National Ecosystem Services Partnership

FEDERAL RESOURCE MANAGEMENT AND ECOSYSTEM SERVICES GUIDEBOOK

Review of Legal Authority: FLPMA

Application of an Ecosystems Services Framework for BLM Land Use Planning

Consistency with the Federal Land Policy and Management Act and Other Applicable Law

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Foreword

Natural areas provide a host of benefits to people—benefits that could be diminished if threats to natural areas are realized. At the same time, funds to protect these areas are dwindling. Consequently, resource managers are increasingly faced with decisions involving tradeoffs, whereby an increase in or preservation of one ecosystem service or benefit comes at the cost of another. The consequences of such decisions sometimes occur across traditional boundaries and responsibilities, requiring managers to consider geographic areas outside their jurisdictions and to think about ecological effects beyond their typical priorities. Such decisions are further complicated by the difficulty of quantifying important benefits not valued by traditional markets—for example, the cultural, aesthetic, and water regulation benefits provided by natural areas. In making tradeoffs, decision makers are likely to overlook benefits that are not quantified. In consideration of these tradeoffs and their potential effect on human well-being, U.S. policies and guidance have begun to incorporate ecosystem services and the benefits they provide into natural resource planning and management.

Federal dialogue on ecosystem services was sparked by the 1998 President's Council of Advisors on Science and Technology (PCAST) report *Teaming with Life: Investing in Science to Understand and Use America's Living Capital*. A decade later, the U.S. Farm Bill called for federal agencies to explore ecosystem services and their potential application in environmental markets, resulting in establishment of the U.S. Department of Agriculture's Office Environmental Markets. In 2010, appointees from federal agencies with natural resource jurisdictions met to explore markets and payments for ecosystem services. Since then, several events have advanced federal agencies' consideration of ecosystem services approaches to natural resource planning and management:

- In 2011 the PCAST issued *Sustaining Environmental Capital: Protecting Society and the Economy*, a report which asserts the critical importance of the environment for the economy and to societal well-being and which emphasizes the need for agencies to develop consistent ecosystem services valuation techniques across federal agencies.
- The U.S. Forest Service's 2012 Planning Rule required that planning activities consider ecosystem services as part of an integrated resource management focus. The agency is moving quickly to phase in implementation of the rule.
- In 2013, the White House Council on Environmental Quality released new principles and requirements for federal investments in water resources. These principles and requirements include guidance on using an ecosystem services evaluation framework for water resources projects.
- Other agencies, including the Bureau of Land Management, Fish and Wildlife Service, U.S. Geological Survey, the U.S. Army Corps of Engineers, the Environmental Protection Agency, and the National Oceanic and Atmospheric Administration, have begun assessing and testing methods for identifying and valuing ecosystem services as they move toward applying them in decisions about natural resource management.

Agency leaders and resource managers are increasingly encouraging their staff to consider ecosystem services in their planning and management decisions. At the same time, they recognize multiple challenges to operationalizing this new approach. These challenges include (1) a lack of capacity and tools to identify, assess, and incorporate ecosystem services into planning and management processes; (2) institutional resistance to a new idea with still-developing methods; (3) institutional limits to cross-agency

sharing and coordinated use of methods and tools; and (4) concern about the credibility and defensibility of the methods within the context of the planning process and agencies' legal authorities. This concern was the subject of a 2012 workshop led by the National Ecosystem Services Partnership (NESP) and A Community on Ecosystem Services (ACES).

To address these challenges, NESP launched the Federal Resource Management and Ecosystem Services (FRMES) project to develop credible approaches for incorporating ecosystem services into natural resource planning and management. The culmination of this project is an online guidebook that describes how these approaches can be useful for federal resource planners and managers. In addition, it examines how federal agencies are exploring or applying the ecosystem services concept. It also provides a framework and methodology to enhance the consistency of ecosystem services approaches.

