Conserving State Trust Lands

Strategies for the Intermountain West

POLICY FOCUS REPORT LINCOLN INSTITUTE OF LAND POLICY
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POLICY FOCUS REPORTS

The Policy Focus Report series is published by the Lincoln Institute of Land Policy to address timely public policy issues relating to land use, land markets, and property taxation. Each report is designed to bridge the gap between theory and practice by combining research findings, case studies, and contributions from scholars in a variety of academic disciplines, and from professional practitioners, local officials, and citizens in diverse communities.

ABOUT THIS REPORT

From the mid-1700s to the late 1950s, state trust lands were granted to states upon their entrance into the Union for the sole purpose of generating income for public institutions. To this end, the lands were managed, leased, or sold for a range of uses, including mining, grazing, and agriculture. Much of this land also adds significant ecological and recreational value to the West. However, the tools available to ensure the preservation of land are limited to those that are compatible with the mandate of generating revenue for trust beneficiaries.

Considering the changing values and increasing public pressure to set aside lands for conservation and recreation, alternatives for the best use of these lands must be explored. This report examines mechanisms and strategies to satisfy both the fiduciary mandate of the trust and the goals of conservation. Tools and concepts, such as conservation sales and leases through outright fee-simple purchases or through acquisition of easements; contributory value and nonmonetary value; ecosystems services markets; and land tenure and exchange are presented and critiqued. The authors offer recommendations to improve the function of these tools and strategies.

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Front cover:
Corona Arch, Utah (top). *Courtesy of the Utah School and Institutional Trust Lands Administration.*
Catalina State Park, Arizona (bottom). *Courtesy of Sonoran Institute.*

Back Cover:
Stockade Block rangelands in Oregon. *Courtesy of Oregon Department of State Lands.*

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Executive Summary

Utah's iconic Corona Arch, a natural sandstone formation on state trust lands, is a go-to spot for travelers to the area. *Courtesy of the Utah School and Institutional Trust Lands Administration.*

State trust lands are an important, little known, and often misunderstood category of public land ownership in the West. Congress granted these lands to states upon their entrance into the Union to provide support for essential public institutions, primarily public education and K-12 schools. Although many of the original trust land grants have passed into private ownership, 23 states continue to hold and manage approximately 46 million acres, 85 percent of which are located in the Intermountain West.

Cattle graze on the 250,000-acre Stockade Block rangelands in Oregon. The land is composed of parcels received through exchanges and grants. *Courtesy of Oregon Department of State Lands.*

These lands constitute a significant part of the western landscape and provide the region with open space and important ecological, recreational, and scenic value. State trust lands have been managed almost exclusively to harvest natural resources through mining, grazing, agriculture, and logging, to provide funding for the trust beneficiaries. However, as the population of the West has grown over the past few decades—as demographics and economic drivers have changed—so has the public pressure to recognize the conservation values of state trust lands.

Although trust land managers, conservation advocates, and public stakeholders alike acknowledge the value of these lands, the range of tools available to ensure land preservation is limited to those that satisfy the trust mandate to generate revenue for trust beneficiaries. This report explores the most promising mechanisms and strategies available to secure conservation outcomes while funding beneficiaries of this unique and important class of lands in the western landscape.

This report explores four significant conservation tools:

1. **Conservation sales and leases** to acquire state trust lands through easements or outright fee-simple purchases (chapter 2).

2. **Contributory value** (the indirect benefits provided by natural resources) through the large-scale master planning process (chapter 3).

3. **Ecosystem services markets,** such as mitigation and conservation banking, to provide payments for ecological restoration and preservation (chapter 4).

4. **Land tenure adjustment** through an exchange process that trades state trust lands with significant conservation values for other lands that are more appropriate and valuable for generating revenue for the trust (chapter 5).

Although each of these tools has its strengths and benefits in different contexts, each also faces barriers and obstacles to successful implementation (chapter 6). The final section of this report offers a series of recommendations to improve the utility of these conservation strategies (chapter 7):

- Explore means to provide matching funds for purchase or lease of state trust lands to increase available funding for state trust land acquisitions for conservation purposes.
- Expand the number and variety of funding sources by exploring innovative conservation finance mechanisms.
- Encourage state trust land agencies to consider conservation leasing arrangements that can increase the productivity and value of trust land assets.
- Support programs that identify and classify appropriate state trust lands as suitable for conservation sale, and provide a mechanism for conservation buyers to acquire those lands.
- Expand the authority of state trust land managers to account for and include non-monetary considerations when evaluating disposition decisions of master plans with significant conservation elements.
- Reform the appraisal process to allow greater recognition of the value of conservation lands.
- Develop adaptable economic models to capture a realistic estimate of the contributory value of conservation.
- Participate in flexible, innovative ecosystem service markets that allow full realization of the trust beneficiaries' interests, such as payment for watershed services (PWS), payment for ecological services (PES), and compensatory mitigation frameworks.
- Reform appraisal standards and practices to allow for greater consideration and recognition of the economic value that ecosystem services provide on trust land holdings.
- Authorize and incorporate concepts of non-monetary consideration into the valuation of trust land parcels to ensure the equal value standard is met for land exchanges that have conservation outcomes.

State trust lands are collectively a significant component of the landscape of the West and are vital to maintaining the quality of life and ecosystem values through the challenges ahead. To ensure that those trust lands are conserved and that they help support ecologically functional landscapes, we must find solutions that fit within the trust mandate.

Forces such as population growth, economic change, climate change, an expanding built environment, and natural resource extraction activities will impact the landscapes of the Intermountain West over the next century. If the environmental values of the region are to be maintained and/or restored to sustain future generations, it will require conservation and natural resource management at a sufficient scale to maintain critical ecosystem functions, species diversity, and land and resource productivity.

CHAPTER 1

Introduction

The Stockade Block is currently leased for grazing, but there is interest in leasing 1,800 acres for a wind energy development. *Courtesy of Oregon Department of State Lands.*

State trust lands span the forests and mountain ranges of the Intermountain West and Pacific Northwest, the grasslands and rich farmlands of the Midwest, and the arid deserts of the Southwest. Although many of the original trust land grants have passed into private ownership, 23 states continue to hold and manage approximately 46 million acres, predominantly located in the Intermountain West.

Naturally, the various stakeholders—community members, educators, developers, ranchers, farmers, hunters, outdoor enthusiasts, and conservationists, to name a few—have a range of expectations for the uses of these lands. However, state trust lands, as their name implies, are held "in trust" and guided by a fiduciary duty to be managed, leased, and/or sold for a diverse range of uses to generate income for the designated beneficiaries.

Although the general public often does not distinguish between state trust lands and public lands (held for multiple use, recreation, or conservation), there are critical differences in how these lands are managed.

The evolving values and public perspectives of western communities regarding land use, conservation, and environmental protection encounter, and sometimes run headlong against, state trust land managers working to meet their fiduciary mandates. As the West has grown, urban metro areas have expanded ever farther into the natural landscape. At the same time, the impacts of a changing climate are being felt broadly across the region, and economies, demographics, and public values have changed significantly. This transformation of the West has altered public expectations about land use and conservation of natural resources, scenic beauty, and recreational opportunities. Preservation of the iconic landscapes of the West, the abundant wildlife, and vital ecosystem services provided by nature increasingly has become a priority for communities in the West. As conservation efforts have grown, more attention has been paid to state trust lands that house significant ecological and conservation values—and many people have sought ways to conserve these lands.

Fortunately, these trends are also mirrored in a growing recognition of the importance of long-term, sustainable management of trust resources by state trust land managers. Interest is growing in emerging markets and revenue generating tools available for conservation. More trust land managers are addressing conflicts arising from changing public expectations in ways that align with their fiduciary obligations. By taking advantage of new markets in environmental services and values, and by managing resources for sustainable use for future generations, trust land managers as well as other stakeholders can utilize strategies for conservation that also meet the trust objectives of generating revenue for its beneficiaries.

This report explores some of the conservation strategies that can be used for managing these lands within the constraints of the trust responsibility. In order to understand how these tools can fit within the trust mandate, a brief examination of the history of state trust lands and the trust relationship will provide critical context.

History and Nature of State Trust Lands in the West

Studies of public land ownership in the United States have neglected the origins and history of state trust land conveyances. Trust land grants date back to the earliest decades after the Revolutionary War, when Congress granted lands to the newly formed states to support essential public institutions in keeping with a Jeffersonian vision to provide public education for all as an essential component of a healthy democracy. Although the vast majority of state trust lands passed into private or local community ownership quite early on, when states divested themselves of their trust land conveyance, the lands remain a significant resource in the western United States.

Twenty-three states continue to hold state trust land grants in the United States, although several of these have only a small number remaining of their original trust land grants. Most state trust land conveyances were rapidly sold in frontier settlement frenzies in the 19th century, which left little lasting benefit for

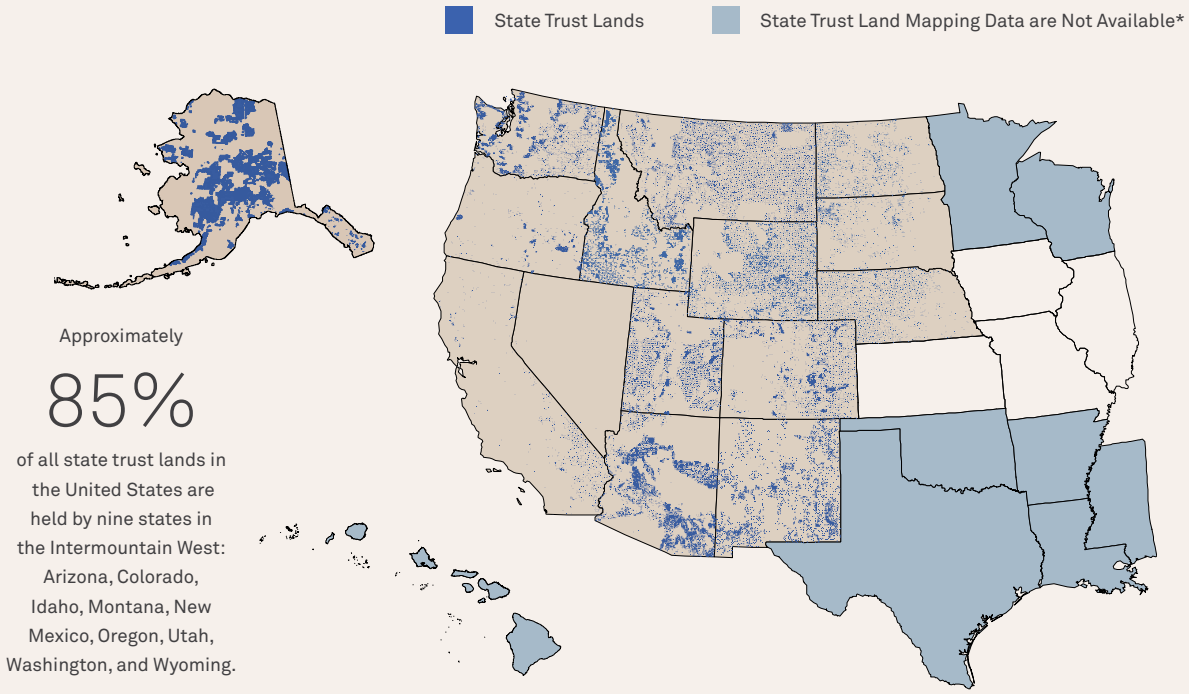
public schools or the other beneficiaries. As younger states—mostly in the West—entered the Union, however, increasingly strict requirements on the management and sale of trust lands allowed them to retain a significant portion of their allocations. For example, Nevada is left with only 3,000 acres of its initial holdings of 2.7 million acres, while Arizona still has 9.2 million acres left out of 10.2 million in its original conveyance. Currently, nine states in the Intermountain West—Arizona, Colorado, Idaho, Montana, New Mexico, Oregon, Utah, Washington, and Wyoming—hold approximately 85 percent of trust lands in the United States (figure 1).

The vast majority of state trust lands are held in a perpetual, intergenerational trust. To fulfill their trust mandate to support various public institutions, these lands are actively managed for a diverse range of uses, including timber, grazing, mining, and agriculture. At the close of the 20th century, those uses expanded to include commercial and residential development, conservation, and recreational uses such as hunting and fishing.

Today, these land holdings are usually accompanied by large permanent funds—some of which total in the billions—that hold the proceeds from the disposal

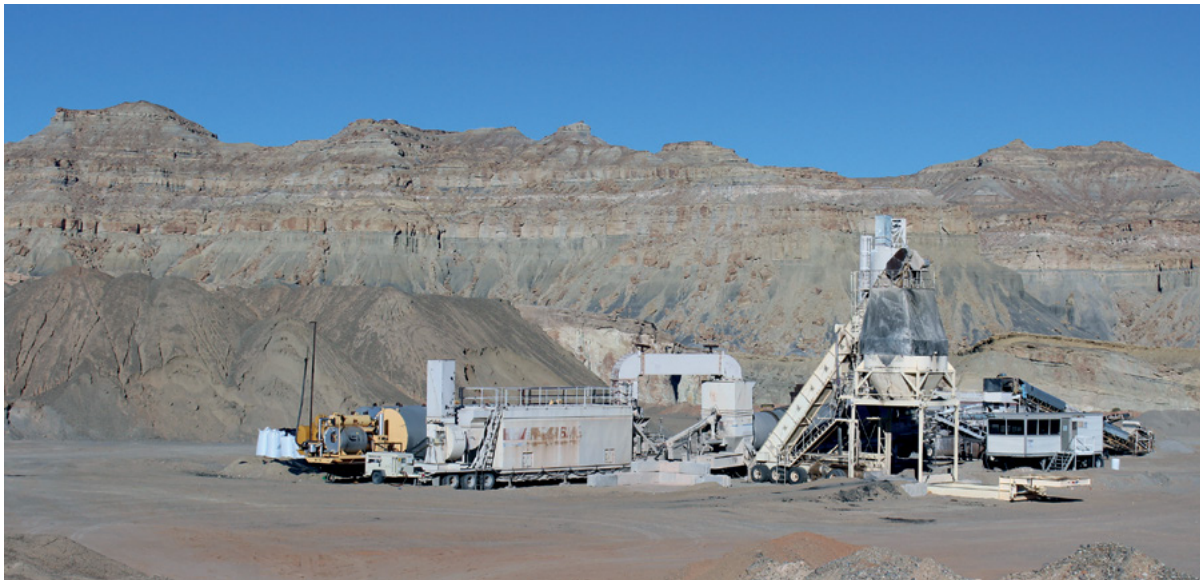
Figure 1

State Trust Lands in the United States



*The lack of data from some state trust land management agencies is due to the low number of state trust land acres in their states or the limited resources of the agencies to provide such data.

Courtesy of Sonoran Institute.



Gravel operations such as this one in Utah were among the early activities on state trust lands that supported public institutions. *Courtesy of Andy B., Utah School and Institutional Trust Lands Administration.*

of these lands or royalties and lease rentals from the extraction of nonrenewable natural resources, such as minerals, oil, and gas. The revenues derived from these lands are used to support the beneficiaries in a variety of ways, including directing payments to public school districts for teacher salaries, guaranteeing school bonds and loans, and underwriting school construction.

State trust land management has traditionally focused on the leasing and sale of natural products, and many western states continue to obtain the majority of their financial benefits from these activities, particularly subsurface uses. Oil, gas, coal, and other mineral extraction provide the bulk of the revenues derived from trust lands in states that are rich in fossil fuel, such as Colorado, New Mexico, Texas, Utah, and Wyoming. This pattern will likely continue in the future. Timber management provides significant revenues in forested states like Idaho, Minnesota, Montana, Oregon, and Washington. Grazing and agriculture, while they do not necessarily bring in the highest revenue among trust land uses, predominate on most trust land parcels throughout the West and represent up to 90 percent of some states' trust land holdings (Culp et al. 2006).

Although each state's enabling act, constitution, and statutory requirements vary regarding the administration and management of state trust lands, all state trust lands programs in the West share several common themes. First, as stated, state trust lands are held in trust for specific beneficiaries, the primary being education and other public institutions.

