it refused to consent to the lease renewals in 2016, leading Interior to deny the lease renewals at the time.²²⁶ The interconnected nature of the lakes in the region exacerbates uncertainties about the impact of sulfide mining, as well as the irreversibility of any harm that results from mining.²²⁷ For instance, surface water in the leased area drains into the South Kawishiwi River—one of America's Most Endangered Rivers of 2013. Specifically, sulfates from sulfur can chemically convert mercury into methyl-mercury, a potent toxicant which bio-accumulates in the food chain.²²⁸ Boundary Waters has already faced multiple fish consumption advisories, as 188 lakes had serious aquatic consumption impairments due to excessive mercury in fish tissue.²²⁹ The pollution risk is even greater because of the low grade character of the rock formation, with sulfur-containing waste rock constituting about 99% of the ore, and copper and other valuable metals only 1 percent.²³⁰

Furthermore, it is unclear whether mining in the Boundary Waters would benefit or harm the local economy. Twin Metals anticipates employing 650 people in mining jobs and another 1300 in non-mining jobs.²³¹ However, the region has depended more on service-related employment in recent years, while mining employment has been more volatile.²³² Tourism in the region generates about \$44.5 million annually and accounts for almost thirteen percent of all employment in St. Louis County.²³³ Diminishing the pristine nature of the Boundary Waters, which is a primary draw for tourists, could harm the vital tourism sector.²³⁴

BLM discussed just two alternatives in its environmental assessment. The first ("Proposed Action") would add stipulations to the leases regarding exploration, drilling, and other surface use activities to protect surface resources. The second ("No-Action Alternative") would renew the leases under the same terms and conditions from 2004. In both alternatives, the leases would be renewed as a non-discretionary action outlined in the prior lease terms.²³⁵

In light of these risks, BLM should have accounted for option value when it initially leased the land to Twin Metals, and again when it contemplated renewing the leases.²³⁶ BLM should not grant lessees the nondiscretionary right to renew leases. Such lease terms bind BLM to leasing decisions even in the face of uncertainties about the environmental impact of selling mineral leases far into the future.



The public outcry for BLM to defer lease sales near the Chaco Culture Park in light of the archaeological and cultural value of the Park and the uncertainties inherent in drilling makes clear that BLM should have considered option value much earlier in the process.

4. Chaco Culture National Historical Park

The Chaco Culture National Historical Park in New Mexico was one of the first national monuments created by President Theodore Roosevelt and is a UNESCO world heritage site.²³⁷ Over the course of 300 years, starting in the mid-800s, the Chacoans erected massive stone buildings surrounded by sacred landscapes and shrines.²³⁸ This area served as an administrative and cultural hub, the reason that “many Southwest Indian people look upon Chaco as an important stop along their clans’ sacred migration paths”²³⁹ Long considered one of the best places for stargazing in the world, in 1991 the Chaco Culture Park established a night skies protection initiative and interpretive program to protect the night sky in the area, and in 2013 Chaco Culture was designated as an International Dark Sky Park.²⁴⁰

Notwithstanding the cultural, historical, and scientific importance of the area, BLM announced that it would hold an oil and gas lease sale in March 2018, including dozens of parcels close to the Chaco Culture Park.²⁴¹ BLM received 120 protests opposing the oil and gas lease sale. Tribal officials, environmentalists and others argued that the lease sites in question were too close to the Park and other sites they consider culturally significant.²⁴² BLM stated that it would defer the sale of 25 parcels on 4,434 acres in the area while it conducted more analysis on cultural sites within the proposed leasing area in response to protests.²⁴³

However, BLM announced plans to issue more oil and gas leases in March 2019, a number of which were within a 10-mile radius of the Park. A few days later, BLM announced that it was withdrawing the lease sales for sites within 10 miles of Chaco Canyon—the third such withdrawal for the leases closest to Chaco Culture Park.²⁴⁴ However, the March 28, 2019 lease sale included thirty-seven parcels in New Mexico and nine in Oklahoma.²⁴⁵ The Society for American Archaeology noted that parcels offered for lease outside the buffer zone hold Chacoan remains, and called for cancellation of the March 28 sale and all subsequent scheduled sales.²⁴⁶ A representative from the National Parks Conservation Association said in response that the current administration was “playing a dangerous game of chicken with local communities and tribes.”²⁴⁷

The National Congress of American Indians, the Navajo Nation, and the All Pueblo Council of Governors have called for a moratorium on drilling in the Greater Chaco Region, pending initiation and completion by BLM and the Bureau of Indian Affairs of an ethnographic study of cultural landscapes in the region. According to the National Congress of American Indians, approximately 90% of federal lands in the oil- and gas-rich San Juan Basin, of which Chaco Canyon is the geographical center, have already been leased for drilling.²⁴⁸

In May 2019, Interior Secretary David Bernhardt committed to a one-year moratorium on oil and gas development within 10 miles of the Chaco Culture Park.²⁴⁹ Groups seeking protections for the ancient site said Bernhardt's pledge did not go far enough. In October 2019, the U.S. House of Representatives passed the Chaco Cultural Heritage Area Protection Act, which would ban future oil and gas drilling and mining activity on federal lands within a 10-mile buffer around the Chaco Culture Park.²⁵⁰ The U.S. Senate has yet to vote on the legislation.

The public outcry for BLM to defer lease sales—numerous time—near the Chaco Culture Park in light of the spiritual, archaeological, and cultural value of the Park and the uncertainties inherent in drilling makes clear that BLM should have considered option value long before the lease sales were posted. BLM should cancel all forthcoming lease sales to learn more about the uncertainties regarding the value of the land, especially as mining could have irreparable ramifications. Moreover, BLM should consider the informational value that would arise from delaying the sales while it conducts more robust cultural and environmental studies. This could have also come to light, for instance, in exploring a delayed leasing alternative as part of a robust NEPA analysis at the lease sale phase, or through BLM's RMP amendment process. While some parcels closest to the Chaco Cultural Park have been spared for the time being, BLM must take its responsibility to “look before you lease” far more seriously.

Conclusion

BLM makes too much public land available for oil and gas leasing at low cost, and fails to account for the public's valuable option to wait and learn more about future events, including climate change, energy prices, technology, and more. Yet, private companies routinely account for option value, leading them to purchase large swaths of land at low prices, and thereby foreclosing potentially more valuable land uses.

This report suggests numerous ways in which BLM can and should account for option value at both the regional planning and lease sale stages. If BLM were to consider option value at the RMP and lease sale stages, more public land would be dedicated to beneficial environmental and social uses, and taxpayers would be better compensated for the lost option to use land at a later time. By accounting for option value before making irreversible decisions, BLM could also prevent irreparable harm to areas of significant cultural and ecological value, protect the public from unforeseen environmental and safety hazards, and reduce the legal costs of attempting to reverse misguided leasing decisions *ex post*.