This legal paper is one of two that will appear in the guidebook. The papers describe the legal foundations for agency use of ecosystem services approaches to planning and management, thereby laying the groundwork for the guidebook. They explain how the National Environmental Policy Act and the Federal Land Management and Policy Act of 1976 enable or limit agencies' incorporation of ecosystem services approaches into federal planning and management processes.

CONTENTS

Introduction

What is the statutory and regulatory authority of the Bureau of Land Management (BLM) to determine whether and how it can apply an ecosystem services framework to land use planning? The answer to this question is of great national importance because among the federal land managing agencies, the BLM administers the largest share of federal land. Its adoption of an ecosystem services framework could promote use of the framework by other federal land managing agencies and as a model for state and tribal land managing agencies.

Analysis of the BLM's land use planning authority—Section 202 of the Federal Land Policy and Management Act of 1976 (FLPMA)—and its components in relation to ecosystem services as well as analysis of similarities in BLM and U.S. Forest Service planning requirements suggest that the BLM does have the legal authority to manage public lands for both the preservation and use of ecosystem services. The agency's resource management plans can be amended to integrate ecosystem services concepts into agency decision making. Consideration of ecosystem services could be incorporated into that process immediately through national or state director guidance, and over the longer term, through inclusion of either the rental value or the loss value of those services in determinations of fair market value, an FLPMA requirement for use of public lands and their resources.

The Bureau of Land Management

The BLM is a federal agency within the U.S. Department of the Interior that currently manages more than 245 million acres of surface land and 700 million acres of subsurface mineral estate in the United States.[1] The lands managed by the BLM are commonly known as public lands.[2] Sister federal land managing agencies include the National Park Service and the U.S. Fish & Wildlife Service within the Department of the Interior and the U.S. Forest Service within the Department of Agriculture. The BLM primarily manages land that entered the public domain in the 19th century through treaty or conquest and that Congress has not withdrawn for management by other federal agencies or purposes, such as parks, refuges, forests, and Indian and military reservations or that has not passed into non-federal ownership through homesteading, mineral entries, grants to states and railroads, or other means.

The Federal Land Policy and Management Act of 1976 (FLPMA), as amended, is the BLM's "organic act."[3] FLPMA "established a policy in favor of retaining public lands for multiple use management."[4] Such management describes the complex task of balancing the many competing land uses, "including, but not limited to, recreation, range, timber, minerals, watershed, wildlife and fish, and [uses serving] natural scenic, scientific and historical values."[5] An equally important management goal, sustained yield, requires the BLM to achieve and maintain in perpetuity a high level of output of the various renewable resources of public lands.[6] To accomplish these goals, FLPMA establishes the process of inventory and planning.

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[1] http://www.blm.gov/wo/st/en/prog/planning.html.
[2] 43 U.S.C. § 1702(e).
[3] Pub. L. No. 94-579, 90 Stat. 2743 (codified as amended at 43 U.S.C. §§ 1701-87).
[4] *Lujan v. National Wildlife Federation*, 497 U.S. 871, 877 (1990).
[5] 43 U.S.C. § 1702(c).
[6] *Id*. § 1702(h).

Ecosystems Services

Ecosystem services are the benefits people obtain from ecosystems.[7] They include "provisioning services" such as food, water, timber, and fiber; "regulating services" that affect climate, floods, disease, wastes, and water quality; "cultural servi*c*es" that provide recreational, aesthetic, and spiritual benefits; and "supporting services" such as soil formation, photosynthesis, and nutrient cycling. Although buffered against environmental changes by culture and technology, humans are fundamentally dependent on the flow of ecosystem services.[8] "[T]he services and countless benefits to the human economy that come from Nature have an estimated value every year of around double the global Gross Domestic Product."[9]

Healthy public land ecosystems provide goods and services that are vital to human health and livelihoods. Many of these goods and services, such as watershed protection, wildlife habitat and diversity, carbon storage, and scenery and solitude, are commonly viewed as free benefits to society. Without a defined marketplace for these goods and services, they are often absent from governmental and corporate balance sheets. The result is that ecosystem services become subject to short-term development pressures and permanent loss. Understanding that public land ecosystems are natural assets with economic and social value can promote conservation and responsible decision making. Recognition and determination of the market value for carbon sequestration, watershed management, ecotourism, and a host of other services can change how public lands are used and can promote good stewardship, especially when used in conjunction with other conservation tools.