All state trust land agencies have several basic fiduciary obligations in managing trusts: the duty to follow the settlor's instructions, the duty of good faith, the duty of prudence, and the duty to preserve the trust (box 1). These fiduciary duties require that the lands be managed in a manner that is in the best interests of the trust beneficiaries—to the exclusion of other public interests, regardless of how important or compelling they are.

Box 1

Fiduciary Obligations of Trustees

In its simplest form, a trust is a legal relationship in which one party holds property for the benefit of another party (the beneficiary). Trustees are held to a set of fiduciary obligations under this relationship.

1. **The Duty to Follow the Settlor's Instructions**
   In a trust relationship, the trustee has a duty to follow the instructions or guidelines laid out by the settlor (the individual or entity that established the trust, provided the trust property, and created the trust structure). This responsibility is significant for the trustees managing the trust assets, and limits their discretion in the disposition of the trust.

2. **The Duty of Good Faith**
   The duty of good faith requires that a trustee act honestly, with undivided loyalty to the beneficiaries of the trust, and prohibits acting in the best interests of parties other than the beneficiaries.

3. **The Duty of Prudence**
   The duty of prudence requires that a trustee act with care, diligence, and reasonable skill in managing and investing the assets of the trust.

4. **The Duty to Preserve the Trust**
   A trustee is obligated to preserve the corpus of the trust, taking a long-term perspective that ensures that the trust will be able to provide support for both current and future beneficiaries in perpetuity in accordance with the terms laid out by the settlor of the trust.

Culp et al. (2005).

Revenue Generation in a Changing Landscape

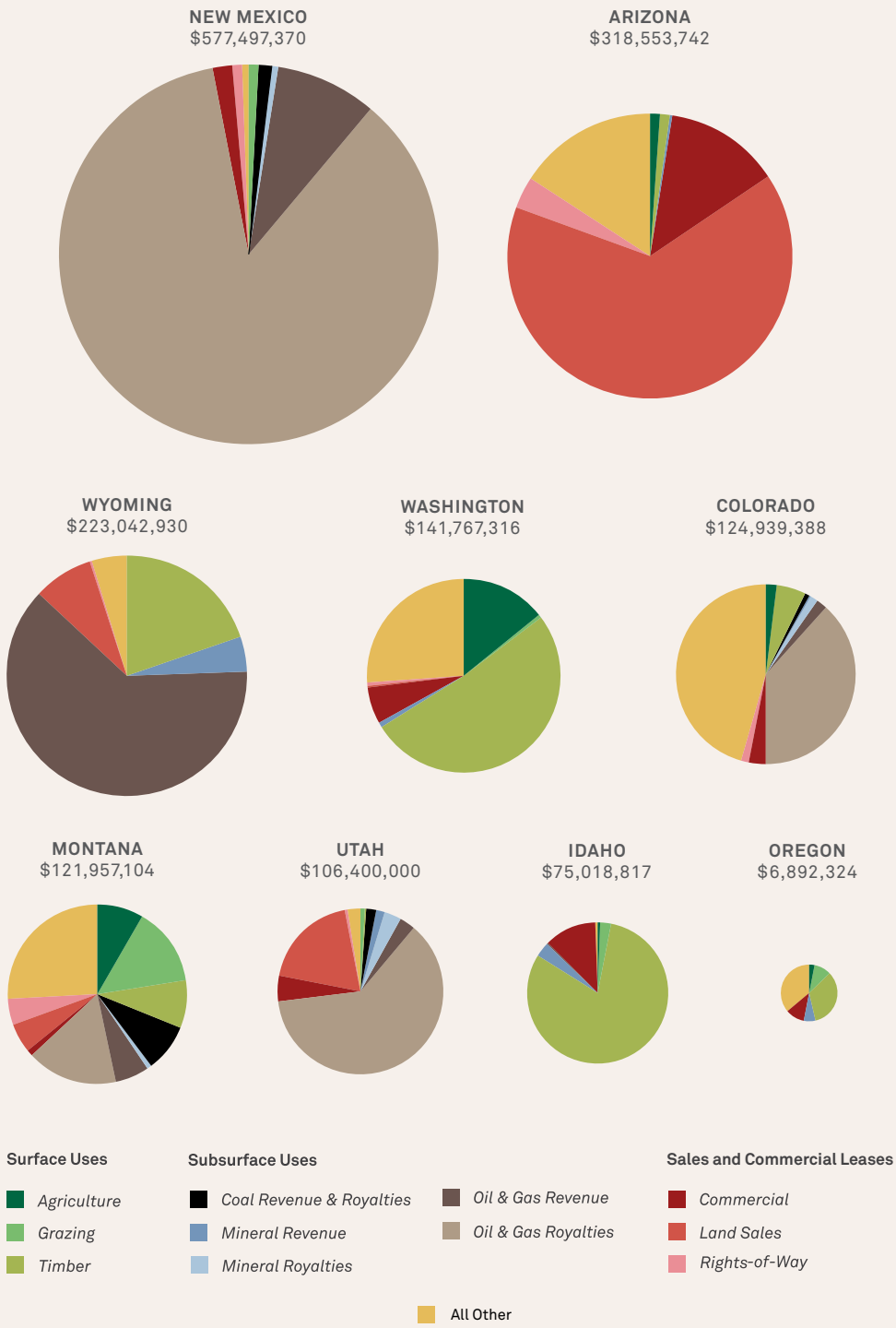
As western communities experience rapid change as a result of urbanization with an ongoing shift toward more diversified, knowledge-based economies, the source of revenues from trust land management is changing as well. For many western states, the role of natural resource extraction in the regional economy, while still important, is giving way to activities that elevate the importance of cultural, environmental, recreational, and location-based amenities. As a result, some natural resource industries—such as agriculture, ranching, and timber production—are in decline. The economies of many communities are increasingly being driven by location and lifestyle choices, a rapid rise in retirement and investment income, and the attractiveness of living close to protected public lands for the more mobile and professional population. As a result, many western trust land agencies have begun to explore opportunities for lucrative residential and commercial development on their holdings.

RESIDENTIAL AND COMMERCIAL DEVELOPMENT

Prior to the recession in 2008, states that had large holdings near urban growth centers were bringing in tremendous revenues from the sale of trust lands for residential and commercial development. For example, in Arizona in 2007, trust land sales and commercial leases auctioned by the Arizona State Land Department (ASLD) brought in over $600 million in revenues, for final bids nearly 15 percent above the appraised value (ASLD 2007–2008). During that period in the Intermountain West, the revenues from real estate development in Arizona were outmatched only by oil and gas development revenues in New Mexico. By 2013, such revenue was still being generated as illustrated for each state by category in figure 2.

Figure 2

Composition and Revenue by State, 2013

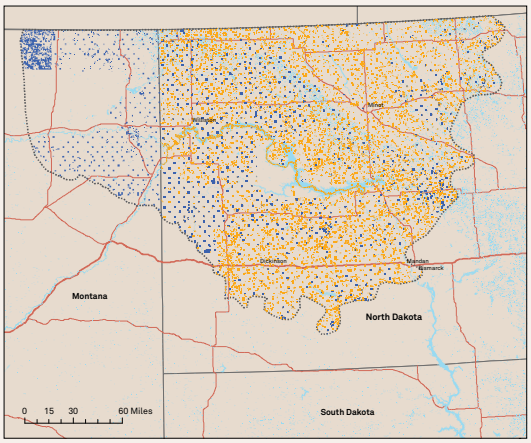


Courtesy of Sonoran Institute.

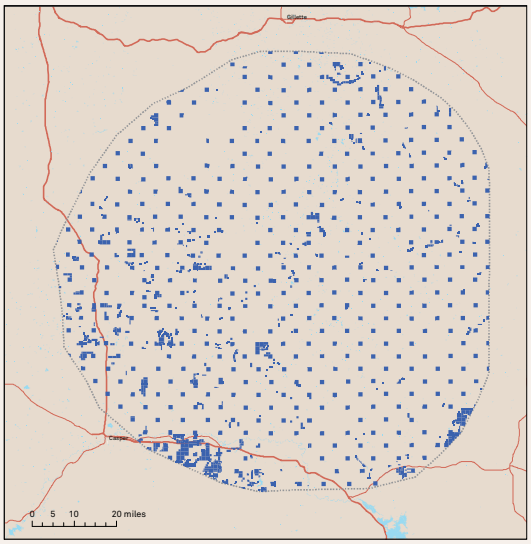
Figure 3

State Trust Land Ownership Overlaid Against Significant Oil Shale Plays

BAKKEN OIL PLAY, NORTH DAKOTA



NIOBRARA OIL PLAY, WYOMING



Surface Trust
SubSurface Trust (ND only)
Bakken Play Boundary
Niobrara Play Boundary
Water Bodies
Interstate
Highway
Cities

Courtesy of Sonoran Institute.

ENERGY DEVELOPMENT

In recent years, the West has also experienced a significant boom in energy development. With the refinement of mining and energy extraction technologies, including hydraulic fracturing or "fracking," natural gas and oil shale exploration on western public lands has exploded. Although some Intermountain West states do not have significant resources to exploit, others lie over large-scale formations—such as Bakken and Niobrara. Figure 3 shows state trust land ownership overlaid against these significant oil shale plays (fields or prospects in the same region that are controlled by the same geological circumstances).

There has been a concurrent surge of interest in renewable energy development in the West. In light of the significant resources available in the region—solar potential in the desert Southwest, wind potential in other areas of the region, and development in the vast swaths of federal and state public lands—renewable energy is viewed as a key to economic growth and green jobs.

With expanded oil, gas, and renewable energy development on the rise, state trust lands are experiencing new opportunities for revenue generation. Parcels that at one time held little potential for economic activities apart from grazing can now bring in premiums if they are situated over significant oil shale deposits or are within renewable energy zones or corridors.

Many states are reaping huge benefits from this energy development explosion, and where their holdings are strategically located to take advantage of these new activities, they are posting record revenues for trust land beneficiaries. However, this boon is occurring at a time when human development is at an all-time high and is adding additional pressures on natural ecosystems, working landscapes, and the signature wide-open spaces of the West.

Climate Transformations

The changing climate is exacerbating the impacts of changes in economic activity, population growth, and land and resource use. Recently, the National Climate Assessment, which includes technical reports on current climate in the Southwest and Northwest, confirms many of the forecasted impacts reported by the Intergovernmental Panel on Climate Change. Large landscape-scale alterations in terrestrial and freshwater ecosystems, as well as observed impacts of temperature, drought, man-made disturbances, and habitat fragmentation, will continue to have substantial effects on land cover, vegetation, and the health of many species (Melillo et al. 2014).

Jordan Valley lies along the eastern edge of Oregon in Malheur County, which includes many holdings of Oregon Department of State Lands' rangelands. *Courtesy of Taryn Bye, Oregon Department of State Lands.*

In the Southwest, the observed impacts include temperature increases, reduced flows in the major river basins, and prolonged severe drought far worse than other dry periods in the past century (Overpeck 2012). In the Northwest, the impacts of climate change include reduced water supplies as a result of changes in snowmelt and timing of precipitation. Additionally, the National Climate Assessment highlights the likelihood of continued forest mortality as a result of drought, pest and disease outbreaks, and wildfires, which may lead to significantly altered forest composition and may extend to the northwestern states, such as Montana, Idaho, and Washington (Melillo et al. 2014).

Climate change will dramatically impact the productivity and economic value of natural resources and lands in the Intermountain West, including state trust land holdings. Trust land managers will face great challenges in adapting management practices to ensure that their land holdings will continue to provide returns for beneficiaries under conditions of uncertainty and risk related to the impact of climate change in the region. Unfortunately, most trust land managers have not developed plans to guide their management decisions in the face of climate change.

A New Paradigm for Large Landscape Conservation and Management

As various challenges and trends unfold in the West, it has become increasingly clear to land managers and conservationists that traditional models and approaches to managing natural resources (land, water, and wildlife) are not sufficient on their own to protect critical biodiversity, landscape health, and other characteristics of intact, functional ecosystems. Historically, efforts to protect natural landscapes have focused on the acquisition of ecologically sensitive natural areas by public land management agencies

charged with a conservation mission, or private purchases by conservation buyers or nongovernmental organizations (NGOs). Other efforts include the preservation of species through federal regulatory means, such as the Endangered Species Act; environmental assessments of human activities through federal regulatory measures, such as National Environmental Policy Act (NEPA); and recommendations for lower impact alternatives. Although these tools have allowed for considerable conservation in the Intermountain West over the past decades, alone they cannot address the challenges of a changing climate or continued growth and its impacts on land use patterns and resource consumption.

However, the emerging focus on large-scale landscape conservation frameworks holds promise for making genuine strides in managing large landscapes that can meet the challenges of the 21st century while maintaining or restoring the health and function of critical ecosystem services. According to McKinney, Scarlett, and Kemmis, large landscape conservation (LLC) initiatives must be: multijurisdictional, multistakeholder, and multipurpose (i.e., incorporating environmental values, community issues, and economic considerations). These approaches recognize that the preservation of functional ecosystems cannot take place on isolated patches of lands, rely on single agencies or landowners to manage them, or occur without adjusting to the impacts of climate change (McKinney et al. 2010).

Large landscape conservation efforts ideally involve all the regional landowners in the process of setting long-term goals and benchmarks for sustainable land management. This effort requires cooperation among federal agencies, as well as constructive collaboration among federal and state agencies and private landowners. In order to successfully engage trust land managers in the important work of large landscape conservation, the fiduciary obligations of trust land management must be considered in creating a conservation strategy (Culp 2014).

Conservation Strategies that Honor the Responsibility of the Trust

In general, the trust's responsibility and objective is to gain the highest possible revenue or sustained income over time through the sale or lease of state trust lands. In order to comply with this mandate, conservationists would be well served to think of state trust lands as they would similarly situated private lands open to development and traditional economic uses. In fact, it is more challenging to state trust land managers to conserve ecologically important lands in light of the management constraints and requirements for revenue generation on trust lands. While a private landowner may make management or disposition decisions that reflect personal values, including conservation of environmental values for future generations, state trust land managers often do not have a similar level of discretion and flexibility.

Over the past several years, the Western Lands and Communities joint program between the Sonoran Institute and the Lincoln Institute of Land Policy has explored a number of approaches to conservation that are compatible with trust responsibilities. The strategies detailed in the following chapters provide some form of fair market value compensation to the trust in exchange for the conservation of ecologically valuable lands.

The demographic, political, and natural forces impacting the landscapes of the Intermountain West will be transformative over the next century. If the environmental values of the region are to sustain future generations, it will require conservation and natural resource management at a sufficient scale to maintain critical ecosystem functions, species diversity, and land and resource productivity. The vast holdings of state trust lands in the West are large enough to accomplish that level of conservation, provided we use strategies that fit within the trust mandate.

CHAPTER 2

Conservation Sales, Leasing Arrangements, and Designations

State trust lands are leased for agricultural use in Grand County, Utah. *Courtesy of Utah School and Institutional Trust Lands Administration.*

The most direct means of securing state trust lands with high ecological values for conservation use is to purchase or lease such parcels at auction when a state trust land agency includes them in disposition plans that identify which parcels to develop, sell, or lease. In some cases, a conservation easement on state trust lands may be purchased or leased allowing the state to continue revenue-generating uses that are compatible with conservation, such as grazing or agriculture, while protecting the environmental values connected with the parcel.

Some states have employed innovative strategies for ensuring conservation management of ecologically important lands, providing special designations for those lands, and retaining them in the trust portfolio for long-term management. This chapter examines the various strategies that state trust land agencies and stakeholders have developed to provide purchase mechanisms for lands identified as having high conservation values or to ensure a conservation designation for environmentally sensitive trust lands. Additionally, this chapter explores the funding sources that would enable communities to offer competitive bids at auction for these lands.