Endnotes

- ¹ See Eric Lipton & Hiroko Tabuchi, *Energy Speculators Jump on Chance to Lease Public Land at Bargain Rates*, N.Y. TIMES (Nov. 27, 2018), <https://perma.cc/UTG9-ETWD> (“The percentage of leases being given away through noncompetitive sales . . . surged in the first year of the Trump administration to the highest levels in over a decade, according to an analysis of federal leasing data by Taxpayers for Common Sense.”).
- ² U.S. BUREAU OF LAND MANAGEMENT, Table 2 Acreage in Effect, <https://perma.cc/Q3MV-FJ4M>.
- ³ U.S. BUREAU OF LAND MANAGEMENT, Table 6 Acreage of Producing Leases, <https://perma.cc/Q3MV-FJ4M>.
- ⁴ CENTER FOR AMERICAN PROGRESS, BACKROOM DEALS: THE HIDDEN WORLD OF NONCOMPETITIVE OIL AND GAS LEASING (May 23, 2019), <https://perma.cc/QSP8-SP74>.
- ⁵ Leases were decreasing at an average rate of 29% in the period of 2013-2016, and then increasing at an average rate of 61% in 2016-2018. See U.S. BUREAU OF LAND MANAGEMENT, Table 11, Acreage Offered at Competitive Lease Sale Auctions since January 1, 2009, <https://perma.cc/Q3MV-FJ4M>.
- ⁶ See, e.g., Lipton & Tabuchi, *supra* note 1; Cooper McKim, *Trump Push For ‘Energy Dominance’ Boosts Drilling On Public Land*, NPR (Nov. 25, 2018), <https://www.npr.org/2018/11/25/666373189/trump-push-for-energy-dominance-boosts-drilling-on-public-land>; Timothy Puko, *Interior Secretary Nominee Says He Will Balance Energy, Environment*, WALL ST. J. (Feb. 8, 2019), <https://www.wsj.com/articles/interior-secretary-nominee-says-he-will-balance-energy-environment-11549634400>; Jayni Foley Hein, *Federal Lands and Fossil Fuels: Maximizing Social Welfare in Federal Energy Leasing*, 42 HARV. ENV’T L. REV. 1 (2018); Jayni Foley Hein, *Priorities for Federal Coal Reform: Twelve Policy and Procedural Goals for Programmatic Review*, INSTITUTE FOR POLICY INTEGRITY, N.Y. UNIV. SCH. OF LAW (June 2016).
- ⁷ See U.S. BUREAU OF LAND MANAGEMENT, Table 11: Acreage Offered at Competitive Lease Sale Auctions Since January 1, 2009, <https://perma.cc/Q3MV-FJ4M>. However, fewer than 800,000 acres actually received bids—less than the respective historical average from the same preceding four-year period. *Id.*
- ⁸ See, e.g., Matt Lee-Ashley & Jenny Rowland-Shea, *Arctic National Wildlife Refuge 101*, CTR. FOR AMERICAN PROGRESS (Oct. 10, 2017), <https://perma.cc/SA7E-7LFG> (“[T]he western part of the lower 48 states [is] already losing a football field of natural area every two and a half minutes.”).
- ⁹ U.S. GEOLOGICAL SURVEY, FEDERAL LANDS GREENHOUSE GAS EMISSIONS AND SEQUESTRATION IN THE UNITED STATES: ESTIMATES for 2005–14 (Nov. 23, 2018), <https://perma.cc/4ARD-LLCE>.
- ¹⁰ Jenny Rowland-Shea, *Oil and Gas Development Is Creating a Problem for the Arid West*, CTR. FOR AMERICAN PROGRESS (Nov. 12, 2019), <https://perma.cc/6E9W-7T5K>. The Center for American Progress found that, since the start of the Trump administration, BLM offered more than 5,550 oil and gas leases in the intermountain West. Of these leases, more than 6 in 10 have been in areas suffering from “high” or “extremely high” water stress, as defined by the World Resources Institute.
- ¹¹ Somini Sengupta, *Bleak’ U.N. Report Finds World Heading to Climate Catastrophes*, N.Y. TIMES (Nov. 26, 2019), <https://perma.cc/TSU5-TRSX>.
- ¹² U.S. GEOLOGICAL SURVEY, *supra* note 9.
- ¹³ For a straightforward illustration involving some mathematical calculations, see Michael A. Livermore, *Patience Is an Economic Virtue: Real Options, Natural Resources, and Offshore Oil*, 84 U. COLO. L. REV. 581, 589–91 (2013) (describing how consideration of financial investment and weather forecasts can shape the decisionmaking process for two children deciding whether to set up a lemonade stand over the weekend).
- ¹⁴ See generally AVINASH K. DIXIT & ROBERT S. PINDYCK, INVESTMENT UNDER UNCERTAINTY (1994).
- ¹⁵ See, e.g., Robert S. Pindyck, *Uncertainty in Environmental Economics*, 1 REV. ENVTL. ECON. & POL’Y 45 (2007); Kenneth J. Arrow & Anthony C. Fisher, *Environmental Preservation, Uncertainty, and Irreversibility*, 88 Q.J. ECON. 312 (1974).
- ¹⁶ Christina Nunez, *Carbon Dioxide Levels Are at a Record High, Here’s What You Need to Know*, NAT’L GEOGRAPHIC (May 13, 2019), <https://www.nationalgeographic.com/environment/global-warming/greenhouse-gases/>.
- ¹⁷ See 43 C.F.R. §§ 3100.0-5; 3107.2-1.

- ¹⁸ For an overview of how option value differs from non-use values, which can also inform environmental policy, see Livermore, *supra* note 13 at 597–601.
- ¹⁹ *Center for Sustainable Economy v. Jewell*, 779 F.3d 588, 610 (D.C. Cir. 2015) (emphasis added). Policy Integrity served as counsel to Petitioner, Center for Sustainable Economy. See also Opening and Reply Briefs for Petitioner.
- ²⁰ *Id.* at 611.
- ²¹ *Id.* at 612 (“Our holding is a narrow one. . . . [T]he agency is not permitted to substitute qualitative assessments for well-established quantitative methods whenever it deems such substitutions convenient.”).
- ²² See U.S. BUREAU OF OCEAN AND ENERGY MANAGEMENT, 2017-2022 OUTER CONTINENTAL SHELF OIL AND GAS LEASING DRAFT PROPOSED PROGRAM (Jan. 2015) at 8-3 to 8-19, <https://perma.cc/KZ28-VVF9>.
- ²³ BOEM, DRAFT PROPOSED PROGRAM FOR THE 2019–2024 OUTER CONTINENTAL SHELF OIL AND GAS LEASING PROGRAM 10-3 to 10-16 (Jan. 2018), <https://perma.cc/7C76-AYE4>.
- ²⁴ 43 U.S.C. § 1701(a)(7) (instructing that “management be on the basis of multiple use and sustained yield unless otherwise specified by law”); see also *Our Mission*, U.S. BUREAU OF LAND MANAGEMENT, <https://perma.cc/MH7Q-W8C7> (“Congress tasked the BLM with a mandate of managing public lands for a *variety of uses* such as energy development, livestock grazing, recreation, and timber harvesting while ensuring natural, cultural, and historic resources are *maintained for present and future use*.” (emphasis added)).
- ²⁵ 43 U.S.C. § 1702(c).
- ²⁶ 43 U.S.C. § 1732(b) (emphasis added).
- ²⁷ 43 U.S.C. § 1701(a)(9).
- ²⁸ U.S. BUREAU OF LAND MANAGEMENT, NO. H-3070-2—ECONOMIC EVALUATION OF OIL AND GAS PROPERTIES HANDBOOK at I.B, <https://perma.cc/4PZM-RVZH>.
- ²⁹ U.S. GOV’T ACCOUNTABILITY OFFICE, GAO-08-691, OIL AND GAS ROYALTIES: THE FEDERAL SYSTEM FOR COLLECTING OIL AND GAS REVENUES NEEDS COMPREHENSIVE REASSESSMENT 3 (2008).
- ³⁰ When considering whether or not to lease their land for fossil fuel development, a knowledgeable owner would also be expected to care about the externalities—such as potential air, water, and noise pollution—and account for these externalities in fixing the price and terms attached to a lease. By extension, as a decisionmaker for the American public at large, BLM should have an incentive to reduce externalities, or at least receive compensation for them, when ascertaining fair market value. See Hein, *Federal Lands and Fossil Fuels*, *supra* note 6, at 39–40 (2018).
- ³¹ 30 U.S.C. § 187.
- ³² *Id.* § 21a.
- ³³ *Id.* § 187.
- ³⁴ 373 U.S. 472, 481 (1963) (citing H.R. Rep. No. 206, 65th Cong., 2d Sess. 5; H.R. Rep. No. 398, 66th Cong., 1st Sess. 12-13). The Court proceeded to draw from a report on an earlier version of the bill that eventually produced the Mineral Leasing Act: “The legislation provided for herein, it is thought, will go a long way toward . . . reserv[ing] to the Government the right to supervise, control, and regulate the . . . [development of natural resources], and prevent monopoly and waste and other lax methods that have grown up in the administration of our public-land laws.” *Id.* (alterations in original) (citing; H.R. Rep. No. 1138, 65th Cong., 3d Sess. 19).
- ³⁵ 43 U.S.C. § 1712(c); see also George Cameron Coggins, *The Developing Law of Land Use Planning on the Federal Lands*, 61 U. Colo. L. Rev. 307, 319 (1990). Coggins observes that section 1712 “specifies neither schedules, procedures, nor content of land use plans.” *Id.* He goes on to contrast BLM’s planning with that of the Forest Service, observing that the latter agency had extensive planning experience prior to the 1976 enactment of its primary planning statute, the National Forest Management Act, which turned out to be “far more encompassing and precise than the statutes governing the other [federal land management] agencies.” *Id.* at 333.
- ³⁶ 43 C.F.R. § 1601.0-2.
- ³⁷ 43 U.S.C. § 1712(c)(1).
- ³⁸ 43 C.F.R. § 1701(a)(8)); see also *Pub. Lands Council v. Babbitt*, 167 F.3d 1287, 1299 (10th Cir.1999).
- ³⁹ *New Mexico Ex. Rel. Richardson v. BLM*, 565 F.3d 683, 710 (10th Cir. 2009).
- ⁴⁰ *Id.* (quoting *Rocky Mtn. Oil & Gas Ass’n v. Watt*, 696 F.2d 734, 738 n. 4 (10th Cir.1982)).
- ⁴¹ 43 C.F.R. § 1601.0-2.
- ⁴² See 43 C.F.R. § 1601.0-5(n).
- ⁴³ 43 C.F.R. § 1601.0-4; see also Coggins, *supra* note 35, at 320 (“[BLM] claims that planning is totally decentralized, meaning that RMPs need not conform to any national model in promulgation or content.” (footnote omitted)).
- ⁴⁴ See U.S. BUREAU OF LAND MANAGEMENT, NO. H-1601-1—LAND USE PLANNING HANDBOOK 17–25, <https://perma.cc/4PZM-RVZH>.
- ⁴⁵ *Id.* at 1.