BLM Land Use Planning Authority

The BLM's resource management plans (RMPs) form the basis for every action and approved use on the public lands.[10] The BLM prepares RMPs for areas of public lands, called planning areas, which tend to have similar resource characteristics. Planning emphasizes a collaborative environment in which local, state, and tribal governments, the public, user groups, and industry work with the BLM to identify appropriate multiple uses of the public lands. Plans are periodically revised as changing conditions and resource demands require.[11]

RMPs are used by managers and the public to

- Allocate resources and determine appropriate multiple uses for the public lands,
- Develop strategies to manage and protect resources, and
- Establish systems to monitor and evaluate the status of resources and the effectiveness of management practices over time.[12]

Land use planning essentially begins with an inventory of public lands, as formulated in Section 201(a) of the FLPMA:

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[7] The terms *ecosystem services* and *environmental services* are often used interchangeably, but they are not the same. *Ecosystem services* are services provided by nature; *environmental services* are services provided by humans. See http://www.sciencedirect.com/science/journal/22120416.

[8] Millennium Ecosystem Assessment, 2005. Ecosystems and Human Well-being: Synthesis at *v.* Island Press, Washington, DC. Available at http://www.millenniumassessment.org/documents/document.356.aspx.pdf.

[9] *Forward* by HRH, the Prince of Wales, at vi, to T. Juniper, *What Has Nature Done for Us?,* Profile Books 2013.

[10] 43 U.S.C. § 1732(a)

[11] http://www.blm.gov/wo/st/en/prog/planning/planning_overview.html.

[12] *Id*.

> The Secretary shall prepare and maintain on a continuing basis an inventory of all public lands and their resource and other values (including, but not limited to, outdoor recreation and scenic values), giving priority to areas of critical environmental concern. This inventory shall be kept current so as to reflect changes in conditions and *to identify new and emerging resource and other values*. The preparation and maintenance of such inventory or the identification of such areas shall not, of itself, change or prevent change of the management or use of public lands.[13]

The emphasized language "to identify new and emerging resource and other values" directly supports incorporation of ecosystem services into inventories.

Section 202(c) of the FLPMA sets out the principles for BLM land use planning:

> In the development and revision of land use plans, the Secretary shall–
>
> (1) use and observe the principles of *multiple use and sustained yield* set forth in this and other applicable law;
> (2) *use a systematic interdisciplinary approach to achieve integrated consideration of physical, biological, economic, and other sciences;*
> (3) give priority to the designation and *protection of areas of critical environmental concern;*
> (4) *rely, to the extent it is available, on the inventory of the public lands, their resources, and other values;*
> (5) consider present and *potential uses* of the public lands;
> (6) consider the *relative scarcity of the values involved* and the availability of alternative means (including recycling) and sites for realization of those values;
> (7) *weigh long-term benefits* to the public against short-term benefits;
> (8) provide for compliance with applicable pollution control laws, including State and Federal air, water, noise, or other pollution standards or implementation plans; and
> (9) to the extent consistent with the laws governing the administration of the public lands, coordinate the land use inventory, planning, and management activities of or for such lands with the land use planning and management programs of *other Federal departments and agencies* and of the States and local governments . . . .[14]

This authority contains language that invites consideration of ecosystem services in BLM land use planning.