Sales and Leases of State Trust Lands

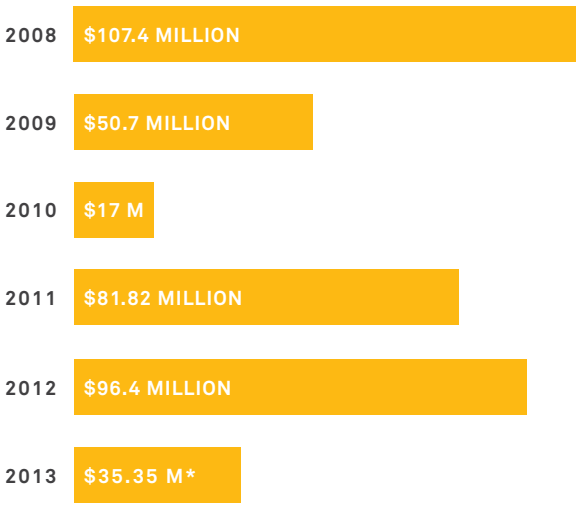
The sale or lease of land for conservation purposes is rare in some western states despite the fact that it is the most straightforward way to preserve state trust lands while meeting the fiduciary obligations of the trust. However, some states in the West have created mechanisms and strategies to make it easier for communities to purchase or lease state trust lands for open space, conservation, or recreation.

The state with the highest rate of conservation sales, Arizona has been the most deliberate in creating a path for communities and NGOs to purchase state trust lands for conservation. In fiscal year 2012 alone, conservation sales of preserve lands accounted for nearly $100 million in revenue generated for the Permanent Fund in Arizona (ASLD 2011–2012). Most of the purchasers were municipalities adding to existing city parks and preserves. Table 1 shows Arizona State Land Department revenue for conservation sales from 2008 to 2013. The Arizona Preserve Initiative (API) (box 2) has enabled 16,000 acres of trust land to be purchased for conservation, adding nearly $400 million to the Permanent Fund.

Table 1

Conservation Sales in Arizona, 2008–2013

REVENUES FROM CONSERVATION SALES



*estimated revenue as of release of FY2013 annual report

Courtesy of Arizona State Land Department.

For entities interested in conservation but unable to pay full fair market value at auction to purchase the lands outright, some states will lease for conservation purposes at lower costs. In 2007, Idaho established a conservation leasing program that allows entities interested in conserving historic, cultural, and environmental values the opportunity to lease trust lands at fair-market value. The Idaho Department of Lands manages about 40 conservation leases in which lessees work to improve wildlife habitat, preserve soil productivity, and safeguard water quality.

For many communities and conservation NGOs, the fee-simple purchase of trust lands for conservation (the purchase of unrestricted interest in a parcel of land) is a daunting prospect, particularly at auction

Box 2

The Arizona Preserve Initiative

The Arizona Preserve Initiative (API) was established by legislative action in 1996 to provide a conservation mechanism for state trust lands with high ecological or open space values. The program allows state or local governments, businesses, state land lessees, or citizen groups to petition the Arizona State Land Department (ASLD) commissioner to reclassify state trust lands as "suitable for conservation purposes." Conservation purposes are defined in the statute as "the protection of the natural assets of state trust lands for the long-term benefit of the land, the trust beneficiaries, lessees, the public, and the unique resources such as open space, scenic beauty, protected plants, wildlife, archaeology, and multiple use values" (A.R.S. §37–311[1]). Only urban lands within one mile of cities of 10,000 people or less, or three miles within municipalities with populations greater than 10,000, may be reclassified under the API program.

The ASLD commissioner, under advisement of the Conservation Advisory Committee, may reclassify such lands as suitable for conservation purposes. The lands are then made available for purchase at fair market value. However, existing leases continue until the end of their term, even when the lands are transferred to a conservation buyer. Reclassified lands may also be withdrawn from sale or lease at the commissioner's discretion for up to five years while the petitioner prepares plans and funds to purchase the property.

By January 2012, 33 petitions for the reclassification of lands were submitted to the ASLD for over 120,000 acres under the API program. Of those, 22 petitions were accepted, resulting in the reclassification of 42,511 acres, while 36,000 await consideration. In terms of reclassified land, 16,343 acres have been sold for conservation purposes and an additional 10,000 are pending sale.

API's matching fund program, Growing Smarter, approved by the voters to supplement the acquisition of trust lands for open space and natural preservation, is largely responsible for the conservation sales revenue gains for Arizona beneficiaries. A legal challenge in 2004 that threatened the API program has slowed petitions for reclassification and ASLD action on existing petitions; challengers criticized the ASLD for violating the Arizona Constitution by not securing "highest and best use" bids at auction for the parcels reclassified under API.

While transactions have cautiously resumed, both trust land managers and conservation advocates alike recognize the need for a constitutional amendment to formalize the API program. Maria Baier, a former Arizona state land commissioner and former CEO of the Sonoran Institute, remarked, "The API has enabled the conservation of thousands of acres of iconic places across the majestic landscapes of Arizona. Nearly every one of the API sales was conducted during my tenure as land commissioner. Having been on the frontline of those transactions, I can say with great certainty that the ability to conserve state trust land, through the API or otherwise, would be greatly enhanced with a change in the state's constitution" (Baier 2013).

where bids from developers or speculators may push prices above appraised fair market value. Conservation NGOs rely on donor dollars, and, therefore, do not have the means to outbid development interests or to make many fee-simple purchases. Local government agencies—typically the entities that purchase state trust lands as open space and preserve lands—are restricted by voter or elected official approvals that often do not allow for competitive bidding above the appraised value of the lands.

Thus, funding remains one of the biggest barriers to widespread acquisition of ecologically important trust lands. However, there are some funding sources to assist communities, NGOs, and federal agencies in acquiring state trust lands with high conservation values.

Funding Sources

Public interest in protecting open space values, scenic views, wildlife, and recreational opportunities has generated sufficient support in some communities to establish local- or state-level funding mechanisms to assist in the purchase of state trust lands. For those states that lack such funding programs, a number of potential federal sources could be used to supplement local dollars to purchase trust lands.

LAND AND WATER CONSERVATION FUND

The Land and Water Conservation Fund (LWCF) was established by Congress in 1965 to finance the acquisition of land and waterways for parks, open space, natural resources, and wildlife habitat protection. Funded through fees on offshore oil and gas exploitation, the LWCF is capped by Congress at an annual amount of $900 million, but it seldom receives that amount. The LWCF remains one of the most important sources of conservation dollars in the United States.

THE AGRICULTURAL ACT OF 2014 (FARM BILL)

The 2014 Farm Bill supports conservation in the United States. A handful of programs within the United States Department of Agriculture and managed by the Natural Resources Conservation Service (NRCS) provide mechanisms for conserving trust lands with conservation values. Several of these programs would provide key assistance and funding for conservation of state trust lands, including the Regional Conservation Partnership Program, the Voluntary Public Access and Habitat Incentive Program, and the Agricultural Conservation Easement Program. Traditional uses, such as grazing or agriculture, could continue in a manner that is compatible with conservation goals.

STATE FUNDING PROGRAMS

A number of western states have passed either state or local funding proposals that provide revenue streams for the acquisition of land for conservation, natural and cultural heritage, parks, and open space. Some of those funds are eligible to use in purchasing state trust lands; in fact, some state programs have been established solely for the purpose of acquiring state trust lands for conservation. The Arizona Preserve Initiative is an example of such a funding program at the state level.

Another example of a state funding initiative is Washington's Trust Land Transfer (TLT) program, which was established in 1989 primarily to protect ecologically valuable state trust lands. Legislative appropriations are directed to the Washington State Department of Natural Resources' Common School Trust to transfer or lease low-revenue-producing state trust lands with high conservation values. Since the program's inception, approximately $800 million has been spent to transition over 111,000 acres of state trust lands into protected status. An additional 5,000 acres have been leased for conservation purposes.

In 1992, Colorado voters passed the Great Outdoors Colorado (GOCO) program, which provides lottery revenues for open space acquisition and a variety of other programs to promote stewardship and restoration of Colorado's natural heritage. In 2013, the Great Outdoors Colorado Board approved the expenditure of $8.8 million to acquire more than 40,000 acres of land for scenic open space, wildlife habitat, and riparian protection.

Conservation Easements on State Trust Lands

The acquisition of conservation easements has been used widely, predominantly by the land trust community, as a relatively affordable tool to conserve lands. A conservation easement is a voluntary, legal agreement between a landowner and another entity—often a land trust, conservation NGO, or government agency—that restricts the use of the land in a manner that protects its conservation values. The landowner retains ownership and use of the land, but gives up some of the rights that constitute legal use of the property, particularly the right to build structures or otherwise engage in activities that would damage the conservation values that the easement is designed to protect (Pidot 2005).

After wildfires, Idaho Department of Lands removes burned trees and replants new ones. Timber comprises 80 percent of the department's state trust land revenue. *Courtesy of Idaho Department of Lands.*

Conservation easements can encounter unique challenges when applied to state trust lands. The forfeiture of certain development and usage rights may reduce the value of the land. Under a strict interpretation of the trust responsibility, this devaluation could be construed as a violation of the trust's fiduciary mandate. However, in cases in which a parcel has limited economic use due to steep or rugged terrain, presence of endangered species, or lack of access, a conservation easement might represent the only means the parcel has of realizing revenue. The sale of conservation easements that include habitat mitigation or ecosystem services valuation could generate substantial revenue. The increased interest in these advanced mitigation strategies is discussed more extensively in chapter 4.

Some states severely restrict who may hold conservation easements. Montana allows only the Department of Fish, Wildlife and Parks and two other specific nonprofits to hold conservation easements over trust lands. Utah requires that conservation easements specify which resource is being conserved and under what circumstances the easement may be terminated.

Most states do not consistently track the amount of revenue generated by state trust land conservation easements. Table 2 profiles the western states that allow conservation easements on state trust lands. The variability of holder eligibility and purpose among the states can limit the broad use of conservation easements.

Conservationists prefer to think of conservation easements as "perpetual." However, if state trust land managers provided perpetual conservation easements over their holdings it could potentially lock in uses that the agency might wish to change at some later date and might limit options for revenue generation. In such cases, conservation advocates should consider the practicality of a long-term, nonperpetual, renewable easement for trust land application. Renewable easements could be treated as long-term leases by trust land management agencies to ensure a sustained stream of income for the beneficiaries and allow the parties to extinguish an easement if a change in circumstances occurs—such as a natural disaster or alteration of the landscape—that renders untenable the purpose of the easement (Boyd et al. 1999). Apart from the necessary costs involved in recording the easement, conservation buyers encounter fewer additional administrative costs when acquiring conservation easements on state trust lands, compared with fee-simple purchases.

CONSERVATION DESIGNATIONS

A few states in the West have created programs that allow a certain percentage or specified acreage of trust assets to be retained in a long-term stewardship classification for long-range management that will improve and sustain the health of the land. Other states have implemented stewardship programs that incentivize higher standards of management and sustainable use of trust land assets.

Colorado is the only state that explicitly created a stewardship trust: State Land Board's Stewardship Trust. (Washington also transfers trust lands with high conservation value to other agencies.) A voter-approved constitutional amendment in 1996 established the Colorado State Land Board's Stewardship Trust, which required the designation of approximately 300,000 acres of state trust lands to be preserved for long-term management of their natural values and scenic beauty. The Stewardship Trust lands are not held permanently for conservation, but are in a long-term status, not to be sold or developed, in order to retain trust values for the future.

Colorado voters deemed sound stewardship as essential to protecting the economic value of the state's trust assets. Lands in the Stewardship Trust may not be removed from the trust unless equivalent acreage is placed within the trust, and vice versa. Lands within the trust may be leased for other purposes provided that such other uses will not significantly affect the natural values of the protected lands.

The Colorado State Land Board is also experimenting with stewardship lease options, which would allow grazing lessees to qualify for longer term leases in exchange for higher standards of land management. New Mexico has also established a program to reward excellence in stewardship of trust lands leased for grazing. New Mexico's Range Stewardship Incentive Program allows lessees with a record of improving rangeland conditions to receive a 25 percent reduction in their grazing fees. The resulting improvements to range quality encourage increased economic return for the trust and continued integrity and diversity of the trust's land assets.

Table 2

State-by-State Review of Conservaton Easement Programs

	PRIMARY PURPOSES					ELIGIBILE HOLDERS				PAYMENT REQUIRED FOR FULL VALUE OF LAND	PUBLIC AUCTION REQUIRED FOR CONSERVATION EASEMENTS	
	Protect natural values and resources	Protect agricultural land	Provide recreation areas	Protect air and water	Conserve land	Government agency	Nonprofit organization	501 (C) (3) organization	Charitable trust		Lease	Sale
Arizona	●	●	●	●		●			●	●	●	●
Colorado	●	●	●			●		●	●			●
Idaho	●	●	●	●		●			●	●		
Montana						●		●	●	●		●
New Mexico	●	●	●				●		●	●	if 5+ years	●
Oregon	●	●	●	●		●			●	●		
Utah						●	●	●	●	●		●
Washington	●					●		●	●	●	●	●
Wyoming									●	●		●

Courtesy of Sonoran Institute.

CHAPTER 3

Contributory Value: Conservation through the Master Plan Process

Coral Canyon is a 2,600-acre master planned community on state trust lands, with amenities such as the golf course on the right. Fifty percent of the land is preserved as open space. *Courtesy of Utah School and Institutional Trust Lands Administration.*

Conservation set-asides that occur through the large-scale master planning process are an important approach to conserving state trust lands while honoring the fiduciary mandates. As discussed, the fee-simple purchase of state trust lands for conservation purposes can present significant challenges. Therefore, there is considerable interest in planning tools that ensure the trust receives full value while also conserving the lands.

Contributory value is a concept first coined by Bryan Norton in his 1986 chapter in *The Preservation of Species,* in which he discusses ecological economics as an approach to measuring indirect benefits provided by environmental resources (1986). A more simple definition can be found in real estate investment literature, where contributory value refers to the contribution of a particular feature or component to the value of the overall whole (Investopedia 2014). Regardless of how it is defined, contributory value is widely recognized as being empirically difficult to assess, yet useful in evaluating the benefit of environmental resources.

Contributory value recognizes the worth associated with property located against or near dedicated open space, and allows conservation to take place because the planning process captures the net value through higher sales prices. A closely related concept, nonmonetary consideration, can be described as an alternative, noncash form of payment or value exchanged in a transaction.

Amenities such as natural open space, environmental values, recreational opportunities, and other quality-of-life factors can influence where people choose to live (Rasker et al. 2004). Natural settings and access to vast public land in the Intermountain West attract large numbers of new residents, particularly retired baby boomers and the working creative class. Shumway and Otterstrom found that the largest number of new migrants to the Intermountain West move to counties with proximity to national parks and other federal lands, high scenic values, recreational opportunities, and communities defined by service-based economies (2001).

Acknowledging the public's desire for conservation, some trust land managers have explored the concepts of contributory value, nonmonetary consideration, and mechanisms for value capture on state trust lands. By using the greater master planning process to designate state trust lands for conservation, trust land managers might capture full value for the land while making allowance for the conservation of open space. Most states are required to sell trust lands at public auction to the highest bidder, regardless of the conservation, open space, cultural, or historic value of the land. However, the master planning process offers a way to meet the fiduciary responsibility, while also providing opportunities for preserving trust lands.

Quality-of-life factors such as open space, environmental values, and recreational opportunities can influence people to live near state trust land. *Courtesy of California Department of Water Resources.*

Capturing Contributory Value in the Planning Process

Although the concepts of contributory value and non-monetary consideration may be explained easily, the development of mechanisms that allow the accounting, monetization, and capture of these values continues to be a challenge. Two approaches to capturing contributory value are the mechanism of the transfer of development rights (TDR) and the holistic, master planning process of large-scale parcels.

TRANSFER OF DEVELOPMENT RIGHTS AS A TOOL FOR CAPTURING CONTRIBUTORY VALUE

In some states, a significant percentage of state trust lands lie directly in the path of development near growing metropolitan areas. Through careful disposition planning in collaboration with local governments, trust land managers can identify lands that will have the highest auction value based on the location of existing or planned infrastructure, higher density zoning, or the siting of other community amenities, such as parks and open space. The fact that state trust land managers primarily sell only the raw land at auction to development interests limits their ability to recover higher value increments resulting from public investments. However, by prioritizing sales of trust land holdings adjacent to or affected by planned capital improvements, trust land managers are positioned to take advantage of the contributory value of infrastructure located near trust land holdings.