- ⁴⁶ See, e.g., U.S. GOV'T ACCOUNTABILITY OFFICE, GAO/RCED-90-225, PUBLIC LANDS: LIMITED PROGRESS IN RESOURCE MANAGEMENT PLANNING 10 (1990), <https://perma.cc/G3FN-CWDC> [hereinafter GAO RMP Report] (“[T]he initial seven plans completed in Colorado took an average of 39 months to prepare. Seven to 24 months were needed to resolve protests before the plans were finally approved.”).
- ⁴⁷ Coggins, *supra* note 35, at 319.
- ⁴⁸ 42 U.S.C. § 4332; see also BLM, LAND USE PLANNING HANDBOOK, *supra* note 44, at 16.
- ⁴⁹ BLM, LAND USE PLANNING HANDBOOK, *supra* note 44, at 16.
- ⁵⁰ See *id.*; 42 U.S.C. § 4332.
- ⁵¹ BLM, LAND USE PLANNING HANDBOOK, *supra* note 44, at 17.
- ⁵² See, e.g., Letter from Institute for Policy Integrity at NYU School of Law to Carlsbad RMP Team Lead, Bureau of Land Management (Nov. 5, 2018), <https://perma.cc/RE6D-5Q73>.
- ⁵³ 43 U.S.C. § 1711.
- ⁵⁴ See, e.g., BLM, GRAND JUNCTION DRAFT RESOURCE MANAGEMENT PLAN AND ENVIRONMENTAL IMPACT STATEMENT, 4-256-4-258 (Dec. 2012), <https://perma.cc/Y6A6-KMDC>.
- ⁵⁵ BLM, MANUAL TRANSMITTAL SHEET 6310—CONDUCTING WILDERNESS CHARACTERISTICS INVENTORY ON BLM LANDS (PUBLIC) 6-10 (2012), <https://perma.cc/7HEY-4QE2> (Under “Specially Designated Conservation Areas and Wildlife” in drop-down menu).
- ⁵⁶ See *infra*, Part III.C. (describing BLM’s assessment of leased areas when conducting wilderness characteristic inventories).
- ⁵⁷ See, e.g., BLM, ENVIRONMENTAL ASSESSMENT, DOI-BLM-NV-B000-2019-0006-EA, June 2019 Competitive Oil and Gas Lease Sale (Feb. 13, 2019), <https://perma.cc/L8HE-KZZE>.
- ⁵⁸ See *id.*
- ⁵⁹ *Id.* at 4.
- ⁶⁰ See *supra*, Part II.A.
- ⁶¹ 30 U.S.C. § 226(b)(1)(B).
- ⁶² 30 U.S.C. § 226(b)(1)(A) (“The Secretary shall accept the highest bid . . . which is equal to or greater than the national minimum acceptable bid, without evaluation of the value of the lands proposed for lease.” (emphasis added)).
- ⁶³ 30 U.S.C. § 226(b)(1)(B).
- ⁶⁴ CONGRESSIONAL BUDGET OFFICE, OPTIONS FOR INCREASING FEDERAL INCOME FROM CRUDE OIL AND NATURAL GAS ON FEDERAL LANDS 1, Apr. 2016, <https://perma.cc/SEM7-PNAS>.
- ⁶⁵ 30 U.S.C. § 226(d).
- ⁶⁶ 43 C.F.R. § 3103.2-2(a).
- ⁶⁷ 30 U.S.C. § 226(d); 43 C.F.R. § 3103.2-2(c).
- ⁶⁸ CONGRESSIONAL BUDGET OFFICE, *supra* note 64, at 18.
- ⁶⁹ U.S. BUREAU OF LAND MANAGEMENT, Table 2 Acreage in Effect, <https://perma.cc/Q3MV-FJ4M>.
- ⁷⁰ U.S. BUREAU OF LAND MANAGEMENT, Table 6 Acreage of Producing Leases, <https://perma.cc/Q3MV-FJ4M>.
- ⁷¹ TAXPAYERS FOR COMMON SENSE, LOCKED OUT: THE COST OF SPECULATION IN FEDERAL OIL AND GAS LEASES (Oct. 3, 2017), <https://www.taxpayer.net/energy-natural-resources/locked-out-the-cost-of-speculation-in-federal-oil-and-gas-leases/>.
- ⁷² See, e.g., Lipton & Tabuchi, *supra* note 1; Cooper McKim, *Trump Push for ‘Energy Dominance’ Boosts Drilling On Public Land*, NPR (Nov. 25, 2018, 7:55 AM), <https://www.npr.org/2018/11/25/666373189/trump-push-for-energy-dominance-boosts-drilling-on-public-land>; Timothy Puko, *Interior Secretary Nominee Says He Will Balance Energy, Environment*, WALL ST. J. (Feb. 8, 2019, 9:00 AM), <https://www.wsj.com/articles/interior-secretary-nominee-says-he-will-balance-energy-environment-11549634400>.
- ⁷³ See U.S. BUREAU OF LAND MANAGEMENT, Table 11: Acreage Offered at Competitive Lease Sale Auctions Since January 1, 2009, <https://perma.cc/Q3MV-FJ4M>.
- ⁷⁴ Lipton & Tabuchi, *supra* note 1; see also Bobby McGill, *Nevada Becoming Wild West for Oil Speculation*, BLOOMBERG ENVT. (Aug. 5, 2019), <https://news.bloombergenvironment.com/environment-and-energy/nevada-becoming-wild-west-for-oil-speculation> (“The administration has put more than 1.8 million acres of federal lands in Nevada on the auction block for leasing since March 2017, more than double the 818,000 acres leased in Nevada during the last four years of the Obama administration. Many of the leases are in regions that have little proven oil production potential, according to environmental group protests filed against the lease sales.”).
- ⁷⁵ TAXPAYERS FOR COMMON SENSE: GAMING THE SYSTEM: HOW FEDERAL LAND MANAGEMENT IN NEVADA FAILS TAXPAYERS (July 2019), https://www.taxpayer.net/wp-content/uploads/2019/07/TCS-Nevada-Federal-Oil-Gas-Report_-July-2019.pdf.
- ⁷⁶ Lipton & Tabuchi, *supra* note 1 (emphasis added).