Section 202(c) Factors in Relation to Ecosystem Services

Subsection 202(c)(1) - Multiple Use and Sustained Yield

FLPMA defines *multiple use* and *sustained yield* as follows:

> The term "multiple use" means the management of the public lands and their various resource values so that they are utilized in the combination that will best meet the present and future needs of the American people; making the most judicious use of the land for some or all of these resources or related services over areas large enough to provide sufficient latitude for periodic adjustments in use to conform to changing needs and conditions; the use of some land for less than all of the resources; a combination of balanced and diverse resource uses that takes into account the long-term needs of future generations for renewable and non-renewable resources,

[13] 43 U.S.C. §1711(a) (emphasis added).
[14] 43 U.S.C. §1712(c) (emphases added).

> including, but not limited to, recreation, range, timber, minerals, watershed, wildlife and fish, and natural scenic, scientific and historical values; and 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.[15]
>
> The term "sustained yield" means the achievement and maintenance in perpetuity of a high-level annual of regular periodic output of the various renewable resources of the public lands consistent with multiple use.[16]

The Supreme Court has described these two terms and recognized how they relate to the inventory of the public lands, as follows:

> "Multiple use management" is a deceptively simple term that describes the enormously complicated task of striking a balance among the many competing uses to which land can be put, "including, but not limited to, recreation, range, timber, minerals, watershed, wildlife and fish, and [uses serving] natural scenic, scientific and historical values." A second management goal, "sustained yield," requires BLM to control depleting uses over time, so as to ensure a high level of valuable uses in the future. § 1702(h). To these ends, FLPMA establishes a dual regime of inventory and planning. Sections 1711 and 1712, respectively, provide for a comprehensive, ongoing inventory of federal lands, and for a land use planning process that "project[s]" "present and future use," § 1701(a)(2), given the lands' inventoried characteristics.[17]

The FLPMA's definition of *multiple use* could hardly be more accommodating to BLM's consideration of ecosystem services: "the management of the public lands and their various resource values so that they are utilized in the combination that will best meet the present and future needs of the American people." Paraphrased, FLPMA's definition could easily support the following statement: "Multiple use management means managing public lands and their ecosystems for the benefit of the American people."

The definition of *sustained yield* is similarly accommodating, emphasizing "achievement and maintenance in perpetuity" of the output of renewable resources. This language strongly supports protection of ecosystems for the ongoing benefit of people.

Subsection 202(c)(2) - Systematic Interdisciplinary Approach to Achieve Integrated Consideration of Physical, Biological, Economic, and Other Sciences

Subsection 202(c)(2) directly supports consideration of ecosystem services in BLM land use planning. Determining, evaluating, and preserving ecosystem services requires an interdisciplinary approach integrating the very sciences identified in 202(c)(2). The use of the term "economic . . . sciences" strongly invites valuation of the physical and biological benefits provided by public lands.

Subsection 202(c)(3) - Protection of Areas of Critical Environmental Concern

Congress has defined *area of critical environmental concern* (ACEC) and provided criteria for the designation of land as an ACEC.[18] BLM planning regulations require public lands to be evaluated under the ACEC criteria during the planning process.[19] According to these regulations

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[15] 43 U.S.C. §1702(c).
[16] 43 U.S.C. §1702(h).
[17] *Norton v. Southern Utah Wilderness Alliance*, 542 U.S. 55 at 58 (2004).
[18] 43 U.S.C. §1702(a). See also 43 CFR 1610.5-6(a)(1) and (2).

> Areas having potential for Areas of Critical Environmental Concern (ACEC) designation and protection management shall be identified and considered throughout the resource management planning process (see §§1610.4-1 through 1610.4-9).
>
> (a) The inventory data shall be analyzed to determine whether there are areas containing resources, values, *systems or processes* or hazards eligible for further consideration for designation as an ACEC. In order to be a potential ACEC, both of the following criteria shall be met:
>
> (1) *Relevance.* There shall be present a significant historic, cultural, or scenic value; a fish or wildlife resource or *other natural system or process*; or natural hazard.
> (2) *Importance.* The above described value, resource, *system, process*, or hazard shall have substantial significance and values. This generally requires qualities of more than local significance and special worth, consequence, meaning, distinctiveness, or cause for concern. A natural hazard can be important if it is a significant threat to human life or property.
>
> (b) *** The approved plan shall include the general management practices and uses, including mitigating measures, identified to protect designated ACEC.[20]

The criteria for ACECs include natural systems or processes and could include consideration of ecosystem services. The BLM could designate ACECs to protect ecosystem services and to target specific kinds of ecological resources for special management, if the relevance and importance criteria are met. For example, the BLM could identify particular watersheds for their unique contributions to downstream water quality and protect them from incompatible forms of leasing and permitting through ACEC designation.