The transfer of development rights is a voluntary transfer of the right to develop property on one parcel of land (known as a sending area) in exchange for the right to develop another parcel of land (called a receiving area), usually at a higher density than was originally zoned. The zoning privileges from an area of low-population needs, such as an agricultural area, are transferred to an area with high-population needs, such as a city center (National Association of Realtors 2014). This transfer allows continued expansion of urban growth and protects open spaces. The agricul-

Apache Junction in Arizona is a desert community nestled in the shadows of the Superstition Mountains adjacent to Superstition Vistas, a potential 21st-century centerpiece development on state trust lands, complete with combined retail, office, and downtown residences. *Courtesy of Sonoran Institute.*

Desert Ridge is the result of a large-scale master plan on state trust land in Arizona—with a commercial core of 570 acres. It was leased in 1993 with a 99-year commercial term. The projected lease revenue is $544,388,965.00. *Courtesy of Sonoran Institute.*

tural or conservation use of the land may continue, and the owner of the land will receive compensation from the owner of the parcel that will be developed for agreeing to place a conservation easement or deed restriction on the land.

These types of programs are often managed at the local government level because a zoning change is often required for TDRs. Successful TDR programs include clearly delineated public purposes for applying the TDR program, such as preserving open space, designating lands for development and open space, adhering to local zoning policies, and recording the development right sent as a conservation easement (Higgins 2000).

The value of a TDR is determined by appraising the value of the land to be conserved before the development restrictions are in place (the "before" value) and comparing it to the value of the land with the development restrictions in place (the "after" value). The difference between the before and after values is generally the accepted value of the development right (Endicott 1993). In areas of strong development pressure, the value of the TDR can be quite high; however, little or no value may result from TDRs in areas of low development pressure. To capture the future value of TDRs in areas of low development pressure, the value is determined according to the value of the easement or restriction to the organization that wishes to purchase it (Endicott 1993). With this type of valuation, the land resource sought for conservation, such as erosion control or habitat protection, will determine the value of the TDR.

Although there is no history of state trust land agencies being involved in TDR programs, there is no reason that they could not play a significant role. State trust land managers could act as matchmakers for TDRs, connecting sellers of TDRs with purchasers in cooperation with local jurisdictions, particularly if those jurisdictions have already adopted and implemented a TDR program. In the context of an agreement between the local jurisdiction and the state trust land agency to identify lands to be conserved or upzoned, the state trust land managers, as large-scale land holders, could create significant opportunities for such transfers.

An advantage of TDRs for state trust land beneficiaries is that if the land is retained by the state land department and also has nondevelopment values, these values can continue to be exploited. Farming, forestry, and recreational uses are just a few of the potential revenue-producing values available on state trust lands that could become sending areas. State trust land managers can also begin to "bank" TDRs that will increase in value as development pressures increase.

MASTER PLANNING OF LARGE-SCALE PARCELS

Comprehensive planning of large-scale parcels of state trust lands presents an opportunity to capture contributory value, examine the entire parcel of the land involved, identify areas most appropriate for development of various densities, and select areas that best add value when conserved as natural open space. To conduct comprehensive planning for such development, innovative partnerships between the land agency and the developer are sometimes forged to allow for greater flexibility in meeting the multiple needs of stakeholders.

To conduct comprehensive planning for such development, innovative partnerships between the land agency and the developer are sometimes forged to allow for greater flexibility in meeting the multiple needs of stakeholders.

Joint development agreements, also known as joint ventures or participation agreements, formalize cooperation between the public sector and private developers to share the costs of improvements and to collaborate in the financing, construction, operation, and maintenance of the facilities. Such agreements may also include the designation of open space and parks as a part of the development process (box 3).

There are a host of combinations and structures for joint ventures. In a well-executed project, all participants benefit—the public sector through cost-sharing and the private sector by increased profits. The specific mechanism of the joint development depends partly on the property ownership framework. If the property is publicly owned, land sales, leases, and land banking arrangements are allowed; many state agencies are restricted from joint partnerships by their constitutions or statutes.

Tools for Quantifying Contributory Value

An accurate process for determining the nonmonetary value of the land needs to be developed in order to devise a system of accounting for the contributory value of state trust land. Several economic tools can assess this value, including hedonic pricing and analyses of consumer willingness to pay. It is useful to quantify the contributory value of preserved land to properly guide state trust land policies.

Construction of a model to measure the contributory value of preserved state trust lands depends upon both a thorough understanding of modeling theory and the availability of data to drive the model. Gathering data of sufficient quality and quantity to construct a meaningful model is not a trivial task, yet some progress has been made in compiling the information needed for state trust land agencies.

The work of Abbot and Klaiber (2010) is helpful in understanding the impact of open space designations on state trust land values, but more research is needed to develop these models and make them more practicable. Considerable work remains to establish a model that can be applied across many western locations. For instance, consideration must be given to the unique nature of trust lands and the restrictions that limit some states' actions regarding the disposal of the land. Existing models are extremely sensitive to location-specific issues; hedonic valuation requires very specific data for targeted neighborhoods to monetize the effects. This makes it difficult to generalize about the value of preserved land. Assessing contributory value in an empirical sense continues to be a challenge.

Box 3

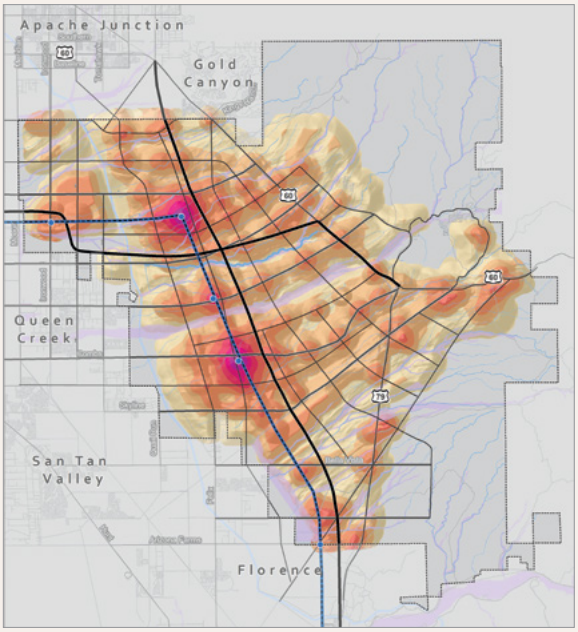
Master Plan Case Studies

Superstition Vistas, Phoenix Metro Area, Arizona

Superstition Vistas encompasses 275 square miles of contiguous state trust land on the southeastern edge of the Phoenix metropolitan area (figure 4). In 2007, local stakeholders—including the Arizona State Land Department (ASLD), surrounding jurisdictions, local utilities, health care providers, and Western Lands and Communities (a joint program of the Lincoln Institute of Land Policy and Sonoran Institute)—formed a steering committee to explore the potential to develop a large-scale master plan for the area. This group has worked to advance a vision for long-term sustainable development of this strategically located parcel of state trust land into a new urban center.

Previously, a large swath within the Superstition Vistas area had been identified by the Superstition Area Land Trust (SALT) as having important conservation and open space values. The identified trust lands, located on rugged terrain bordering the Superstition Mountains Wilderness Area, had long been part of local conservation plans. SALT also filed petitions to have approximately 1,100 acres, designated for conservation under trust land reform ballot measures, reclassified under the Arizona Preserve Initiative (API). Given the criticism surrounding the implementation of API (see box 2, p. 17) and the lack of success at the ballot box, the community was looking for other ways to preserve those lands as open space.

The initial concepts developed by the Superstition Vistas Steering Committee called for the eventual development of a city, or several neighboring



Courtesy of Fregonese Associates, Inc.

Figure 4

Superstition Vistas Scenario S

Box 3 *continued*

jurisdictions, of up to one million people. The steering committee created six alternative scenarios for the development of this land, as compelling illustrations to inform and motivate this sustainable model of development. The scenarios explored various design options, densities, amounts of open space, housing mixes, access to public transit, and other alternative modes of transportation. An economic valuation of each scenario was made. The most promising scenario was the one based on advanced planning, development of public transportation infrastructure, creation of higher density mixed-use centers, and larger areas of public open space and natural preserve. This model produced twice the net present value of a scenario based on a continuation of the traditional piecemeal disposition of state trust land and status quo development patterns in the region.

Mesa del Sol, Albuquerque Metro Area, New Mexico

Mesa del Sol, in Albuquerque, is a 12,400-acre master planned community located on trust lands held by the New Mexico State Land Office (NMSLO) (figure 5). Its location between downtown and the airport makes it a prime site for commercial and residential development. The Mesa del Sol project was initially approved as a joint public-private partnership between the City of Albuquerque, the University of New Mexico, and the NMSLO. NMSLO's long-term goal was to establish Mesa del Sol as a model for mixed-use sustainable development in the desert Southwest.

The planning and visioning process occurred in fits and starts through the 1980s and 1990s, but ultimately the vision for Mesa del Sol emerged as a series of 39 mixed-use urban and rural villages, interspersed with commercial and employment centers, and linked by an extensive multimodal transportation system and open space network (Sonoran Institute 2004). It was estimated that the build-out would take 50 years. In 2002, NMSLO selected Forest City Covington NM, LLC, to be the primary developer for 9,000 acres within the project. The developer bought 3,000 acres outright and leased the remaining 6,000 acres. Eight hundred acres were set aside to remain undeveloped.

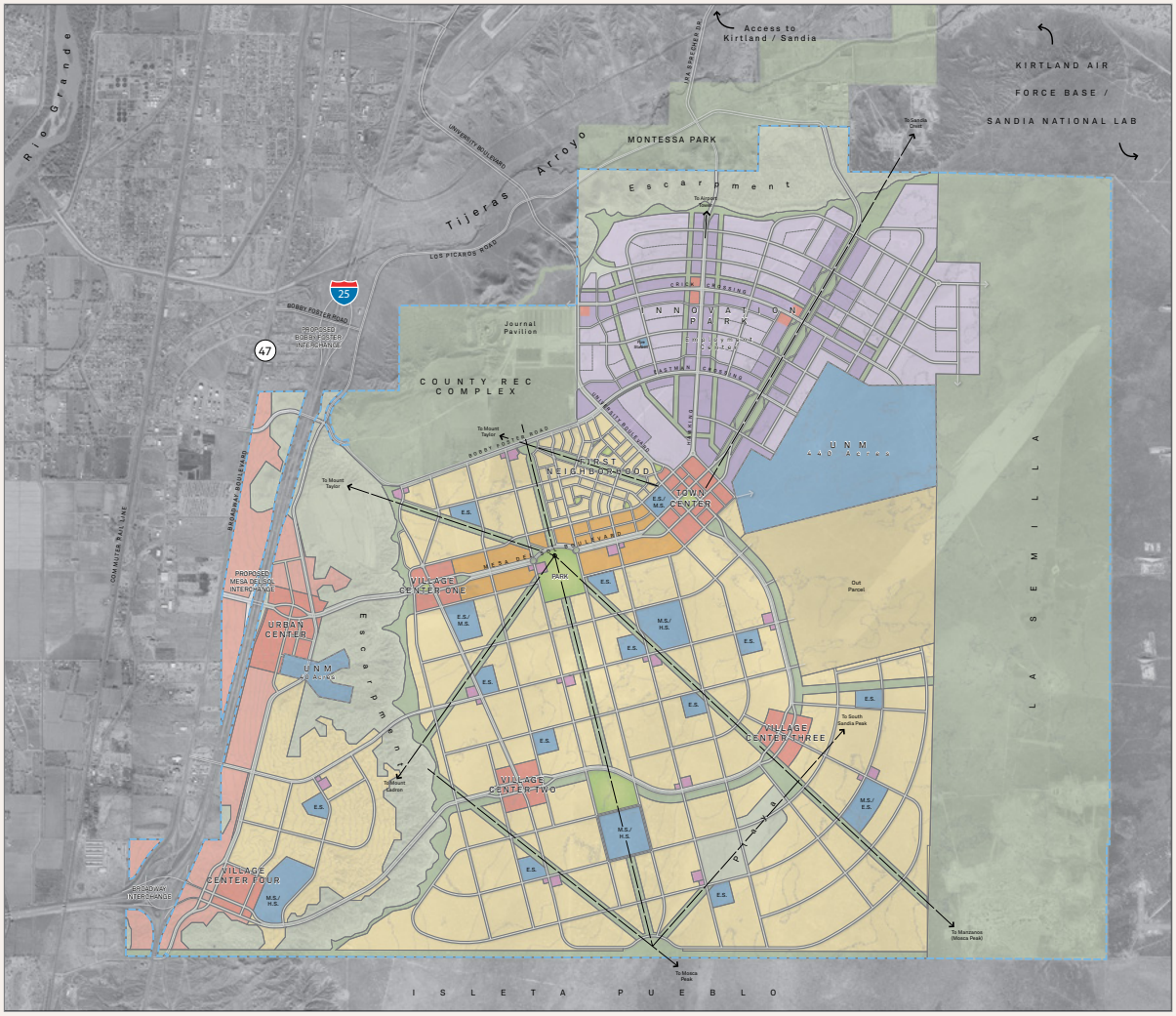
The master plan developed for Mesa del Sol, completed by Calthorpe Associates, plots out 1,400 acres for industrial and commercial development, 4,400 acres for residential and retail use, 3,200 acres of parks and open space, and 800 acres for schools and universities. The City of Albuquerque's "no net (public) expense" program required that the developer cover the costs of servicing the development. To cover the upfront infrastructure expenses, Forest City Covington proposed the use of a tax increment development district (TIDD) to tap into future tax revenues from the development (Sonoran Institute 2004).

The Mesa del Sol project successfully attracted large employment centers to the master plan development, although there has been some turnover due to outside market forces. Forest City Covington broke ground on the first residential neighborhood in 2010; the first residents began moving into the development in the summer of 2012.

It may be too early to decide if Mesa del Sol represents a good example of how a contributory value model might work in honoring the trust without loss in value or finances through a master planning process involving significant open space set-asides. Certainly, NMSLO succeeded in receiving higher revenues for the trust beneficiaries by securing a percentage of the profits gained from the land sales after the lands are platted, entitled, and infrastructure is provided. The developer excelled in bringing employment and investment to the development that otherwise might not have occurred.

Figure 5

Mesa del Sol Master Plan



Land Uses

- Mixed-Use Centers
- Neighborhood Centers (diagrammatic placement)
- Commercial
- Schools & UNM Land
- Office/R&D
- Industrial
- Corridor Residential
- Residential
- Large Parks
- Trunk Open Space Network
- Steep Slope & Playas

Courtesy of Griffin and Associates.

CHAPTER 4

Ecosystem Services Markets as Conservation Tools

Oregon's Virgina Valley Stockade Block is the largest piece of Common School Fund trust land in Oregon. *Courtesy of Oregon Department of State Lands.*

State trust land managers have generally supported extractive land uses for revenue generation—leasing trust lands holdings for mineral extraction, oil and gas exploration and extraction, grazing and agriculture, forestry, and commercial activity. However, population growth and fundamental changes to resource-based industries have led to new opportunities for revenue generation. By focusing on sustainable land management practices, state trust land managers can take advantage of new and emerging markets in ecosystem services while ensuring the continuation, even the expansion, of funds for the beneficiaries of long-term trusts. It may serve trust interests to understand the opportunities presented by these new markets. It is critical that trust land managers identify current and potential ecosystem services generated by state trust lands to plan for entry into these markets.

Defining Ecosystem Services

Ecological values are defined as the "clean air, clean and abundant water, fish and wildlife habitat, and other values that are generally considered public goods." Ecosystem services are "the benefits that human communities enjoy as a result of natural processes and biological diversity" (Oregon Sustainability Board 2010, 4). Until recent decades, ecological functions such as water filtration, clean air, carbon sequestration, crop pollination, and biodiversity were largely taken for granted because past generations did not recognize the profound impact human activities had on natural systems.

Until recent decades, ecological functions such as water filtration, clean air, carbon sequestration, crop pollination, and biodiversity were largely taken for granted because past generations did not recognize the profound impact human activities had on natural systems.