- ⁷⁷ CONGRESSIONAL BUDGET OFFICE, *supra* note 64, at 19. The report recognized that while rental fees have the capacity to “promote efficiency by discouraging firms from ‘warehousing’ parcels simply to prevent competitors from exploring them,” the fees “would have to be far greater than they are now to have such an effect.” *Id.* at 9.
- ⁷⁸ See, e.g., Lipton & Tabuchi, *supra* note 1 (quoting an executive at a Texas-based company, with leases to landholdings roughly the size of Rhode Island, to this effect).
- ⁷⁹ CTR. AMERICAN PROGRESS, OIL AND GAS COMPANIES GAIN BY STOCKPILING AMERICA’S FEDERAL LAND 3 (2018), <https://www.americanprogress.org/issues/green/reports/2018/08/29/455226/oil-gas-companies-gain-stockpiling-americas-federal-land/>. There has been a trajectory towards increased speculation of undeveloped land, especially after an SEC rule in 2008 allowed companies to include undeveloped land in its disclosures for “proved reserves.” *Id.* at 5–6, 14 (citing 17 C.F.R. § 210).
- ⁸⁰ THE WILDERNESS SOC’Y, NO EXIT: FIXING THE BLM’S INDISCRIMINATE ENERGY LEASING 4 (2016), <https://perma.cc/UMG7-KWPR>; see also Lipton & Tabuchi, *supra* note 1 (“The speculation, critics say, allows companies to lock up millions of acres of federal land in leases, complicating efforts to set it aside for other uses.”).
- ⁸¹ THE WILDERNESS SOC’Y, *supra* note 80, at 5; see also U.S. BUREAU OF LAND MANAGEMENT, MANUAL TRANSMITTAL SHEET 6310—CONDUCTING WILDERNESS CHARACTERISTICS INVENTORY ON BLM LANDS (PUBLIC) (2012), <https://perma.cc/7HEY-4QE2> (Under “Specially Designated Conservation Areas and Wildlife” in drop-down menu); U.S. BUREAU OF LAND MANAGEMENT, MANUAL TRANSMITTAL SHEET 6320—CONSIDERING LANDS WITH WILDERNESS CHARACTERISTICS IN THE BLM LAND USE PLANNING PROCESS (PUBLIC) (2012), <https://perma.cc/7HEY-4QE2> (Under “Specially Designated Conservation Areas and Wildlife” in drop-down menu); U.S. BUREAU OF LAND MANAGEMENT, MANUAL TRANSMITTAL SHEET 1613—AREAS OF CRITICAL ENVIRONMENTAL CONCERN (1988), <https://perma.cc/7HEY-4QE2> (Under “General Management” in drop-down menu).
- ⁸² 43 U.S.C. § 1702(a).
- ⁸³ See generally Karin P. Sheldon & Pamela Baldwin, *Areas of Critical Environmental Concern: FLPMA’s Unfulfilled Conservation Mandate*, 28 COLO. NAT. RES. ENERGY & ENVTL. L. REV. 1 (2017).
- ⁸⁴ *Id.* at 31–32; see also Coggins, *supra* note 35, at 318 (“The regulations for planning promulgated during the Carter Administration were drastically revised under Secretary Watt and his successors in an attempt to streamline the process, limit public participation, and deemphasize planning.”).
- ⁸⁵ See *id.* at 33–47. For instance, current planning regulations “rely solely on a cross reference to § 202 of FLPMA to incorporate the priority principles for ACEC planning. This failure to provide explicit and visible priority for ACECs in planning may result in a lack of adequate funding for ACEC data collection and management, a failure to consider some areas with ACEC potential, and a failure to designate and protect them.” *Id.* at 38; see also 43 C.F.R. § 1601.0-8 (“The development, approval, maintenance, amendment and revision of resource management plans will provide for public involvement and shall be consistent with the principles described in section 202 of the Federal Land Policy and Management Act of 1976.”).
- ⁸⁶ See *id.* at 47–58; see also GAO RMP Report, *supra* note 46, at 4 (observing that ACEC designations “were substantially dependent on the philosophical views of Bureau field managers, which varied considerably” and recounting that where one field office had applied the designation to a western juniper/sagebrush plant community considered common throughout many parts of the West, another field office had not applied the designation to a paleontological site containing pterodactyl foot tracks, one of only four such known sites in the entire world).
- ⁸⁷ THE WILDERNESS SOC’Y, *supra* note 80, at 5 (going on to furnish examples of no- to low-potential areas in four western states that are open to leasing).
- ⁸⁸ *Id.* at 3. For example, nominations of no- or low-potential areas under the purview of Colorado’s Kremmling Field Office encountered opposition “based on inadequate protections for fisheries and water quality (June 2014), wildlife (August 2012) and permitted recreation activities (May 2013).” *Id.* at 6.
- ⁸⁹ Lipton & Tabuchi, *supra* note 1. Only “3 percent of the 715,441 acres of federal land in the state leased for oil and gas were actually producing energy as of late [2017].” *Id.* Compare Table 6 Acreage of Producing Leases *supra* note 3, with Table 2 Acreage in Effect, *supra* note 2.
- ⁹⁰ BLM, WILDERNESS CHARACTERISTICS INVENTORY REVIEW A REVIEW OF VALE AND LAKEVIEW DISTRICT CONFORMANCE WITH ESTABLISHED PROCEDURES FOR MAINTAINING THE INVENTORY OF LANDS WITH WILDERNESS CHARACTERISTICS 33-34 (Dec. 18, 2015), <https://perma.cc/E7JM-KCBL>.
- ⁹¹ THE WILDERNESS SOC’Y, NO EXIT: FIXING THE BLM’S INDISCRIMINATE ENERGY LEASING 4 (2016), <https://perma.cc/UMG7-KWPR> (citing BLM, GRAND JUNCTION DRAFT RESOURCE MANAGEMENT PLAN AND ENVIRONMENTAL IMPACT STATEMENT, 4-256 (Dec. 2012)).