Subsection 202(c)(4) - Reliance on the Inventory of the Public Lands, Their Resources, and Other Values

Land use planning essentially begins with an inventory of public lands. Section 201(a) of FLPMA states that

> The Secretary shall prepare and maintain on a continuing basis an inventory of all public lands and their resource and other values (including, but not limited to, outdoor recreation and scenic values), giving priority to areas of critical environmental concern. This inventory shall be kept current so as to reflect changes in conditions and to identify new and emerging resource and other values. The preparation and maintenance of such inventory or the identification of such areas shall not, of itself, change or prevent change of the management or use of public lands.

The emphasized language "to identify new and emerging resource and other values" directly supports incorporation of ecosystem services into inventories.

Subsection 202(c)(5) - Consider Present and Potential Uses of the Public Lands

Subsection 202(c)(5) addresses both current and future land uses. It gives the BLM the opportunity to anticipate future land uses and values and to fold them into its planning. It directly supports the agency's consideration of emerging concepts of land use, such as treating land to enhance ecosystem services or even leaving land alone because its economic benefit is greatest if left alone.

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[19] 43 CFR 1610.5-6.
[20] *Id*. (emphases added).

Subsection 202(c)(6) - Consider the Relative Scarcity of the Values Involved
Subsection 202(c)(6) directly supports BLM planning efforts to identify and consider the preservation of unique land values, including those providing ecosystem services. When essential ecosystem services are scarce in a planning area or region, this subsection supports BLM planning efforts to preserve them.

Subsection 202(c)(7) - Weigh Long-Term Benefits to the Public Against Short-Term Benefits
The benefits of ecosystem services are often more enduring than economic benefits derived from exploitation of the land. Subsection 202(c)(7) supports consideration of the long view appropriate to an evaluation of ecosystem services.

Subsection 202(c)(8) - Provide for Compliance with Applicable Pollution Control Laws
Although subsection 202(c)(8) does not directly implicate consideration of ecosystem services, it is not inconsistent with that consideration under any of the other 202(c) subsections.

Subsection 202(c)(9) - Coordinate the land Use Inventory, Planning, and Management Activities of or for Such Lands with the Land Use Planning and Management Programs of Other Federal Departments and Agencies and of the States and Local Governments
The extent to which subsection 202(c)(9) supports consideration of ecosystem services depends on the management regimes of other neighboring federal, state, and local land management agencies. Public lands managed by the BLM are often adjacent to or intermingled with lands within the National Forest system.

Similarities of BLM and Forest Service Planning Requirements

The BLM and the U.S. Forest Service have similar, but not identical, land management missions. Many of the BLM authorities have parallels in the National Forest Management Act of 1976, as amended.[21] For example, the Forest Service must "maintain on a continuing basis a comprehensive and appropriately detailed inventory of all National Forest System lands and renewable resources. . .[and keep it] current so as to reflect changes in conditions and identify new and emerging resources and values."[22] The Forest Service must also "develop, maintain, and, as appropriate, revise land and resource management plans for units of the National Forest System, coordinated with the land and resource management planning processes of State and local governments and other Federal agencies."[23] Forest plans must use "a systematic interdisciplinary approach to achieve integrated consideration of physical, biological, economic, and other sciences. . . ."[24] and " provide for multiple use and sustained yield of the products and services obtained therefrom. . . ."[25] In essence, it appears that if the Forest Service can consider ecosystem services in forest planning, the BLM can also consider ecosystem services for public lands planning.