In many cases, ecosystem services are irreplaceable once they are gone. Burning fossil fuels and clearing forests are examples of losing nonrenewable ecosystem services that result in problems with air filtration or climate regulation (Oregon Sustainability Board 2010). Other resources may be technically renewable, but they take generations to replenish, such as topsoil. The growth of human population requires a higher level of ecosystem services, yet our activities increase the rate of ecosystem service loss.

Ecosystem services benefit society and therefore have value. New markets for ecosystem services have been established because, under federal law, compensatory mitigation is required. These ecosystem services markets are creative means for state trust land managers to generate revenue for preserving conservation values on trust lands. In order to take advantage of these new markets, trust land managers must know how to determine the value of the ecosystem services generated by trust lands.

Emerging Ecosystem Services Markets

Ecosystem services can be valued instrumentally or intrinsically (Oregon Sustainability Board 2010). The instrumental method uses a utilitarian approach: if the ecological service or feature is useful to humans and can be monetized, it has value. In contrast, intrinsic valuation methods recognize that value can be attributed to an environmental feature or function simply because humans appreciate that it exists, which can add a spiritual or nonmonetary value to the service.

The value of ecosystem services can be divided into use or nonuse categories. Use can be categorized as "direct use" such as logging, fishing, recreation, tourism, and harvesting; "indirect use" includes flood control, habitat and climate regulation, and waste assimilation (New Jersey Department of Environmental Protection 2007). The "nonuse" category includes intrinsic uses, such as the satisfaction of knowing that certain species exist or are protected for future generations. This chapter focuses on the direct and indirect use value of ecosystem services that can be monetized in the marketplace.

Ecosystem Marketplace—a source of news and analytics on markets and payments for ecosystem services—estimates that the global annual market for ecosystem services programs is $1.8–$2.9 billion (Madsen et al. 2010). State trust land managers, as large-scale landowners, have a tremendous opportunity to identify lands that can meet the needs of emerging ecosystem services markets.

Harney County, southeastern Oregon, includes large holdings of Oregon Department of State Lands rangelands. *Courtesy of Taryn Bye, Oregon Department of State Lands.*

COMPENSATORY MITIGATION DRIVEN BY REGULATIONS

The most robust ecosystem services markets currently in operation in the United States are those driven by regulations that require compensatory mitigation for adverse impacts to particular ecological features or functions. There are two primary federal laws that govern these transactions—the Clean Water Act (CWA), passed by Congress in 1972, and the Endangered Species Act (ESA), which was enacted in 1973.

The objective of the CWA is to restore and maintain the chemical, physical, and biological integrity of the nation's waters. To achieve this, the CWA prohibits the discharge of dredged or fill material into wetlands, streams, and other waters in the United States unless a permit is issued by the U.S. Army Corps of Engineers (USACE) under Section 404 of the CWA. The permit program is administered by the USACE, but the U.S. Environmental Protection Agency (EPA) is responsible for developing the regulations that provide the environmental criteria for permit issuance.

Compensatory mitigation can be accomplished through on-site efforts by the developer or through qualified third-party actions. For example, the developer could purchase "credits" from a mitigation bank, which might be a wetland, stream, or other aquatic resource area that has been restored, created, enhanced, or preserved by a private landowner or land manager. The bank is a legal framework structured to provide credits based on the restoration of a qualify-

ing wetland or stream. The amount of restoration, or value of the particular wetland or stream to the region, determines how many credits the bank can offer. Permittees, upon approval of regulatory agencies, can acquire these credits to meet their requirements for compensatory mitigation (box 4).

Another option is in-lieu fee mitigation. These programs are generally administered by public agencies or nonprofit organizations that have established an agreement with regulatory agencies to use in-lieu fee payments collected from the developer to conduct aquatic resource restoration, creation, or preservation activities. Both the banking and in-lieu fee strategies are forms of "third-party" compensation because a third party—the bank or the in-lieu fee sponsor—assumes responsibility from the permittee for the implementation and success of the mitigation effort.

Box 4

Mitigation Credits

One mitigation credit for wetlands restoration is often equivalent to one acre of protected resources. The methods by which credits are measured and calculated vary considerably and are generally determined region by region depending on the service being provided. Most credits are based on acreage, functional assessment, a combination of a functional assessment and acreage, or a functional assessment in combination with professional judgment (Environmental Law Institute 2005). Typically, value is estimated per credit.

In 2009, payments for conservation banking in the United States were $200 million per annum. The average prices for mitigation credits in the United States are: $74,535 for wetlands (not including tidal and vernal pools); $260 for streams; and $31,683 for habitats. The price per acre of habitat for the Utah prairie dog is $1,836; an acre for the San Joaquin kit fox ranges from $2,500 to $15,000; and an acre of habitat for a breeding pair of the least Bell's vireo is $125,000 (Madsen et al. 2010).

It is most common for the permittee to be responsible for mitigation in the United States. Regulations in 2008 favored mitigation banking over the other approaches (Hough and Robertson 2009). In particular, the 2008 EPA rule shifts the preference to off-site mitigation and strengthens the in-lieu fee program. Both should reduce the piecemeal "postage stamp" approach to conservation of wetlands resources in favor of larger reserves that protect functional systems and habitat (Culp et al. 2011).

Similar mitigation for negative impacts of development and habitat disturbance is required under the Endangered Species Act. The ESA's goal is to protect critically imperiled species, and to maintain and ensure recovery of those populations by removing or mitigating the threats to their continued persistence.

As in Section 404 mitigation banking, conservation banking is a method available under the ESA whereby a permittee can purchase credits for mitigation of impacts to endangered species associated with a development project. A conservation bank is a parcel of land that supports the natural habitat of one or more species listed under the Endangered Species Act, conserved and managed in perpetuity through a conservation easement (United States Department of the Interior, Fish and Wildlife Service 2003).

The main difference between mitigation banking and conservation banking is that wetland mitigation banking seeks to replace the exact function and values of the specific wetland habitats that will be adversely affected by a proposed project, while conservation banking strives to offset adverse impacts to a species, as cited in 16 U.S.C. §3837[c].

According to the Fish and Wildlife Service, the regulatory agency in charge of mitigation of endangered and threatened species, a conservation bank can be created in a number of different ways:

1. Acquisition of existing habitat.
2. Protection of existing habitat through conservation easements.
3. Restoration or enhancements of disturbed habitat.
4. Creation of new habitat in some situations.
5. Prescriptive management of habitats for specified biological characteristics.

A bank can be created in association with a specific project, or as an entrepreneurial effort in anticipation of an independent customer base with a variety of projects and conservation needs (United States Department of the Interior, Fish and Wildlife Service 2003).

The provision of mitigation credits by third-party, off-site programs, through either the creation of mitigation or conservation banks or through the in-lieu credit system, represent key opportunities for large-scale landowners such as state trust land agencies. Transactions associated with compliance-driven ecosystem services markets, such as those generated by the Clean Water Act and the Endangered Species Act, average about $3 billion annually in the United States (Vickerman 2010).

CARBON CREDIT MARKETS

Carbon credit markets represent an emerging opportunity for trust land managers, especially for forested trust lands with the potential for carbon sequestration. A carbon credit is a certificate or permit representing a reduction, removal, or avoidance of one metric ton of carbon dioxide or its equivalent in the atmosphere. Essentially, these credits are financial instruments that can be traded in carbon credit markets.

Carbon sequestration refers to the process of capturing carbon from the atmosphere and storing it in some way, usually in trees or other plants, but also through other mechanisms. Sequestration is one way to generate a carbon credit.

Carbon trading is a form of emissions trading in which greenhouse gas (GHG) emissions are capped at some level, and markets are used to allocate these emissions among regulated sources of GHG emissions.

Rights-of-way for utility lines, such as these high-tension structures and wires in California, can add significant value to a parcel of state trust lands. *Courtesy of California Department of Water Resources.*

The carbon credit market consists of compliance markets comprising GHG emitters who are obligated to reduce their emissions and voluntary markets in which individuals or businesses elect to reduce their carbon emissions.

The United States is the largest source of greenhouse gasses in the world; in 2011 it released 6,702 million metric tons (United States Environmental Protection Agency 2013). Land use change and forestry practices, such as decreased timber harvests and changes in soil management, offset approximately 15.5 percent of the total U.S. anthropogenic carbon dioxide emissions in 1990, and 16.1 percent in 2011 (United States Environmental Protection Agency 2013).

Currently, the CO_2 sequestration value from reforestation, afforestation, or avoided deforestation is very limited. Although voluntary programs like the Power Tree initiative of the utility sector (a consortium of 25 leading U.S. electric power companies) and the Chicago Climate Exchange have provided some demand for land-based sequestration in the United States, the vast majority of expenditure has been within the lower Mississippi basin (Davis 2007).

Although formalized markets are limited, it is likely that continued scientific evidence of climate change impacts will drive demand for greenhouse gas emissions reductions and all legitimate forms of sequestration. As an early indication of this trend, in late August 2006, the California legislature passed the Global Warming Solutions Act (AB 32), imposing a mandatory cap on greenhouse gas emissions in California, and establishing annual mandatory reporting of GHG emissions for significant sources. The legislation sets limits to cut statewide emissions to 1990 levels by 2020, reducing them about 25 percent below today's levels. Industries were required to begin making reductions in 2012 (Davis 2007).

Carbon markets present an opportunity for state trust land managers to engage in forest management activities that sequester carbon as part of a larger set of solutions to address climate change. In Washington State, the Department of Natural Resources' strategic plan calls for exploring carbon offset credits that could be developed on forested trust lands (Washington State Department of Natural Resources 2010). It is important for state land departments to continue to follow carbon market developments as potential income-generating activities for trust lands (Davis 2007).

Valuation of Ecosystem Services

Managers can estimate the potential value of ecosystem services on their lands by conducting an inventory of the lands, running a demand analysis for ecosystem services, and examining recent transactions for payments for ecosystem services credits.

A successful example of this approach is documented in "Analysis of Ecosystem Services Potential on Colorado State Trust Lands" (Sonoran Institute et al. 2012).

The recommendations from this report provide an excellent road map for trust land managers interested in developing a program for generating ecosystem services revenue:

- Develop a set of discrete criteria (metrics) specific to the ecosystem services present on state trust lands, such as wetlands mitigation or endangered species mitigation, to identify, evaluate, and select trust land holdings that are appropriate to qualify as an ecosystem services market asset.
- Conduct a comprehensive inventory of the land holdings to identify the best and most marketable opportunities for ecosystem services.
- Examine the state trust land portfolio to determine if any of the lands that have high conservation values could also qualify for ecosystem services market transactions.
- Develop enough internal expertise and experience with ecosystem services markets to effectively evaluate opportunities and ensure the best return on investment.
- Explore all options for participating in ecosystem services markets from acting as a principal in mitigation banking to making trust lands available for third-party operators involved in the creation and marketing of ecosystem services credits to determining the appropriate path forward to pursue revenues from these markets.
- Consider establishing a policy to guide the use of appropriate real estate instruments, such as conservation easements, on lands within the ecosystem services asset pool to enable them to qualify for mitigation banking credits.
- Cultivate relationships with key regulating agency staff to access current and emerging information about demand and opportunities for providing ecosystems services on the market (Sonoran Institute et al. 2012).

Marketing ecosystem services is financially competitive and provides a means of diversifying the portfolio for trust land agencies in the West, compared with the traditional methods of generating revenue on state trust lands, such as grazing and agricultural leases. In most states, leasing for grazing and agriculture constitutes 60 to 90 percent of state trust land leases, but it brings in a fraction of the total revenues from trust land activities (Culp et al. 2005). The advantage of ecosystem services credits is that they provide a source of income from areas with high conservation value, where activities like grazing or agriculture may ecologically endanger the parcel.

However, it is difficult to compare revenues generated from ecosystem services—generally one-time sales—with revenues from renewable grazing or agricultural leases. Ecosystem services credits are perhaps best viewed as a component of an income portfolio that also includes a range of other revenue streams.

Potential demand in ecosystem services markets is difficult to predict. It can be estimated based on past permitting trends and future plans for development. For example, the USACE, which is in charge of issuing permits for projects affecting wetlands and other aquatic resources under the Clean Water Act, tracks the number of permits and amount of mitigation required. Records of past years can provide a basis for estimating future demand, although there is no guarantee that past trends will continue.

Additional information on planned developments provides further insight into potential future demand for ecosystem services. In most states, departments of transportation are one of the largest purchasers of ecosystem services due to requirements that highway projects and other developments offset impacts. Transportation project plans furnish information on upcoming capital investments and their anticipated mitigation requirements.

Although there is a shortage of completed transactions to serve as models, examples from Utah and Colorado are on the forefront of these markets. Their experiences can help guide the development of programs in other states (box 5). As Achterman and Mauger note, leaders experimenting with ecosystem services markets at the state and local levels are filling a vital role in the development, stabilization, maturation, and dissemination of these markets by developing policies and protocols for valuation, accounting, and credit trading through lessons learned from experience (2010). New market entrants are attracted to participate and drive additional supply and demand with a "proof of concept" that ecosystem markets actually work and can generate significant revenues through pilot programs and efforts pioneered by state entities.

State trust land managers could provide an important role in this respect. Through building the institutional capacity to effectively engage in marketing ecosystem services credits on state trust lands, they can also model new markets for valuing those benefits and create payment systems for their management and preservation.

By working to expand these markets through pilot efforts, state trust land managers can secure additional competitive revenue sources for the beneficiaries of the trust and even assist in creating new opportunities for marketing ecosystem services (Culp et al. 2011).

Box 5

Case Study: Utah

The Utah Prairie Dog is listed as threatened under the Endangered Species Act. In 2005, the Utah School and Institutional Trust Lands Administration (SITLA) established a conservation bank for the prairie dog in conjunction with the U.S. Fish and Wildlife Service. The conservation bank is authorized by the Iron County Habitat Conservation Plan, and the service area of the bank is the entirety of Iron County in the southwestern portion of Utah.

The bank comprises 758 acres in three parcels: Flossie Knoll, South Butte, and The Tanks. SITLA enhanced the conservation bank's prairie dog habitat through shrub removal, controlled burning, and seeding. A conservation easement on the site is held by the Utah Division of Wildlife Resources (UDWR).

According to the conservation banking agreement, the maximum number of credits potentially available is equal to the number of preserved acres: 758 credits. Thus far, 154 credits have been established based on the number of prairie dogs observed in spring counts (77) multiplied by two, perhaps to adjust for the sampling process. The initial 154 credits were sold to Iron County for $1,636 per credit, plus $200 per credit for the perpetual endowment fund (SITLA 2006). Additional credits may be generated if more prairie dogs establish habitat at the site.

Funding for management of the SITLA conservation bank comes from the interest earned by an endowment fund. Under an agreement with Iron County, UDWR manages the bank and provides annual reports to the U.S. Fish and Wildlife Service that describe the status of prairie dogs in the bank, biological monitoring, and management activities. (Conservation Fund 2012).

Students clean up Lake Mountain in Utah as part of a SITLA program. Utah's schools are the beneficiaries of 96 percent of all trust lands in the state. *Courtesy of Utah School and Institutional Trust Lands Administration.*

Box 5 *continued*

Case Study: Colorado

The Colorado State Land Board (SLB) is exploring multiple tools for ecosystem services payments on trust lands, primarily as a new, nontraditional line of business, rather than as a way to meet conservation objectives. SLB's significant land assets, long-term perspective, and time available for project development allow them to thoroughly research new opportunities. Sonoran Institute, Solano Partners, Inc., and Parametrix prepared a report on the potential for ecosystem services in Colorado. Five categories of potential demand were identified (Sonoran Institute et al. 2012):

- Transportation infrastructure.
- Upstream/downstream watershed linkages.
- Energy development (renewable, as well as oil and gas).
- Carbon sequestration.
- Conservation and mitigation banking.

Three state land board sites were analyzed to identify potential credit generation and payments for ecosystem services opportunities. The analyses determined that the sites had the potential to generate conservation revenue from conservation banking, wetland banking, and stream banking.