- ⁹² *Id.* (citing the Colorado River Valley Resource Management Plan and Bighorn Basin Resource Management Plan in Wyoming).
- ⁹³ See *supra* Part III.A; see also Lipton & Tabuchi, *supra* note 1 (“Taxpayers get 12.5 percent of revenues produced from any oil or gas extracted from leased public land—or nothing but trivial rent payments if speculators fail to develop the land successfully.”).
- ⁹⁴ CONGRESSIONAL BUDGET OFFICE, *supra* note 64, at 2. Even here, taxpayers receive a relatively minimal benefit from production on federal land, as the federal onshore royalty rate of 12.5 percent “is less than the royalty rate imposed by many states for production of oil and gas on state-owned land. For example, current state royalty rates are 25 percent in Texas, 18.75 percent in Oklahoma, and 16.67 percent in Colorado, Montana, and Wyoming; New Mexico and North Dakota use both 16.67 percent and 18.75 percent rates.” *Id.* at 20.
- ⁹⁵ 30 U.S.C. § 226(b)(1)(A).
- ⁹⁶ 30 U.S.C. § 226(c)(1).
- ⁹⁷ Lipton & Tabuchi, *supra* note 1; CENTER FOR AMERICAN PROGRESS, BACKROOM DEALS, *supra* note 4.
- ⁹⁸ Lipton & Tabuchi, *supra* note 1.
- ⁹⁹ CONGRESSIONAL BUDGET OFFICE, *supra* note 64, at 2.
- ¹⁰⁰ See 43 C.F.R. §§ 1601.0-2; 1601.0-8; 1610.5-5; 1610.5-6.
- ¹⁰¹ See *supra* Part II.
- ¹⁰² Sheldon & Baldwin, *supra* note 83, at 59 (further noting that “[i]n the past, many ACECs have subsequently become National Conservation Areas or National Monuments”).
- ¹⁰³ *Id.* at 61–62 (“The legislative history of FLPMA, and early agency actions, support the interpretation that these priorities are both procedural . . . and substantive.”).
- ¹⁰⁴ See *id.* at 61–64.
- ¹⁰⁵ See *supra* Part III.B.
- ¹⁰⁶ Sheldon & Baldwin, *supra* note 83, at 58–59.
- ¹⁰⁷ *Id.* at 32; Pub. L. No. 115-12, 131 Stat. 76 (2017). President Trump signed the associated Joint Resolution.
- ¹⁰⁸ 5 U.S.C. § 801(b)(2) (establishing that a rule subjected to a joint resolution of disapproval “may not be reissued in substantially the same form, and a new rule that is substantially the same as such a rule may not be issued, unless the reissued or new rule is specifically authorized by a law enacted after the date of the joint resolution disapproving the original rule”).
- ¹⁰⁹ See *supra* Part I.
- ¹¹⁰ 779 F.3d 588, 610 (D.C. Cir. 2015); see also *supra* notes 20–22 and accompanying text.
- ¹¹¹ See BOEM, DRAFT PROPOSED PROGRAM FOR THE 2019–2024 OUTER CONTINENTAL SHELF OIL AND GAS LEASING PROGRAM at 10-13 (Jan. 2018), <https://perma.cc/7C76-AYE4>. BOEM does not currently account for climate change effects in its analysis, and does not quantify environmental and social costs.
- ¹¹² *Id.*
- ¹¹³ See *id.*
- ¹¹⁴ For more information on how BLM and BOEM could quantify environmental and social option value, see INST. FOR POLICY INTEGRITY, COMMENTS ON THE 2019-2024 OUTER CONTINENTAL SHELF (OCS) OIL AND GAS LEASING DRAFT PROPOSED PROGRAM 26-32 (Mar. 2018), <https://perma.cc/U3BU-JSA3>.
- ¹¹⁵ See *supra* Part I.
- ¹¹⁶ See, e.g., *infra* Part V.B.
- ¹¹⁷ See *infra*, Part V.B.
- ¹¹⁸ *Id.*
- ¹¹⁹ See 43 U.S.C. § 1701(a)(9); *supra* Part II.A.
- ¹²⁰ See Hein, *supra* note 6 at 33.
- ¹²¹ *Supra* notes 63–64 and accompanying text.
- ¹²² Jayni Foley Hein, *Harmonizing Preservation and Production*, INST. FOR POLICY INTEGRITY, N.Y. UNIV. SCH. OF LAW 15 (2015) [hereinafter Interior Leasing Report].
- ¹²³ See *supra* Part III.B.
- ¹²⁴ Hein, *Interior Leasing Report*, *supra* note 120, at 18.
- ¹²⁵ Hein, *Interior Leasing Report*, *supra* note 120, at 19.
- ¹²⁶ See 43 C.F.R. § 3103.2-2(a)-(b).
- ¹²⁷ BUREAU OF LAND MANAGEMENT, Appendix 7—Lease Stipulations and Standard Lease Terms (BLM Form 3100-11), at A7-1–A7-2, <https://perma.cc/LSYH-2PUP>.
- ¹²⁸ *Id.*
- ¹²⁹ See 43 C.F.R. §§ 3101.1-2; 3101.1-3.
- ¹³⁰ 43 C.F.R. § 3107.2-1.
- ¹³¹ 43 C.F.R. § 3135.1-6(a).
- ¹³² 43 C.F.R. § 3135.1-6(b).
- ¹³³ 43 C.F.R. § 3103.4-4(b).
- ¹³⁴ See U.S. GOV’T ACCOUNTABILITY OFFICE, GAO-18-411, OIL AND GAS LEASE MANAGEMENT: BLM COULD IMPROVE OVERSIGHT OF LEASE SUSPENSIONS WITH BETTER DATA AND MONITORING PROCEDURES 1 (2018) [hereinafter GAO, LEASE MANAGEMENT REPORT].

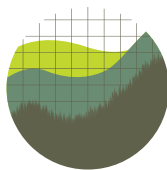
- ¹³⁵ *Id.* at 7, citing 43 C.F.R. § 3103.4-4. BLM officials told GAO that suspensions of production are rare. *Id.*
- ¹³⁶ *Id.* at 11, citing U.S. DEP’T OF THE INTERIOR, BUREAU OF LAND MGMT., SUSPENSIONS OF OPERATIONS AND/OR PRODUCTION MANUAL. However, it is difficult to determine the most common reasons for lease suspensions because BLM does not require such reasons to be included in its database. Rather, such information is in the official lease files, many of which are in hard copy.
- ¹³⁷ 43 C.F.R. § 3135.1-5(b).
- ¹³⁸ GAO, LEASE MANAGEMENT REPORT, *supra* note 132, at 2.
- ¹³⁹ *Id.* at 14–15, 18. Colorado, Montana, New Mexico, Utah, and Wyoming alone had more than 2,350 of the 2,750 suspended leases, amounting to more than 2.9 million acres of land. *Id.* at 15.
- ¹⁴⁰ See Letter from Joseph R. Balash, Assistant Sec’y, Land & Minerals Mgmt., U.S. Dep’t of the Interior, to Frank Rusco, Dir., Nat. Res. & Env’t, U.S. Gov’t Accountability Office (May 22, 2018) (on file with author). BLM said it will also replace its current database technology to help create standardized reports for lease suspension data and to have data fields recording the reasons for the suspensions. *Id.*
- ¹⁴¹ Niina Farrah, *BLM Halts Leases after Sage Grouse, Climate Legal Brawls*, ENERGYWIRE (Nov. 14, 2019), <https://perma.cc/V3PR-LTQH>.
- ¹⁴² *Id.*
- ¹⁴³ GAO, LEASE MANAGEMENT REPORT, *supra* note 132, at 25–26. GAO determined that BLM’s monitoring of lease suspensions did not constitute quality information as defined by the *Standards for Internal Control in the Federal Government*. *Id.* at 19 (“[Q]uality information may be defined as appropriate, current, complete, accurate, accessible, and provided on a timely basis.”) (citing U.S. GOV’T ACCOUNTABILITY OFFICE, GAO-14-704G, STANDARDS FOR INTERNAL CONTROL IN THE FEDERAL GOVERNMENT (2014)). For example, the lack of a data field for lease suspensions prevents the public and others across the agency from knowing the reasons for or the status of such suspensions. Also, the system’s informality can lead to inconsistent oversight and practices among field offices. *Id.* at 20–21. In addition to recommending a data field for BLM to record reasons for suspensions and official agency procedures for monitoring suspensions, GAO recommended that officials in headquarters and state offices oversee field offices’ monitoring of suspensions, and recommended mechanisms to assist officials in such oversight (such as requiring standardized summary reports on lease suspensions). *Id.*
- ¹⁴⁴ See *infra* Part V.B.
- ¹⁴⁵ Whether President Trump will ultimately succeed in removing the land from the monument is currently subject to litigation. See *Wilderness Society v. Trump*, Case 1:17-cv-02587-TSC (D. D.C. 2019).
- ¹⁴⁶ U.S. DEP’T OF THE INTERIOR, BUREAU OF LAND MGMT., GRAND STAIRCASE-ESCALANTE NATIONAL MONUMENT AND KANAB-ESCALANTE PLANNING AREA PROPOSED RESOURCE MANAGEMENT PLANS AND FINAL ENVIRONMENTAL IMPACT STATEMENT ES-39 (Oct. 2019), <https://perma.cc/JSV9-2HFT> [hereinafter KEPA RMP & Final EIS].
- ¹⁴⁷ *Id.* at ES-39.
- ¹⁴⁸ *Id.* at ES-7.
- ¹⁴⁹ *Id.* at 2-15.
- ¹⁵⁰ *Id.* at ES-27. In any event, job and labor income projections are usually transfers from one group to another, and not reflective of net welfare gains.
- ¹⁵¹ MICHAEL VANDEN BERG, UTAH GEOLOGICAL SURVEY, MINERAL POTENTIAL REPORT FOR THE LANDS NOW EXCLUDED FROM GRAND STAIRCASE-ESCALANTE NATIONAL MONUMENT 58 (2018), <https://perma.cc/PHX7-TTF3>.
- ¹⁵² *Id.*
- ¹⁵³ U.S. DEP’T OF THE INTERIOR, *Explore Data/Utah*, <https://perma.cc/W74Q-SZFC>; see also Juliet Eilperin, *A Diminished Monument*, WASH. POST (Jan. 15, 2019), <https://perma.cc/N8NQ-CX2Q>.
- ¹⁵⁴ Eilperin, *supra* note 151. Another source cites two dozen types of dinosaurs discovered at the monument. Ben Arnoldy, *Monumental Discoveries*, EARTHJUSTICE (July 2, 2018), <https://perma.cc/Q33W-WM75>.
- ¹⁵⁵ KEPA Proposed RMP & Final EIS, *supra* note 144, at ES-16.
- ¹⁵⁶ Letter from Soc’y of Vertebrate Paleontology to U.S. Bureau of Land Mgmt. at 10 (on file with author) [hereinafter SVP Letter].
- ¹⁵⁷ *Id.* at 3.
- ¹⁵⁸ Eilperin, *supra* note 151. On the one hand, paleontologist Alan Titus, who works within the monument, said casual fossil collection will not deplete fossils that are important to research. On the other hand, Jeff Eaton, a retired professor, is concerned about what will be taken out of the monument. *Id.*
- ¹⁵⁹ KEPA Proposed RMP & Final EIS, *supra* note 144, at ES-16.