In fact, in 2012 the Forest Service issued regulations that identify the protection of ecosystem services as an important element of forest planning.[26] In addition, the Forest Service is exploring national opportunities to advance markets and payments for ecosystem services and encourages broader thinking and collaboration that stimulates market-based conservation and stewardship. The U.S. Department of Agriculture, of which the U.S. Forest is a part, created the Office of Environmental Markets (OEM) to

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[21] Pub. L. No. 94-588, 90 Stat. 2949 (codified as amended at 16 U.S.C. § 1601 *et seq*.).
[22] 16 U.S.C. § 1603.
[23] 16 U.S.C. § 1604(a).
[24] 16 U.S.C. § 1604(b).
[25] 16 U.S.C. § 1604(e)(1).
[26] 36 C.F.R. Part 219.

foster the development of markets for ecosystem services, as required by Section 2709 of the 2008 Farm Bill.[27] The BLM could consider partnering with the Forest Service and OEM in this effort.

Legal Basis for Including Consideration of Ecosystem Services in BLM Decision Making

Amending RMPs to include consideration of ecosystem services would provide the legal basis for integrating ecosystem services concepts into BLM decision-making. Section 301(a) of FLPMA requires that "[t]he Secretary shall manage the public lands ... in accordance with the land use plans ... when they are available."[28] According to the Supreme Court's finding in a 2004 case, "The statutory directive that BLM manage 'in accordance with' land use plans, and the regulatory requirement that authorizations and actions 'conform to' those plans, prevent BLM from taking actions inconsistent with the provisions of a land use plan."[29] In fact, BLM actions contrary to a plan can be set aside as contrary to law under the Administrative Procedures Act.[30]

Once ecosystem services concepts are adopted in BLM's RMPs, the agency will be required to take these concepts into account in its actual decisions regarding leasing, permitting, and other public land determinations, such as whether to retain a tract of land or offer it for sale. The requirement that BLM actions be consistent with RMPs is enforceable by affected outside parties.

Practical Basis for Including Consideration of Ecosystem Services in the BLM Planning Process

Consideration of ecosystem services could be incorporated into the BLM planning process immediately through national or state director guidance, and over the longer term, through determinations of fair market value, receipt of which is provided for in the FLPMA for use of public lands and their resources.

National or State Director Guidance

Consideration of ecosystem services in the BLM planning process could be immediately implemented through national or state director guidance. As each plan, plan revision, or plan amendment is developed, BLM regulations require the following:

> The Field Manager, in collaboration with any cooperating agencies, will analyze the inventory data and other information available to determine the ability of the resource area to respond to identified issues and opportunities. The analysis of the management situation shall provide, consistent with multiple use principles, the basis for formulating reasonable alternatives, including the types of resources for development or protection. Factors to be considered may include, but are not limited to:
>
> (a) The types of resource use and protection authorized by the Federal Land Policy and Management Act and other relevant legislation;
> (b) Opportunities to meet goals and objectives defined in *national and State Director guidance;*
> (c) Resource demand forecasts and analyses relevant to the resource area;
> (d) The estimated sustained levels of the various goods, services and uses that may be attained under existing biological and physical conditions and under differing management practices

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[27] See http://www.fs.fed.us/ecosystemservices/OEM/index.shtml.
[28] 43 U.S.C. § 1732(a); see also 43 CFR § 1610.5-3(a) (2003) ("All future resource management authorizations and actions ... and subsequent more detailed or specific planning, shall conform to the approved plan").
[29] *Norton v. Southern Utah Wilderness Alliance*, 542 U.S. 55 at 69 (2004). See also 43 CFR 1610.5-3(a) ("All future resource management authorizations . . . shall conform to the approved plan.")
[30] 5 U.S.C. § 706(2).