The SLB has a planning lease with WRA, Inc., an environmental consulting firm, to explore the possibility of creating a conservation mitigation bank on state trust land in Larimer County in northern Colorado. Pending approval by the U.S. Fish and Wildlife Service, the bank would preserve naturally occurring habitat occupied by the Preble's Meadow Jumping Mouse (PMJM), a threatened species under the Endangered Species Act.

The PMJM—threatened by human development, wildfire, drought, small population sizes, and modifications to habitats resulting from climate change—can be found along the eastern edge of the Front Range foothills of the Rocky Mountains from southeastern Wyoming to Colorado Springs, Colorado. Seventy-five percent of this section of state trust land is already surrounded by conserved lands. The bank would offer off-site compensatory mitigation for unavoidable impact on the PMJM. Preservation of this habitat in a conservation bank would be a major contribution to the conservation and recovery of the PMJM, and would represent a new source of revenue for Colorado State Land Board trust beneficiaries.

At the Colorado State Land Board, we look at ecosystem services payments primarily as a new line of business that can generate significant income for our trust beneficiaries and less as a way of achieving specific conservation objectives. The challenge is that ecosystem services projects typically have a long start-up time and can involve significant up-front project development costs. So it has been important for us to be strategic in our approach and determine where the best opportunities lie. At the same time, we're testing several ecosystem services projects that involve different risk and reward strategies for our agency. Fortunately, the SLB has significant land assets and a long-term perspective, so we can take the time to develop the projects. We see a significant opportunity for new revenue while at the same time improving the ecological function and performance of certain critical ecosystems.

—Mindy Gottsegen
Conservation Services Manager
Colorado State Land Board

CHAPTER 5

Land Tenure Adjustment

Turbines near Tracy, California, provide wind energy. Renewable energy offers new opportunities for revenue generation on trust lands throughout the West. *Courtesy of California Department of Water Resources.*

One of the most important conservation strategies for state trust lands is simply to transfer the management of trust lands with significant conservation values to other agencies or entities with a clear mandate to manage the lands for conservation. Large federal land management agencies, specifically the Bureau of Land Management (BLM) and U.S. Forest Service (USFS), most often have a conservation mandate as a part of their mission.

A range of mechanisms for land tenure adjustment is available to state trust agencies. Most state land agencies have the authority to exchange, sell, and purchase, but each state has different enabling acts, constitutions, and statutes. In addition, some state agencies are authorized to use trust land banking and nonsimultaneous land exchanges to sell or otherwise dispose of state trust parcels. The agencies may use the funds generated to acquire nonstate trust land as long as the process is completed within a specified time of the land sale or disposal. Land exchange is the most common tool for land tenure adjustment in the current climate of constrained federal budgets.

History of Land Exchanges

Both state and federal agencies are eager to engage in land tenure adjustment transactions in order to consolidate land ownership, promote conservation goals, and eliminate management challenges. The West, more than any other region in the United States, has a legacy of land ownership and management challenges—a checkerboard mingling of state trust lands with federal and private lands—that result from the method of conveying of a public estate to state and private hands. In the case of state trust lands, the conveyance process itself created a scattered system of holdings, where new western states received sections of each township (Souder and Fairfax 1996).

Railroad land grants also contributed to the checkerboard land ownership pattern. Railroad companies received a significant amount of public lands in the 19th century. From 1850 through 1871, the federal government gave multiple grants of public lands—sections extending 5 to 20 miles from the right-of-way—to incentivize the construction of railroads throughout the nation (Maley 1996).

During this period, and before many states had formally entered the Union, Congress or the president designated federal lands within some states for special purposes, such as tribal reservations, parks, national forests, and other uses. Federal lands were also acquired through homesteading. This led to the congressional practice of allowing states to select alternative trust lands when the identified section in a township had already been conveyed to another entity (Culp et al. 2005). The in-lieu selection process was applied inconsistently, and often not retroactively. As a result, some states were unable to recover their full trust land conveyance through this process.

Over a decade into the 21st century, state trust land managers continue to cope with land management challenges, inefficiencies, and consequent losses to the public beneficiaries imposed by ownership patterns established by prior federal conveyance. The checkerboard state/federal lands and in-holdings of the West create obstacles for federal agencies responsible for managing those lands as well, and can negatively impact their efforts to use the land for conservation and multiple-use projects. It would be beneficial to resolve these conflicts to create a more rational and efficient land ownership pattern for both the trust beneficiaries—through securing appropriate lands for revenue generation within the trust portfolio and the public interest—by transitioning land with high conservation, ecological, or recreational values into larger, contiguous blocks for easier management at the landscape level.

State trust lands that are surrounded by federal lands managed for conservation are unlikely to support the beneficiaries as intended by the trust responsibility. Access alone can be a significant hurdle in making those state lands available for revenue generation, not to mention the federal mandates for multiple use, con-

In 1981, 258 acres of state trust land were leased to add to Picacho Peak State Park in central Arizona. *Courtesy of Diana Rhodes, Sonoran Institute.*

servation, or recreation goals on these adjacent lands. For those inholdings that are available for revenue-producing activities, there may be only one viable lessee because of the lack of access. This is often the case for large-scale grazing or agricultural units. Thus, lack of competition in bidding can also reduce the amount of revenue that can be reasonably obtained from such lands (Culp and Marlow 2013).

Although state trust land managers view land tenure adjustment through exchanges as an extremely useful tool, its feasibility and political salability have become increasingly limited. The land exchange process is long, onerous, and frequently subject to controversy among public stakeholders. Policy changes that streamlined the land exchange process would enhance its potential as a conservation tool.

The Land Exchange Process

Administrative land exchange is the most frequently employed land exchange mechanism by the BLM and USFS. The primary law governing land exchanges for the BLM and the USFS is the Federal Land and Policy Management Act (FLPMA) and its amendments. Although several other laws provide legal authority for various types of exchanges, the statutory basis for most BLM and USFS land exchanges is the FLPMA (United States Bureau of Land Management 2005).

In order to exchange land through an administrative process, the BLM or USFS must complete the following steps (United State Bureau of Land Management 2005):

1. **Develop an exchange proposal.** This written proposal includes legal descriptions of the federal lands to be exchanged and information regarding the responsibilities of the parties to the exchange. The exchange proposal is based on discussions between the federal and nonfederal entities involved in the exchange.

2. **Evaluate the feasibility of the exchange.**
A feasibility report providing documentation of the various aspects of the exchange is required. This includes evaluation of the public interest, costs, value, timeline for the exchange, compatibility with either the BLM resource management plan or USFS forest land and resource management plan, and potential alternatives. The feasibility report is also reviewed by appropriate legislative committees, the Department of Interior or Agriculture solicitor, state BLM directors, and the deputy director of BLM, among others. The USFS requires additional review by Congress and the secretary of the interior for exchanges when the federal land value is $500,000 or more.

3. **Conduct a complete resource inventory and NEPA analysis.**
The BLM must conduct land title reviews, resource inventories, and a National Environmental Policy Act (NEPA) analysis of the parcel to determine if any significant resources are present, including, but not limited to, mineral, cultural, water, and timber resources; federally listed or sensitive plant and animal species; critical habitat; and/or riparian areas. Inventories must also assess outstanding third-party rights and confirm that there are no hazardous materials or other liabilities on or associated with the property. The environmental impacts of completing the exchange are evaluated.

4. **Appraise the property.**
The BLM or USFS must have the property appraised by a qualified appraiser to determine the current market value of the property. This involves determination of the highest and best use of the property based on market evidence. The appraisal must then be reviewed and approved by the Department of Interior's Appraisal Services Directorate. The minimum acceptable bid for a parcel of land will be established by the federal appraiser.

5. **Provide a public notice.**
Public notice of the proposed exchange must be provided and public comment solicited.

6. **Publicize the notice of decision.**
After a decision to complete the exchange has been made, the BLM or USFS must then publish and distribute a notice of decision.

7. **Transfer title.**
The final stage is title transfer. The title review and land status are examined and the federal land patent is transferred.

Once these steps are met, the land exchange between the federal agency and the state trust agency can proceed.

Legislative Land Exchanges

Legislative exchanges are negotiated transactions that rely on the political process for completion. This method is often preferred for more complex exchange transactions in which the goals of the parties are quite different, because political campaigns can engender support for the exchange.

In most legislative exchanges, informal discussions begin among a member of the Senate or Congress, local citizens, and elected officials regarding the desirable lands for exchange. These conversations may focus on future growth accommodation, economic development stimulation, achievement of conservation outcomes, or other desired outcomes. Other primary motivations, especially from the standpoint of state trust land managers, are to consolidate land positions, improve management, acquire developable land, or transfer land with conservation values to a federal entity.

State and county officials are likely to play a leading role in the discussions, as most federal lands fall within county boundaries, but municipal leaders may also play an important role, particularly if federal lands are perceived as constraints to growth. The process by which these conversations eventually develop into a legislative proposal can take many forms, but successful efforts build a broad base of support among the diverse interests. Eventually, legislation may be introduced in the House or the Senate, or in both, by one or more members of the state's congressional delegation. The ensuing legislative process often can be long and tortuous (Culp and Marlow 2013).

State land managers interested in land exchanges can facilitate the process through a number of strategies and actions. The development of a unified state trust land exchange policy to guide the agency's participation in land exchange transactions can significantly structure and streamline the exchange process. Such a state policy can articulate the requirements needed for the department to engage in a land exchange proposal, and provide guidance to partner entities who seek an exchange with a trust land management agency. The objectives of an exchange can be evaluated by establishing criteria to compare the goals and mandates of the trust.

For example, the Montana DNRC's land exchange policy created a series of explicit criteria, along with screening standards, that streamlined its evaluation of the merits of a given exchange. Also, given the high costs associated with completing an exchange transaction, the policy includes provisions for sharing the administrative costs associated with the exchange evaluation. This enables the DNRC to ease some of the financial burdens of the exchange process. Wyoming also specifies a series of Trust Land Management Objectives used to analyze the overall merit of proposed land exchanges (box 6). If state policy did not clearly outline the criteria for exchanges, such transactions might happen in a reactive or haphazard fashion that could lead to outcomes that are less efficient or more controversial for the state trust land agency.

To ensure the success of an exchange, it is important at the outset to establish that the participating entities have the commitment of resources and time. One of the most significant challenges to successful land exchange transactions is the high cost of engaging in them. Many exchanges span the course of years in their development, analysis, vetting, and finalization. With exchanges involving federal entities, the process of complying with environmental laws, such as NEPA, and conducting environmental site assessments can increase the costs dramatically. Additional costs include the time of staff and outside expertise that, in some cases, must be consulted to conduct the necessary reviews. An added challenge associated with federal land exchanges is the requirement that an appraisal review take place if the exchange is not completed within one year of the land valuation. Since most exchanges involving federal entities take more than one year, this requirement represents another expense and logistical hurdle (Culp and Marlow 2013).

Another option is to focus on exchanges that are relatively small and simple. Although these do not provide a complete solution to problematic land ownership patterns, they can incrementally achieve trust objectives while avoiding the delays and controversy of larger transactions. Over time, a series of small, strategic exchanges can assist the state trust land management agency to further consolidate holdings and improve management efficiency. Prioritization of proposed land exchanges can also help to direct resources to the cases that will have the most positive and strategic impact for the trust.

Box 6

Land Exchange Criteria in State Trust Land Agencies

MONTANA

The Montana Department of Natural Resources and Conservation developed the following criteria to evaluate the merits of state trust land exchanges.

Ensure that properties in question have:

- equal or greater land value;
- similar navigable lake or stream values;
- equal or greater revenues generated for the beneficiaries;
- equal or greater acreage;
- consolidation of state trust lands;
- potential for long-term appreciation; or
- improved or equal access to state or public lands.

As beneficiaries and supporters of state trust lands, educators, members of the media, and conservation personnel tour Moriah Ranch in Albany County, Wyoming. *Courtesy of Wyoming Office of State Lands and Investments.*

WYOMING

The objectives of Wyoming's Office of State Lands and Investment's Trust Land Management (in order of decreasing priority) are to:

Meet the beneficiaries' short-and/or long-term objectives through the following:

Revenue

- Improve income generating potential.
- Decide whether to work alone or in combination with other state trust lands.
- Determine whether to establish single or multiple uses.

Investment

- Improve returns.
- Improve portfolio diversification.
- Increase appreciation potential.
- Improve intrinsic natural resource values (i.e. habitat, water).

Improve the manageability of the land asset:

- Consolidate ownership patterns.
- Leverage management resources of other agencies/entities.

Meet specific school and/or community needs:

- Increase stability.
- Provide growth opportunity.
- Improve access/recreational opportunity.

Due diligence can help avoid problems later in the process. It is valuable for state trust land managers to gather as much information as early as possible about the lands involved in an exchange. Building a constituency early in the process and conducting a transparent public communication and participation process can short-circuit controversy. Early engagement of stakeholders who may be affected by an exchange will encourage them to support it and will increase the potential for resolving issues. Transparency in the process can also serve to defuse public suspicion that one party is receiving a windfall at the expense of the public or trust beneficiaries (Boetsch and Culp 2010). The Three Peaks Exchange in Utah (box 7) provides a good example of managing conflicts between the goals of a state land trust and the character of the state trust lands themselves (Boetsch and Culp 2010).

Improving the Land Exchange Process

A strong rationale can be made for facilitating improvements to the land exchange process to enable more efficient and successful land tenure adjustment transactions between state and federal entities. Under the current system, land tenure adjustment is likely to proceed quite slowly and will continue to impede landscape-scale conservation efforts on federal lands and stymie the efforts of trust land managers to realize the full value of their holdings for the public beneficiaries they serve.

For example, there are multiple efforts underway throughout the West to identify, map, and conserve critical wildlife linkages to ensure that the iconic

Box 7

Land Exchange Case Study: Three Peaks Exchange, Utah (2008)

One of the more recent federal land exchanges, the Three Peaks exchange in Iron County, Utah, was an administrative land exchange completed in May 2008. The exchange transferred ownership of 950 acres of state trust land located inside the boundary of the Three Peaks Recreation Area in exchange for 330 acres of Bureau of Land Management (BLM) land. The Utah State and Institutional Trust Lands Administration (SITLA) land included important scenic areas, which are now managed for their recreational and aesthetic values. SITLA acquired land with development potential, including a 160-acre industrially zoned parcel with rail and utility access, located only 10 miles from Cedar City (Boetsch and Culp 2010).

The Three Peaks exchange was originally proposed in 2002, but was delayed pending extensive joint planning by the BLM, Iron County, and local citizens. During that time, the BLM completed an environmental assessment (EA) in 2005.

The Three Peaks exchange is an excellent example of resolving the sometimes mutually exclusive relationship between the goals of a state land trust and the character of the state trust lands themselves. The EA very carefully documented the purpose and need for the exchange. Although the exchange was successful, it illustrates the potential length of time the administrative land exchange process might take regardless of the amount of land exchanged.

species of the region will thrive now and in future generations. Montana's Crown of the Continent initiative represents one of these large landscape initiatives involving a broad coalition of landowners and interest groups. At a regional level across the West, the Western Governors Association's initiative on wildlife corridors and habitat is working to identify and conserve linkages to support wildlife. The success of these efforts, as well as similar initiatives, depends on the participation of all affected landowners, including state trust land managers, and on the employment of a broad range of tools that will enable those landowners to carry out the vision of large landscape conservation. A functional land exchange process is one key tool to facilitate these efforts while meeting the objectives of all involved parties (Culp and Marlow 2013).

Several methods for streamlining and improving the land exchange process have been proposed, and, if implemented, would address key issues identified by stakeholders. Most promising of these involves improvements to the process, such as incorporating the recognition of the value of conservation and natural landscapes. The Uniform Appraisal Standards for Federal Land Acquisitions (UASFLA) describes the limitations of appraisals in accounting for conservation values in fair market estimations, even though significant public benefits arise from ecosystem services on specific parcels, the preservation of natural landscapes, and the stewardship of wildlife and their habitats.