- ¹⁶⁰ For a study of the importance of bees as primary pollinators of most flowering plants, see Jeff Ollerton et al., *How Many Flowering Plants Are Pollinated by Animals?*, 120 *OIKOS* 321, 321 (2011) (“Plant–pollinator relationships may be one of the most ecologically important classes of animal–plant interaction: without pollinators . . . many animal populations would decline, with consequent knock-on effects for other species.”).
- ¹⁶¹ Olivia Messinger Carril et al., *Wild Bees of Grand Staircase-Escalante National Monument: Richness, Abundance, and Spatio-Temporal Beta-Diversity*, *PEERJ* DOI 10.7717/peerj.5867 (2018), citing Jason Gibbs et al., *The Bees of Michigan (Hymenoptera: Apoidea: Anthophila)*, 4352 *ZOOTAXA* 1 (2017).
- ¹⁶² *Id.* at 2.
- ¹⁶³ *Id.* at 16.
- ¹⁶⁴ See, e.g., Ollerton et al., *supra* note 158, at 321 (citing human reliance on animal-pollinated crops but lack of scientific consensus on how many pollinated flowering plant species exist); Elizabeth Grossman, *Declining Bee Populations Pose a Threat to Global Agriculture*, *YALE ENV’T* 360 (Apr. 30, 2013), <https://perma.cc/8ZHS-WVSP> (“One of every three bites of food eaten worldwide depends on pollinators, especially bees, for a successful harvest . . .”); U.S. ENVTL. PROT. AGENCY, *Pollinator Protection: Colony Collapse Disorder*, <https://perma.cc/RYR3-YP53> (summarizing the Colony Collapse Disorder Action Plan created for bee protection in 2007). But see Jon Entine, *The Bee Apocalypse Was Never Real; Here’s Why*, *AMERICAN COUNCIL ON SCIENCE & HEALTH* (Apr. 17, 2018) <https://perma.cc/Q5AW-SCKJ> (discussing the myth of honeybee decline).
- ¹⁶⁵ See KEPA Proposed RMP & Final EIS, *supra* note 132.
- ¹⁶⁶ *Supra* Part IV.A.
- ¹⁶⁷ U.S. DEP’T. OF THE INTERIOR, *USGS Identifies Largest Continuous Oil and Gas Resource Potential Ever Assessed*, <https://perma.cc/H8PQ-87XZ>. At current production rates, the Basin is said to produce as much as 49 years’ worth of oil. Jennifer Hiller, *Texas and New Mexico Shale Basins Hold 49 Years Worth of Oil*, *USGS*, *REUTERS* (Dec. 6, 2018) <https://www.reuters.com/article/us-oil-shale-texas/texas-and-new-mexico-shale-basins-hold-49-years-worth-of-oil-usgs-idUSKBN1O52IV>.
- ¹⁶⁸ Keith Schneider, *Here’s Why New Mexico’s Oil Boom Is Raising a Lot of Questions About Water*, *L.A. TIMES* (Mar. 25, 2018), <https://perma.cc/P477-LQLA> (“Conditions here are unique,” said Ed Martin, assistant commissioner in the New Mexico State Land Office, which manages nearly 2 million acres of state land for energy production. “The volumes of water the industry uses are so prolific. The disposal problems are more pronounced. The potential for something to go wrong is higher.”).
- ¹⁶⁹ Rachel Leven, *Drilling Overwhelms Agency Protecting America’s Lands*, *CTR. FOR PUB. INTEGRITY* (Nov. 13, 2018), <https://perma.cc/L8A5-EQQ3>.
- ¹⁷⁰ NAT’L PARK SERV., *Beauty and Wonder; Above and Below*, <https://perma.cc/3ZA7-76ED>; see also Schneider, *supra* note 166.
- ¹⁷¹ BLM, *Draft Resource Management Plan and Environmental Impact Statement* (Aug. 2018), <https://perma.cc/SD34-2H6R>; Leven, *supra* note 167.
- ¹⁷² Bonnie Berkowitz & Adrian Blanco, *Mapping the Strain on our Water*, *Wash. Post* (Aug. 6, 2019) <https://www.washingtonpost.com/climate-environment/2019/08/06/mapping-strain-our-water/?arc404=true>.
- ¹⁷³ Schneider, *supra* note 166.
- ¹⁷⁴ *Id.*
- ¹⁷⁵ Though this report focuses on the particularly uncertain effects of fracking on groundwater in New Mexico, see an account of the ramifications on Texas groundwater from fracking in the Basin in Christopher Collins, *In the Heart of the West Texas Oil Patch, A New Fracking Frenzy Is Putting a Strain on Groundwater*, *TEX. OBSERVER* (Dec. 11, 2017), <https://perma.cc/RM6P-AU9E>.
- ¹⁷⁶ Schneider, *supra* note 166.
- ¹⁷⁷ See U.S. DEP’T OF THE INTERIOR, BUREAU OF LAND MGMT., September 2018 Competitive Oil and Gas Lease Sale 13 (2018), <https://perma.cc/VP2J-3LN5>. No Environmental Impact Statement was prepared for the September 2018 lease sale because Alternative B deferred parcels thought to be connected to the Capitan Aquifer. U.S. DEP’T OF THE INTERIOR, BUREAU OF LAND MGMT., September 2018 Competitive Oil and Gas Lease Sale DOI-BLM-NM-P000-2018-0004-EA—Finding of No Significant Impact (2018), <https://perma.cc/SZ5Z-SXMV>.
- ¹⁷⁸ Jeb French, *Legislature Approves Funding to Stabilize Sink-hole-in-Waiting*, *KOB4* (Feb. 12, 2018, 9:52 PM) <https://perma.cc/5SV7-Q93J>.
- ¹⁷⁹ Associated Press, *Project to Fill Defunct Brine Well Faces \$9M Shortfall*, *AP NEWS* (Oct. 29, 2019), <https://perma.cc/MUL2-NM76>.
- ¹⁸⁰ See Schneider, *supra* note 166 (quoting George Veni, director of the National Cave and Karst Research Institute).
- ¹⁸¹ LEWIS LAND, *EVAPORITE KARST IN THE PERMIAN BASIN REGION OF WEST TEXAS AND SOUTHEASTERN NEW MEXICO: THE HUMAN IMPACT*, NAT’L CAVE & KARST RES. INST. (2013) (detailing the scientific causes of the 2008 sinkholes in the Carlsbad region); see also Schneider, *supra* note 166.