> and degrees of management intensity which are economically viable under benefit cost or cost effectiveness standards *prescribed in national or State Director guidance;*
> (e) Specific requirements and constraints to achieve consistency with policies, plans and programs of other Federal agencies, State and local government agencies and Indian tribes ....[31]

By virtue of the foregoing planning regulation, national director or state director guidance on the consideration of ecosystem services would have to be taken into account in the development of any future BLM land use plan or plan amendment.

Fair Market Value for Use of Public Lands

Beyond land use planning, there is another mechanism for the BLM to integrate consideration of ecosystem services into its decision making. Section 102(a)(9) of FLPMA 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. . . ."[32] The BLM determines fair market value in a variety of ways. In the contexts of mineral leasing and public land sales, it determines fair market value primarily through competitive bidding.[33] In other contexts, such as land exchanges and the establishment of rentals for use of public lands, it uses appraisals.[34] To date, the BLM has included neither the rental value of ecosystem services nor the loss of these services in its fair market value determinations.[35] Grazing fees are determined by a statutory formula.[36]

There is no legal reason, absent specific legislation such as for grazing fees, that the BLM could not take into account the value of the ecosystem services lost or gained in determining fair market value for exchanges or rentals. The constraint on doing so is practical, not legal. Methodology to assist in determining the value of ecosystem services is still being developed.[37] The BLM would have administrative discretion to adopt any rational methodology.

Conclusion

The BLM has substantial legal authority to adopt preservation and use of ecosystem services into its planning regime for public lands. Among the many aspects of its planning authority that permit the integration of ecosystems services concepts into BLM land use plans, the designation of ACECs to protect natural processes and systems appears particularly well suited. Moreover, the BLM has the authority to integrate its own use of ecosystem services concepts with those of neighboring federal land managers, such as the U.S. Forest Service, that are similarly integrating consideration of ecosystem services into their own land management planning processes. Once ecosystem services concepts were included in BLM land use planning, BLM decisions would be guided by consideration of these concepts. The agency could immediately implement consideration of ecosystem services into land use planning through national director or state director guidance. Over the longer term—and to the extent that appropriate methodology is developed and adopted—the BLM could also use the requirement that it obtain fair market value for use of public lands to ensure consideration of ecosystem services in determining land values and rentals.

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[31] 43 CFR 1610.4-4 (emphases added).
[32] 43 U.S.C. § 1701(a)(9).
[33] See 43 CFR 3120.1-1 and 2711.3-1.
[34] See 43 CFR 2201.3-2 and 2920.5-4.
[35] BLM Manual MS-9310 *Appraisal of Real Property* (issued October 27, 1999).
[36] 43 U.S.C. § 1905 and Executive Order No. 12548 (Feb. 14, 1986).
[37] http://www.sciencedirect.com/science/journal/22120416.

About the National Ecosystem Services Partnership

The National Ecosystem Services Partnership (NESP) engages both public and private individuals and organizations to enhance collaboration within the ecosystem services community and to strengthen coordination of policy and market implementation and research at the national level. The partnership is an initiative of Duke University's Nicholas Institute for Environmental Policy Solutions and was developed with support from the U.S. Environmental Protection Agency and with donations of expertise and time from many public and private institutions. The partnership is led by Lydia Olander, director of the Ecosystem Services Program at the Nicholas Institute, and draws on the expertise of federal agency staff, academics, NGO leaders, and ecosystem services management practitioners.

About the Nicholas Institute for Environmental Policy Solutions

Established in 2005, the Nicholas Institute for Environmental Policy Solutions at Duke University improves environmental policymaking worldwide through objective, fact-based research in the areas of climate change, the economics of limiting carbon pollution, emerging environmental markets, oceans governance and coastal management, and freshwater management. The Nicholas Institute is part of Duke University and its wider community of world-class scholars. This unique resource allows the Nicholas Institute's team of economists, scientists, lawyers, and policy experts not only to deliver timely, credible analyses to a wide variety of decision makers, but also to convene decision makers to reach a shared understanding of this century's most pressing environmental problems.

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