The Wyoming Board of Land Commissioners partners annually with The Wyoming Conservation Corp (WCC) and Devon Energy on a 10-day volunteer effort to clean up state lands. *Courtesy of Wyoming Office of State Lands and Investment.*

Given that the appraisal process does not accurately factor in conservation values, some of the criticism that has been levied against the land exchange process for missteps in valuation should be reexamined more closely. Exchanges that had been executed to achieve conservation goals may have significantly underestimated the conservation value of the exchanged lands due to UASFLA's appraisal standards. If the conservation values were accounted for appropriately, exchanges that may not seem to serve the public interest could actually benefit the public through land conservation.

This limit in the appraisal process does a disservice to conservation efforts and to state trust land managers seeking to exchange trust land holdings with conservation values for lands more appropriate for development or other modes of revenue generation.

CHAPTER 6

Challenges and Barriers to Conservation Strategies

An oil and gas pump jack operates in Carbon County, Utah. Most states allow multiple uses of state trust lands, such as stacking recreational or conservation leases on top of mineral licenses. *Courtesy of Utah School and Institutional Trust Lands Administration.*

One might wonder why more environmentally sensitive trust lands in the West are not managed for their conservation values, with so many tools available to capture revenues and value from lands with ecological significance. The fact is that trust lands with unique and unmatched ecological, recreational, or scenic value are rarely placed in a conservation status. Despite the number of conservation tools and strategies discussed in this report, there are still a number of obstacles to their widespread implementation in the West.

Challenges to Securing Conservation Sales and Leases for Trust Lands

The main challenge to achieving conservation objectives on state trust lands is the lack of funds available within the local government and nonprofit sectors, or among other interested conservation buyers, to pay full-market value for the parcels. The primary source of funding for conservation acquisition among federal programs, the Land and Water Conservation Fund, has been underfunded for decades. Other conservation acquisition dollars are also in short supply, particularly in western states. Many states in the West do not even have state or local programs to generate funding to secure local or regional park lands or recreation lands of any type, let alone to acquire state trust lands.

Most nonprofit organizations that might want to buy or lease trust land for conservation are not in the financial position to compete with developers or businesses. Local governments, the other most frequent buyer of conservation trust lands, are restricted by their means of funding state trust land acquisition for conservation. Typically, local governments secure such funds through open space bonds or appropriation; constraints often prevent them from using public funds to pay above market value in an effort to outbid other interests. Therefore, competitive public auction itself can present a barrier to the conservation of trust lands.

In the end, few state trust lands are likely to be conserved through outright sale or lease, although these are important tools to preserve some parcels, particularly in states like Arizona that have dedicated revenue streams to provide matching funds to assist buyers in purchasing state trust lands for conservation. But generally, with the limited conservation acquisition funding available, it is unlikely that the conservation needs of the Intermountain West can be met solely through the sale or lease of state trust lands.

Obstacles to Using Contributory Value and Nonmonetary Consideration

As discussed, trust land conserved as open space, parks, or other nondeveloped uses increases the value of nearby properties, especially within the same parcel or community. Contributory value, both direct and indirect, accrues at several different scales. However, despite the fact that contributory value is a widely recognized phenomenon in real estate valuation, the tools to measure and monetize it effectively and easily, and thus enable transactions to account for the value premium conveyed by conservation, have not matured enough to make the calculation easy.

Some states lack explicit authorizing language in their constitutions or statutes that allow the use of nonmonetary consideration to be evaluated and accounted for in trust land transactions. Use designations such as open space or parks—as well as rights-of-way for roads, utility lines, or other dedications—can add significant value to a parcel of state trust lands. But courts have ruled that such value-added easements or dedications cannot be made outside the requirements for public auction. Western states that have the strictest interpretations and language regarding trust doctrine may not have the flexibility to consider contributory value, even if they are inclined to do so (Culp and Hunting 2011).

Other state agencies, however, have the flexibility and discretion to use contributory value in their accounting of trust land transactions, but they lack a clear, consistent, and reliable methodology for accurately capturing those values.

Natural amenities, preserved open space, and recreational lands on state trust lands near Arizona's Superstition Mountains add contributory value to the surrounding area. *Courtesy of Sonoran Institute.*

MONETIZING CONTRIBUTORY VALUE

One of the most critical obstacles to the use of contributory value is the lack of tools and easy, low-cost methodologies for calculating it in transactions. Contributory value is a nonmonetary consideration, and its monetization requires detailed, location-specific information that incorporates hedonic price models for open space and natural area designations on the price of real property. This information is not easily available in a comprehensive database to either state trust land managers or conservation interests; instead, it is usually generated on a case-by-case basis. This makes it difficult to develop a reasonable rule of thumb to evaluate whether a given transaction will yield enough nonmonetary consideration to make a master plan that includes a conservation element a net positive for the trust beneficiaries (Culp and Hunting 2011).

There is a rich body of research about how the value of open space is capitalized into private property values. Most of these studies rely on hedonic pricing models to examine the portion of property value that is attributable to open space. However, the drawback in using hedonic valuation to capture the contributory value of a given parcel is that such valuation methodologies are expensive, time consuming, and highly dependent on the location of the parcel, as well as on the demographics and values of the buyers and community as a whole.

Another concern is raised when evaluating the preservation of larger-scale open space, which may be more valuable from an ecological standpoint, but may be located at a considerable distance from other properties within the state trust portfolio. Although the preserved land may attract distant recreational users for activities such as hiking, bird watching, and bicycling, these uses may not be adequately evaluated for their added value to properties that are near but not adjacent to the recreation site.

Ecosystem services from preserved land also provide tangible benefits, such as the value of the flood-control provided by preserved wetlands. But it may be difficult to monetize this value to specific surrounding parcels, and parse how these effects are spatially distributed. Contributory value becomes harder to capture the farther the land is from the amenity. Open space features are capitalized into land values at a variety of scales, from lot size that puts more private open space in an area to neighborhood parks and larger regional preserves (Anderson and West 2006).

Limits of Ecosystem Services Markets

State trust land managers face challenges when approaching ecosystem services markets. The relative newness of the markets can be an obstacle in itself, with few completed transactions available to model protocols and evaluate outcomes. The methodologies for identifying and developing mitigation credits are still relatively new, and methods of valuation for indirect benefits are inconsistent, making it difficult to fully quantify and monetize ecosystem services. It requires significant new capacity and expertise within the state trust land agency to explore the market and sale of ecosystem services as an expansion of the trust portfolio.

Entry into the marketplace to qualify for mitigation or conservation bank credits also requires a large up-front investment and much preparation. The initial financial outlay can be significant, but once the credits are available for purchase, the return on investment can be quite good, especially if the alternative use for the parcel is a relatively low-value use, such as grazing. It can be difficult to justify the resources and expense—particularly since the market is relatively new or untested—for trust land agencies without large sums of investment capital to prepare trust land parcels for participation in ecosystem markets (Culp et al. 2011).

Additionally, an inventory is necessary to identify, evaluate, and prioritize the mitigation or conservation banking opportunities on particular parcels, prior to exploring ways in which a mitigation bank might be set up and operated. Yet, at this time, there are few tools available to facilitate construction of a spatially-referenced inventory of specific ecosystem services and their values. Federal agencies offer a great deal of mapping information, but it is often not at the detailed scale that is necessary for evaluation on a parcel-by-parcel basis. The U.S. Fish and Wildlife Service has completed mapping for designated critical habitat for only a handful of listed endangered species for conservation banking. Further detail, acquired through other data layers and ground-truthing of parcels, is needed to assess resource quality and suitability for ecosystem services markets. Extensive inventories and preparatory work is also resource-intensive. For trust land agencies that operate on a limited budget, such activities may not be possible without additional funding (Culp et al. 2011).

Perhaps the main reason trust land managers don't participate broadly in ecosystem services markets is that the outlay of preparatory costs, evaluation, and assessments is extensive, and there may be only a handful of parcels with timely, marketable, high-value potential for sale or lease for ecosystem services markets. Also, some markets may exclude state trust lands from participation out of the mistaken belief that they are "public lands" with a multiple-use mission similar to that governing federal public lands. Educating stakeholders about the revenue-generating mandate for state trust lands can help correct the view that state trust lands are inappropriate for inclusion in an ecosystem services market. However, there is still a persistent belief that allowing state trust land managers—who manage holdings that number in the millions of acres in most states—to participate fully in ecosystem services markets would flood the market, lower prices, and render ineffective the use of ecosystem services markets as a tool for conservation.

Barriers to Land Exchanges

Land exchanges in the Intermountain West have come under fire in recent years. Criticism of land exchanges stems from a handful of past exchanges that generated substantial public controversy and from subsequent findings of weaknesses in the federal agency appraisal process. The majority of land exchange proposals that evoked controversy involved private interests receiving significant economic windfalls at the public expense due to failures in agency management of the appraisal process. However, public skepticism extends even to situations where there is no private entity reaping a profit from public lands, such as exchanges between state and federal land management agencies seeking to conserve ecological value on state trust lands (Culp and Marlow 2013).

Over the past two decades, these controversies have been investigated at both the federal and local levels. The General Accounting Office (GAO) completed reviews of land exchanges involving the USFS and BLM and, in some cases, found the process to be riddled with inefficiencies and mismanagement that led to significant losses to the public (United States General Accounting Office 2000; 2009). At the local level, individual exchanges can draw fire from community interest groups, conservation organizations, or other public stakeholders. In the state of Arizona, land exchanges were deemed unconstitutional, the result of a 1990 Arizona Supreme Court decision in a controversial exchange (*Fain Land & Cattle Co. v. Hassell*, 790 P.2d 242 [Ariz. 1990]). Many interests worked to restore land exchange authority to Arizona over the course of twenty years, yet every attempt failed until 2012, when the voters finally approved a limited exchange measure as a constitutional amendment.

The Appraisal Institute and GAO reviews of the appraisal processes at the BLM and USFS identified a range of issues and problems in the land exchange process, primarily in the appraisals conducted by the BLM. Staff appraisers at BLM were found to be insufficiently independent due to organizational problems, such as inconsistent delegation of authority and interference by management in appraisal processes. Established procedures for appraisals and reviews had been circumvented. This resulted partly from a politicized and transaction-driven process in which the independence of appraisers was secondary to the push of management and realty staff to complete land transactions. All these issues contributed to use of nonstandard appraisal procedures, including disregarding market value, changing appraised value, accepting appraisals from land exchange proponents, and substituting other values for fair market value (United States General Accounting Office 2000).

These reviews identified another key problem: an insufficient number of qualified appraisal personnel due to staff attrition and failure to replace highly experienced appraisers. Increasingly, contract appraisers were unfamiliar with federal appraisal standards as specified in the Uniform Appraisal Standards for Federal Land Acquisition (UASFLA). The types of land and the nature of the BLM transactions demand specific expertise that is not available with contract appraisers who are not in the business of valuing large-scale natural resource assets. Furthermore, the bidding process required for contracting outside appraisers—in which the lowest bid often wins—can result in the selection of less qualified appraisers. These problems result in extended appraisal timelines, inaccurate market values, lost value to taxpayers, and transactions that are not always in the public's best interest (United States General Accounting Office 2000).

Overall, the number of completed land exchanges has declined—including exchanges occurring between federal and state trust land management agencies. State land managers also expressed dissatisfaction with the land exchange process, despite reforms. Land exchanges are frequently regarded as onerous, time-consuming, and resource intensive. Moreover, trust land managers believe that too often federal agencies give inadequate priority to resolving land

tenure issues, to the detriment of the trust's interests (Culp and Marlow 2013).

Despite the high-profile controversies that highlight the limits and flaws in the exchange process, land exchange remains a valuable tool, especially given the funding constraints of state and federal agencies. Land exchanges enable each party to resolve land ownership problems and achieve management goals that benefit the public. In the case of state-to-federal exchanges, the public interest is being served on both sides of the transaction.

The barriers outlined here seem daunting, yet policy changes can make conservation tools more effective in achieving conservation benefits, as well as meeting the trust's fiduciary mandate. Clearly, there are a number of drawbacks to each approach discussed in this report. However, as with any large-scale conservation effort, a one-size-fits-all approach is not practical or even possible. Although these approaches will not effectively conserve state trust lands in every instance, a suite of tools can provide some flexibility and allow the methods to be adapted to particular circumstances.

This windmill lay downed in Jordan Valley, Malheur County, Oregon. Oregon DSL's rangeland holdings primarily lie in this southeast area of the state. All revenue from leasing state rangeland is deposited into the Common School Fund. *Courtesy of Taryn Bye, Oregon Department of State Lands.*

CHAPTER 7

Policy Recommendations

Historically, grazing and agriculture have been the primary uses for state trust lands throughout the West. *Courtesy of California Department of Water Resources.*

The tools to achieve conservation outcomes on state trust lands are challenging to implement. Yet, the recommendations in this report can improve the effectiveness and the success rate of these strategies. For some of the approaches, policy reform is not required to increase the efficacy of the strategy. For others, policy change at the state and/or federal level would significantly increase the usefulness of these tools and the possibility of successful conservation efforts.

Expand the Use of Conservation Sales and Leases

The purchase or lease of state trust lands in the West for conservation purposes is a simple, straightforward tool. Since funding is one of the most significant obstacles, the passage of policies, bond measures, legislative appropriations, and other funding mechanisms would increase the amount of available resources to assist or underwrite the acquisition of state trust lands at fair market value.

As philanthropic and public sources of financing for conservation become increasingly constrained, conservationists are beginning to explore a variety of private financing options and innovative funding strategies. For example, some private sources of funds might include compensatory mitigation funding for habitat restoration or participation in other ecosystem services markets. Other private finance opportunities may come from conservation development, where the lion's share of a parcel, typically the areas with the highest ecological values, may be preserved in its entirety, while a small portion of the parcel is developed, usually in a clustered development with high-end real estate.

More innovative strategies include the use of sustainable resources and revenues generated from conservation lands that create funding sources to secure additional land acquisitions. For example, a funding stream to support conservation can be created through sustainable timber harvesting or a low-impact agricultural or grazing lease. Additionally, many conservation NGOs that are strapped for funds to acquire conservation land have begun to look at bridge financing from foundations, banks, and venture capital—essentially borrowing funds to acquire land with a payment schedule that suits the NGO's annual income. Such loans may be combined with uses that are compatible with conservation, such as grazing or agriculture, to help cover the expense of acquiring state trust land at market value and managing the lands for their conservation values.

Few state trust land management agencies have programs that allow leasing to conservation interests for habitat restoration, wildlife management, and other activities to support environmental values. Increasing the opportunity for conservation lessees to bid on short- or long-term leases on state trust lands in order to enhance the health of landscapes could increase the long-term productivity of trust land assets.

Recommendations to increase the opportunity for successful conservation sales and leases of state trust lands:

- **Explore additional financing measures** that provide matching funds for purchase or lease of state trust lands for conservation purposes, such as state-level or local-level bond measures.
- **Increase the number and variety of funding sources** through conservation finance mechanisms, such as revenue generation from conservation lands; bridge financing and loans; and conservation venture capital.
- **Encourage state trust land agencies to consider conservation leasing arrangements** that increase the productivity and value of trust land assets through short-term conservation management and restoration of ecological values.
- **Support programs that identify and classify appropriate state trust lands** as suitable for conservation sale, and provide a mechanism for conservation buyers—local governments, NGOs, or others—to acquire those lands.

Improve the Utility of Contributory Value in the Master Planning Process

With conservation funding for acquisitions in scarce supply, the large-scale master planning process is an important tool for facilitating conservation of open space, recreational lands, and natural areas. It allows large, open space dedications, infrastructure improvements, and other values to be integrated into the parcel as a whole. These mechanisms help trust land managers to realize value increments associated with the transition of raw land to parcels that are zoned, entitled, and ready for development, and that incorporate valuable amenities, such as scenic open space, recreational areas, and parks.

Potential reforms to enhance the competitiveness and value of this type of master planning include: longer-term infrastructure planning between trust land agencies and local jurisdictions; the creation of an exception or the constitutional restriction against liens on state lands; and the expansion of the ability of state land agencies to engage in participation contracts in partnership with developers and local jurisdictions (Culp et al. 2012). Additionally, most state trust land agencies are not constitutionally or statutorily allowed to include nonmonetary consideration in the sale of state trust land assets.