- ¹⁸² Kevin Crowley, *The Permian Oil Boom Is Showing Signs of Overheating*, BLOOMBERG (Oct. 16, 2018), <https://perma.cc/T4BZ-D28P>.
- ¹⁸³ Laura B. Comay et al., CONG. RES. SERV., ARCTIC NATIONAL WILDLIFE REFUGE (ANWR): AN OVERVIEW 9 (2018), <https://perma.cc/UNW9-FYK9>.
- ¹⁸⁴ *Id.* at 10. Each sale must offer at least 400,000 acres and must include high-potential areas for discovery of hydrocarbons. *Id.*
- ¹⁸⁵ *Id.* at 4; Steven Amstrup, *Arctic National Wildlife Refuge, Polar Bears Int'l* (Dec. 13, 2017), <https://perma.cc/Q677-3JR5>.
- ¹⁸⁶ U.S. FISH & WILDLIFE SERV., *Wildlife & Habitat*, <https://perma.cc/FU4D-HLP2>.
- ¹⁸⁷ Amstrup, *supra* note 183; George M. Durner, Steven C. Amstrup, & Ken J. Ambrosius, *Polar Bear Maternal Den Habitat in the Arctic National Wildlife Refuge, Alaska*, 59 ARCTIC 31, 34 (2006); *see also* A.S. Fischbach et al., *Landward and Eastward Shift of Alaskan Polar Bears Denning Associated With Recent Sea Ice Changes*, 30 POLAR BIOL 1395 (2007). Part of an international agreement in 1973 among the U.S., Canada, Denmark, Norway, and the former Union of Soviet Socialist Republics mandated parties to give “special attention to habitat components such as denning and feeding sites . . .” of polar bears. PAMELA BALDWIN, CONG. RES. SERV., LEGAL ISSUES RELATED TO PROPOSED DRILLING FOR OIL AND GAS IN THE ARCTIC NATIONAL WILDLIFE REFUSE (ANWR) 12 (2004) (quoting Agreement on the Conservation of Polar Bears, T.I.A.S. No. 8409, 27 U.S.T. 3918 (Nov. 15, 1973)).
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- ¹⁸⁹ Fischbach et al., *supra* note 185.
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- ¹⁹¹ *Id.* at 4.
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- ¹⁹⁴ *Seismic Trails*, U.S. FISH & WILDLIFE SERV., <https://perma.cc/3HUR-63B7>.
- ¹⁹⁵ Henry Fountain, *Alaska's Permafrost Is Thawing*, N.Y. TIMES (Aug. 23, 2017) <https://www.nytimes.com/interactive/2017/08/23/climate/alaska-permafrost-thawing.html?module=inline>, citing Andrew H. MacDougall et al., *Significant Contribution to Climate Warming From the Permafrost Carbon Feedback*, 5 NATURE GEOSCIENCE 719 (2012), <https://www.nature.com/articles/ngeo1573.pdf>.
- ¹⁹⁶ Craig Welch, *Arctic Permafrost is Thawing Fast. That Affects Us All*, NAT'L GEOGRAPHIC (Sept. 2019), <https://www.nationalgeographic.com/environment/2019/08/arctic-permafrost-is-thawing-it-could-speed-up-climate-change-feature/#close> (“We know there are thresholds we don't want to cross,” said Chris Field, director of Stanford University's Woods Institute for the Environment. “But we don't know precisely where they are.”).
- ¹⁹⁷ Alaska Wilderness League, “People of the Arctic National Wildlife Refuge,” <https://www.alaskawild.org/wp-content/uploads/2014/10/People-of-the-Arctic-National-Wildlife-Refuge.pdf>.
- ¹⁹⁸ *Id.*
- ¹⁹⁹ Steven Mufson, *Trump Administration Takes Another Step Toward Oil Drilling in Arctic National Wildlife Refuge*, WASH. POST (Dec. 20, 2018), https://www.washingtonpost.com/national/health-science/trump-administration-takes-another-step-toward-oil-drilling-in-arctic-national-wildlife-refuge/2018/12/20/5fb93f40-0469-11e9-b5df-5d3874f1ac36_story.html?noredirect=on&utm_term=.651aae8cb466.
- ²⁰⁰ Lee-Ashley & Rowland-Shea, *supra* note 8; *see also* COMAY, *supra* note 181, at 1.
- ²⁰¹ Lee-Ashley & Rowland-Shea, *supra* note 8.
- ²⁰² This figure does not include the costs of pulling out of the project, which could cost up to \$4.1 billion. Karolin Schaps, *Royal Dutch Shell Pulls Plug on Arctic Exploration*, REUTERS (Sept. 28, 2015, 1:48 AM), <https://www.reuters.com/article/us-shell-alaska/royal-dutch-shell-pulls-plug-on-arctic-exploration-idUSKCN0RS0EX20150928>.
- ²⁰³ COMAY, *supra* note 181, at 3.
- ²⁰⁴ *Id.* at 12.
- ²⁰⁵ *Id.* at 13–14.
- ²⁰⁶ *See* Adam Federman, *How Science Got Trampled in the Rush to Drill in the Arctic*, POLITICO (July 26, 2019), <https://perma.cc/5N3F-RZ5E> (stating, “Geoff Haskett, who served as regional director for the Alaska Region of the Fish and Wildlife Service during the Obama administration, said the rush to lease has undermined the scientific integrity of the review process.”).

- ²⁰⁷ The leases in the 130,000-acre area were suspended since the 1980s. *Interior Department Cancels Remaining Oil and Gas Leases in Montana's Badger-Two Medicine Area*, U.S. DEP'T OF THE INTERIOR, BUREAU OF LAND MGMT. (Jan. 10, 2017), <https://perma.cc/PHB3-FKUU> [hereinafter BLM Jan. 10, 2017 Press Release].
- ²⁰⁸ All leaseholders were refunded for any lease payments. In 2016, the Department of the Interior cancelled its remaining leases with Solenex LLC and Devon Energy, who voluntarily relinquished its never-developed leases and was refunded about \$200,000. *Secretary Jewell, Senator Tester, Blackfeet Nation, and Devon Energy Announce Cancellation of Oil and Gas Leases in Montana's Lewis and Clark National Forest*, U.S. DEP'T OF THE INTERIOR (Nov. 16, 2016), <https://perma.cc/DTZ6-LRP9> [hereinafter DOI Nov. 16, 2016 Press Release]. DOI cancelled its leases with the J.G. Kluthe Trust of Nebraska and W.A. Moncrief, Jr. of Texas in 2017. BLM Jan. 10, 2017 Press Release, *supra* note 205.
- ²⁰⁹ See DOI Nov. 16, 2016 Press Release, *supra* note 206; *The Badger-Two Medicine Is Too Wild to Drill*, WILDERNESS SOC'Y, <https://www.wilderness.org/wild-places/montana/oil-and-gas-drilling-badger-two-medicine>.
- ²¹⁰ BLM Jan. 10, 2017 Press Release, *supra* note 192.
- ²¹¹ Letter from Blackfeet Tribal Bus. Council to Sally Jewell, Sec'y, U.S. Dep't of the Interior & Tom Vilsack, Sec'y, U.S. Dep't of Agric. (Oct. 24, 2014) (on file with author) [hereinafter Blackfeet Tribal Bus. Council Letter].
- ²¹² Dept. of Interior, *Interior Department Cancels Oil and Gas Lease in the Lewis and Clark National Forest* (Mar. 17, 2016), <https://perma.cc/L52Q-FAU8>.
- ²¹³ Tristan Scott, *Judge Hears Final Arguments in Badger-Two Medicine Case*, FLATHEAD BEACON (Mar. 19, 2018), <https://perma.cc/649H-UAT6>.
- ²¹⁴ Kianna Gardner, *Moncrief Permanently Retires Lease in Badger-Two Med*, DAILY INTER LAKE (Oct. 1, 2019), https://www.dailyinterlake.com/breaking_news/20191001/moncrief_permanently_retires_lease_in_badger-two_med.
- ²¹⁵ *Moncrief v. U.S. Dep't of the Interior*, No. 17-609, slip op. at 13–14 (D.D.C. Sept. 24, 2018) (finding that Moncrief was not given sufficient notice that their leases might be subject to cancellation and that his rights as a *bona fide* purchaser were violated under MLA); *Solenex L.L.C. v. Jewell*, No. 13-0993 (R JL), slip op. at 13–15 (D.D.C. Sept. 24, 2018) (“[T]his “wait and see” approach—though convenient from a policy perspective—wreaks havoc on the interests of individual landholders.”).
- ²¹⁶ *Badger Two-Medicine*, MONT. WILDERNESS ASS'N, <https://perma.cc/NMN4-CFM9>.
- ²¹⁷ See *supra* note 213 and accompanying text.
- ²¹⁸ See *Solenex*, slip op. at 13–14 (citing *Prieto v. United States*, 655 F. Supp. 1187, 1191 (D.D.C. 1987) (finding the agency's rescission of trust status to an Indian land grant after nine months was arbitrary and capricious) and *Am. Wild Horse Pres. Campaign v. Perdue*, 873 F.3d 914, 923 (D.C. Cir. 2017) (“A central principle of administrative law is that, when an agency decides to depart from decades-long past practices and official policies, the agency must at minimum acknowledge the change and offer a reasoned explanation for it.”)).
- ²¹⁹ See *supra* Part IV.B.2.
- ²²⁰ See *Solenex*, slip op. at 7, 12–13; see also *supra* Part IV.B.
- ²²¹ Complaint at 1, *Wilderness Soc'y v. Zinke*, No. 1:18-cv-01496 (D.D.C. June 25, 2018) at 7–8 [hereinafter *Wilderness Soc'y Complaint*].
- ²²² Pat Pheifer, *Interior Department Reinstates Leases for Twin Metals Minnesota Mine Project*, STAR TRIBUNE (May 3, 2018, 5:43 AM), <https://perma.cc/SX6W-EJCW>. Among other environmental concerns, the Area is a critical habitat for many species, including three under the Endangered Species Act and over 100 species of migratory breeding birds. U.S. FISH & WILDLIFE SERV., *Minnesota: County Distribution of Federally-listed Threatened, Endangered, Proposed, and Candidate Species*, <https://perma.cc/SJH6-ZBYF>. For a summary of the Area's ecological value, see John L. Weaver, WILD-LIFE CONSERVATION SOC'Y, CONSERVATION VALUE OF ROADLESS AREAS FOR VULNERABLE FISH AND WILDLIFE SPECIES IN THE CROWN OF THE CONTINENT ECOSYSTEM, MONTANA (2011).
- ²²³ *Wilderness Soc'y Complaint*, *supra* note 219; see also Pheifer, *supra* note 220.
- ²²⁴ The U.S. Departments of Agriculture and the Interior received opposition letters from 170 businesses and outdoors organizations by the end of May. *Lawsuit Aims to Prevent Mining Pollution near Boundary Waters Wilderness in Minnesota*, EARTHJUSTICE (June 25, 2018), <https://perma.cc/9TMS-USGV>.
- ²²⁵ The first was brought by nine Minnesota business that sought to protect the recreation area from mining, challenging the reinstatement of the leases as “arbitrary and capricious.” Complaint at 3, *Voyageur Outward Bound Sch. v. United States*, No. 1:18-cv-01463-NM (D.D.C. June 21, 2018). The second, brought by the Wilderness Society, the Izaak Walton League of America, and the Center for Biological Diversity, challenged BLM's reinstating the leases as beyond BLM's authority and arbitrary. *Wilderness Soc'y Complaint*, *supra* note 206, at 1.

- ²²⁶ Letter from Thomas L. Tidwell, Chief, U.S. Dep’t of Agric. Forest Serv. to Neil Kornze, Dir., U.S. Dep’t of the Interior Bureau of Land Mgmt. (Dec. 14, 2016) [hereinafter Tidwell Letter] (on file with author); Pfeifer, *supra* note 207.
- ²²⁷ Tidwell Letter, *supra* note 224 (“In addition to the existing high quality of the waters, the dramatic hydrogeology and interconnectedness of BWCAW’s [Boundary Waters Canoe Area Watershed] forests, lakes, streams, and wetlands make the region unique and susceptible to degradation.”).
- ²²⁸ *Twin Metals*, SIERRA CLUB, <https://perma.cc/ZF4V-JHQ7> (last visited Nov. 29, 2019) (“Although mining companies claim that they can “mitigate” such problems, there is currently no sulfide mine in existence that is not polluting the ground[sic]water.”).
- ²²⁹ U.S. DEP’T OF THE INTERIOR, BUREAU OF LAND MGMT., Environmental Assessment 13–14 (2018), <https://perma.cc/R257-U353> [hereinafter *Twin Metals EA*].
- ²³⁰ SIERRA CLUB, *supra* note 226.
- ²³¹ *Creating Local Jobs*, TWIN METALS MINN., <https://perma.cc/R4ER-B3MQ>.
- ²³² Tidwell Letter, *supra* note 211, at 5.
- ²³³ *Id.*
- ²³⁴ See, e.g., *Create Your Own Adventure in the Boundary Waters*, EXPLORE MINN., <https://www.exploreminnesota.com/travel-ideas/create-your-adventure-in-the-boundary-waters/>.
- ²³⁵ *Twin Metals EA*, *supra* note 227, at 6, 9. Regarding general resource protection, BLM requires “exercise reasonable diligence to protect life, health, property, mineral or water resources.” BLM said this requirement more expressly seeks to protect habitats than the No-Action Alternative, but still does not anticipate any measurable difference in impact to wildlife habitats. BLM also does not expect any measurable difference between the two Actions when it comes to watershed protection because both require compliance with state and federal laws. Overall, BLM believes the Proposed Action only “may have a slightly more beneficial effect on shared resources . . .” *Id.* at 24.
- ²³⁶ *Supra* Part IV.B.2.
- ²³⁷ UNITED NATIONS EDUC., SCI. & CULTURAL ORG. WORLD HERITAGE CONVENTION, *Chaco Culture*, <https://perma.cc/EFV2-3D6V>.
- ²³⁸ NAT’L PARK SERV., *History & Culture*, <https://perma.cc/SUY8-3LCS>.
- ²³⁹ UNITED NATIONS EDUC., SCI. & CULTURAL ORG. WORLD HERITAGE CONVENTION, *supra* note 235.
- ²⁴⁰ NAT’L PARK SERV., *Chaco Night Sky Program*, <https://perma.cc/Y9EW-S6FY>.
- ²⁴¹ NAT’L PARK SERV., *History & Culture*, *supra* note 236; Adam Markham, *Chaco Canyon at Risk: Interior Nominee Bernhardt Wants to Drill on Lands Sacred to Tribes*, UNION OF CONCERNED SCIENTISTS (Feb. 19, 2019), <https://perma.cc/W7YY-TH5M>. Senators Tom Udall and Martin Heinrich introduced the Chaco Cultural Heritage Area Protection Act in May 2018 to ban drilling and fracking on lands within a 10-mile radius of the Park, part of which BLM offered for lease in February 2019. Chaco Cultural Heritage Area Protection Act, S. 2907, 115th Cong. (2018), <https://perma.cc/3J72-WA62>.
- ²⁴² Michael Coleman, *Zinke Cancels Chaco Canyon Lease Sale*, ALBUQUERQUE J. (Mar. 1, 2018), <https://perma.cc/MVP2-GXAW>.
- ²⁴³ *Id.*
- ²⁴⁴ Rebecca Moss, *BLM Defers Sale of Oil, Gas Leases in Chaco Canyon Area*, SANTA FE NEW MEXICAN (Feb. 8, 2019), <https://perma.cc/88XR-UERV>.
- ²⁴⁵ *Id.*
- ²⁴⁶ Letter from Susan M. Chandler, RPA, President, Soc’y for American Archaeology to Tim Spisak, State Dir., BLM New Mexico State Office (Feb. 15, 2019), <https://perma.cc/5FJK-8JXM>.
- ²⁴⁷ NAT’L PARKS CONSERVATION ASS’N, *BLM Defers Oil and Gas Lease Sales in New Mexico, Temporarily Protecting Chaco Culture National Historical Park* (Feb. 8, 2019), <https://perma.cc/L3VY-GBK2>. The representative also stated that all remaining lease sales be deferred until both the Resource Management Plan is updated and the tribes are consulted.
- ²⁴⁸ Adam Markham, *Chaco Canyon at Risk*, UNION OF CONCERNED SCIENTISTS BLOG (Feb. 19, 2019), <https://perma.cc/53D5-FVMS>.
- ²⁴⁹ Heather Richards, *Chaco Oil and Gas Ban Falls Short for Some Locals*, GREENWIRE (May 31, 2019), <https://perma.cc/9TBV-MFB6>.
- ²⁵⁰ H.R.2181, Chaco Cultural Heritage Area Protection Act of 2019.



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