In order for this tool to be employed by trust land agencies, master plan developers, and conservation advocates, provisions need to create parameters around which nonmonetary consideration can be accounted for in trust land transactions. More complete data on land sales—particularly state trust land sales and appraisals in a range of states—need to be acquired, converted to spatial data files, and analyzed through a hedonic regression to monetize contibutory value. Given the location-specific nature of the impacts of contributory value, multiple regression analyses need to be conducted to provide either regionally specific information, or enough data points to estimate a range for the effect of open space on state trust land prices. It would be highly useful to trust land managers in the West to continue this research and develop quantifiable measures of contributory value by providing more tangible proof that using this strategy to recover value resulting from conservation would keep the trust whole—that is, without loss in value or finances (Culp and Hunting 2011).

Logistically, transfer of development rights (TDR) can accomplish contributory value-based transactions, provided the government unit responsible for administering them has a strong commitment to the complex process required. The complexity of diverse land ownership can be avoided because state trust land departments often own land in receiving areas as well as in sending areas. State trust land managers can sell development rights from land suitable for conservation to purchasers of trust land in urban areas slated for additional growth. At the same time, state land departments can auction land with conservation easements to organizations interested in purchasing such areas. As long as state trust land managers work in conjunction with local planners, such a program can be quite successful (Culp and Hunting 2011).

Recommendations to improve the utility of contributory value as a tool to meet both conservation needs and the interests of trust beneficiaries:

- **Support efforts to compile data on land sales and appraisals** throughout the Intermountain West to inform accounting analyses of contributory value.
- **Promote the expansion of the authority of state trust land managers** to account for and include nonmonetary consideration in an evaluation of disposition decisions involving master plans with significant conservation elements.

- **Develop economic models that can be adapted** to a variety of circumstances, geographies, and parcel types to capture a realistic estimate of the contributory value of conservation.

Increase Access to Ecosystem Services Markets

Most ecosystem services markets are still emerging. Although they hold great potential as revenue-generating sources for conservation activities, there are few other opportunities for revenue outside of the regulatory, compensatory mitigation frameworks provided by the federal Clean Water Act and the Endangered Species Act. To qualify as a provider of mitigation or conservation bank credits for compensatory mitigation, state trust land managers are often required to place a perpetual conservation easement over the state trust land in question. State trust land managers are hesitant to provide permanent easements over trust land holdings, as that may lock in land uses that may not serve the long-term, intergenerational interests of the trust. One of the best methods for increasing the participation of state trust land managers in ecosystem services markets is to focus on those markets that are tailored more to the needs of the service provider as well as the party benefiting from the services. Payment for ecosystem services (PES) or payment for watershed services (PWS) structures, which are voluntary, can be more flexible in meeting the needs of both the trust and the parties interested in securing the environmental services. Another approach to making ecosystem services markets more attractive is to allow the conservation values that can be offered in those markets to be more fully accounted for and monetized by trust land managers.

The Ironwood Forest National Monument covers 188,619 acres, of which 59,922 acres are nonfederal and include private land holdings and Arizona state trust lands. *Courtesy of Jason Meininger, the Sonoran Institute.*

CONSIDER ECOSYSTEM SERVICES AND CONSERVATION VALUES IN LAND APPRAISALS

Economic values arising from services provided by ecosystems on land parcels are not considered in the appraisal process or incorporated into the appraised value of the land, despite the fact that economic values associated with conservation, restoration, and ecosystem services are increasingly recognized in investment and real estate transactions (Davis 2014). This disconnect exists partly due to the appraisal standards that guide professional appraisers, the Uniform Standards of Professional Appraisal Practice (USPAP), and the Uniform Appraisal Standards for Federal Land Appraisal (UASFLA).

Comparatively, agricultural leases yield higher revenues than grazing leases. *Courtesy of California Department of Water Resources.*

"The appraiser's estimate of highest and best use must be an economic use. A noneconomic highest and best use, such as conservation, natural lands, preservation, or any use that requires the property to be withheld from economic production in perpetuity, is not a valid use upon which to estimate market value." (Appraisal Institute 2000, 18)

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For many years, environmental and ecological economists have measured the economic value of a wide range of ecosystem goods and services in specific spatial and social contexts. In general, the academic literature on valuation has found clear evidence that ecological systems and the services they produce are economically valuable (Davis 2014).

Although it is likely to be a long process, changing appraisal standards to explicitly consider conservation and ecosystem services values would be a critical step in ensuring that land appraisals incorporate ecological values that are already recognized in the markets.

Recommendations to improve participation in ecosystem services markets:

- **Focus on opportunities for trust lands to be included in innovative ecosystem service markets** that are flexible enough to allow for the trust

beneficiaries' interests to be fully realized, such as PWS, PES, and advance mitigation frameworks.

- **Research and identify how the appraisal standards and guidelines could be modified** to account for conservation values in land transactions.
- **Reform USPAP and UASFLA appraisal standards and practices** to allow for greater consideration and recognition of the economic value that ecosystem services provide on trust land holdings.

Streamline Land Tenure Adjustment

The barriers to the land exchange process described in this report have dramatically slowed the process of rationalizing land patterns in the West. Although the land exchange process can be an effective tool for securing conservation lands in lieu of outright purchase, the transactions continue to be fraught with difficulty.

As the feasibility and political salability of available methods for land exchanges have become increasingly limited, there have been many proposals for streamlining and improving the land exchange process, while also maintaining high standards in transactions that meet the GAO's recommendations for transparency and service to the public interest.

REFORM THE APPRAISAL PROCESS

The GAO and the Appraisal Institute conducted evaluations of the land exchange processes at BLM and USFS, and attempts to address the criticism raised in these assessments led to more complicated appraisals and dramatically extended timelines. Although extensive improvements in the appraisal process have occurred as a result of recommendations by GAO and the Appraisal Institute, additional reform is necessary to ensure more timely appraisals, which is perhaps the most difficult issue for state trust land agencies.

Attempts to reform the land exchange process should decrease the time it takes to complete land exchanges. Currently, the average time to complete a land exchange is estimated at 18 to 24 months according to BLM's land exchange handbook. In order to complete land exchanges in a reasonable time frame, it is necessary to have adequate staffing. This applies to the federal as well as the state land agencies. If funding for additional dedicated land exchange staff is not feasible, then a portion of existing staff should be trained in land exchange processing tasks so that various people can perform these tasks. The decreased workload for appraisal staff would likely improve the quality and timeliness of appraisals (Culp and Marlow 2013).

Enhanced training of existing staff involved in land transactions and the appraisal process would facilitate conformance with established appraisal procedures, ensure the public interest is served in land transactions, and decrease the time necessary to complete the appraisal process. Another strategy would be to hold periodic meetings between staff working on land exchanges and appraisal personnel. Discussion topics for these meetings would include the coordination of requests for appraisals, timelines for appraisal completion, and updates on the status of appraisals currently in process. In addition, a prioritization process for time-sensitive appraisals would ensure timely delivery of appraisals.

CHANGE THE CONCEPT AND EXPECTATION OF "FAIR MARKET VALUE"

An inherent problem at the conceptual level is that exchanged land parcels are required to have equal value as measured by fair market value. This standard is often difficult to meet, especially when locations, characteristics, and attributes of the parcels are radically different from one another, such as when land with high

conservation value is being exchanged for land with high development value.

The direct exchange of land is similar to bartering: items are traded without using money as a medium of exchange. A barter transaction occurs when both sides are satisfied with the exchange. Each party in the barter transaction has a unique perspective that assigns a value to the item received, a value that would be viewed differently by others. A solution to the difficulties in assigning equal value might be to incorporate conservation value into fair market value or a different set of metrics that indicate when an exchange is equitable. Ultimately, a system is needed that can accommodate transactions to meet both parties' goals and ensure that the public interest is well-served.

Recommendations to streamline the mechanisms of achieving land tenure adjustment through the exchange process:

Reform the appraisal process:

- **Increase the number of properly qualified staff appraisers** at the agencies.
- **Improve the training of existing staff appraisers** to recognize conservation values as well as the economic value of more traditional or consumptive land uses.
- **Simplify the process** for contracting outside appraisers.

Ensure the equal value standard is met for land exchanges that have conservation outcomes:

- **Authorize and incorporate concepts of nonmonetary consideration** as a legitimate means for state trust land managers to evaluate trust land parcels.

It would also be constructive to convene a roundtable of land value appraisal experts, state trust land managers, and public land managers interested in pursuing land exchange transactions to develop a set of priorities for further research and investigation to improve the process.

Improve Conservation Outcomes on State Trust Lands

Common themes have emerged in evaluating the opportunities to increase conservation of ecologically significant state trust lands. The importance of reforming the appraisal process cannot be overstated. Such reform would have substantial utility across the various tools to achieve conservation outcomes. A policy change to better incorporate conservation values into the appraisal process could increase the capacity of a number of conservation tools.

There are also a number of constitutional or statutory changes that would increase the opportunity for conservation of lands, as well as state trust lands that are valuable for recreation and open space. By giving state trust land agencies the authority to account for nonmonetary consideration and the contributory value of conservation to adjacent or nearby parcels, conservation could be effectively achieved through the master planning process at low cost to conservation advocates; the trust would still remain whole in terms of the overall value of the transaction. Implementing that change would prompt partnerships between conservation interests, developers, and trust land agencies to identify opportunities for large-scale master planning to achieve a variety of positive outcomes—including higher value development, greater revenues for trust beneficiaries, and conservation of important natural values.

Finally, expanding the number and diversity of funding sources to underwrite conservation acquisitions—

The sun sets in Dry Valley Rim, Harney County, Oregon. *Courtesy of Oregon Department of State Lands.*

outright land sales, leases, and easements—would increase opportunities to conserve lands while also providing fair market revenues for the trust. Innovative funding mechanisms should also be used to explore payment for watershed services (PWS) and payment for ecological services (PES) arrangements that would provide conservation management of critical resources while providing an adequate funding stream to secure trust land participation.

Protecting and enhancing the environmental attributes of state trust lands—particularly those within the context of large-landscape conservation efforts that are adapting to climate impacts and restoring functional ecosystems—will yield a host of benefits to all of the people in the region. The conservation of strategic, priority parcels of state trust lands can improve the adaptive capacity of ecosystems to climate change, protect species from endangerment, provide recreational opportunities for a growing population, and preserve the iconic, scenic beauty of the West. These changes—increased funding, policy revisions to the appraisal process, and renewed authority of trust land agencies to recognize a variety of means to provide full value to the trust—offer tools for managing state trust lands with conservation values.

These changes—increased funding, policy revisions to the appraisal process, and renewed authority of trust land agencies to recognize a variety of means to provide full value to the trust—offer tools for managing state trust lands with conservation values.

Acronyms

API	Arizona Preserve Initiative
ASLD	Arizona State Land Department
BLM	U.S. Bureau of Land Management
CWA	Clean Water Act
DNRC	Montana Department of Natural Resources and Conservation
EA	Environmental Assessment
EPA	Environmental Protection Agency
ESA	Endangered Species Act
FLPMA	Federal Land and Policy Management Act
GAO	General Accounting Office
GHG	Greenhouse Gas
GOCO	Great Outdoors Colorado
LLC	Large Landscape Conservation
LWCF	Land and Water Conservation Fund
NEPA	National Environmental Policy Act
NGO	Non-Governmental Organization
NMSLO	New Mexico State Land Office
NRCS	Natural Resources Conservation Service
PES	Payment for Ecological Services
PMJM	Preble's Meadow Jumping Mouse
PWS	Payment for Watershed Services
SALT	Superstition Area Land Trust
SITLA	Utah School and Institutional Trust Lands Administration
SLB	Colorado State Land Board
TDR	Transfer of Development Rights
TIDD	Tax Increment Development District
TLT	Trust Land Transfer
UASFLA	Uniform Appraisal Standards for Federal Land Acquisition
UDWR	Utah Division of Wildlife Resources
USACE	U.S. Army Corps of Engineers
USFS	U.S. Forest Service
USPAP	Uniform Standards of Professional Appraisal Practice

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The flowers of the Indian paintbrush add color to the landscape of the West. *Courtesy of Oregon Department of State Lands.*

About the Authors

Susan Culp is a project manager for Western Lands and Communities, which is a joint program of the Lincoln Institute of Land Policy and the Sonoran Institute. The partnership integrates conservation with development and promotes sustainability in the Intermountain West. Susan oversees the program's research and policy analysis projects to promote regional planning; improve management of state and federal public lands; and integrate energy, transportation, water, and conservation infrastructure at a regional level. She holds a bachelor's in marine biology from the University of California at Santa Cruz and a master's degree in public administration and policy, with a focus on natural resources, from the University of Arizona's Eller College of Business and Public Administration.

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K-12 public schools are the primary beneficiary of revenue generated from state trust land. *Courtesy of Utah School and Institutional Trust Lands Administration.*

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The Sonoran Institute inspires and enables community decisions and public policies that respect the land and people of western North America. Facing rapid change, communities in the West value their natural and cultural resources, which support resilient environmental and economic systems.

Founded in 1990, the Sonoran Institute helps communities conserve and restore those resources and manage growth and change through collaboration, civil dialogue, sound information, practical solutions, and big-picture thinking.

ABOUT WESTERN LANDS AND COMMUNITIES

Western Lands and Communities is a joint program of the Lincoln Institute of Land Policy and the Sonoran Institute that takes a long-term strategic perspective on shaping growth, sustaining cities, protecting resources, and empowering communities in the Intermountain West. The program was established in 2003.

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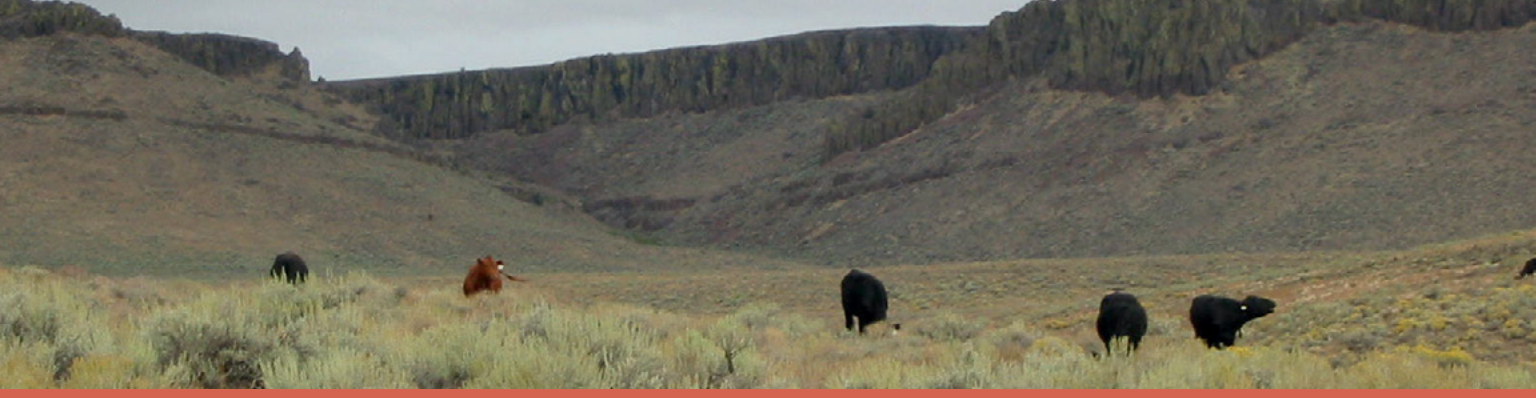

Conserving State Trust Lands

Strategies for the Intermountain West

The Intermountain West is home to 85 percent of the country's 46 million acres of state trust lands: lands that were granted to states upon their entrance into the Union with a mandate to generate income for public institutions, particularly K-12 schools. To this end, these state trust lands have been managed, leased, or sold for mining, grazing, and agriculture, among other uses.

Pressure to conserve state trust lands, particularly those with ecological and recreational importance, has increased due to the significant population growth of the West, which is expected to continue over the next few decades. Additionally, land managers are only now beginning to recognize the value that open landscapes and ecosystem services add to state trust lands. However, management of state trust lands is generally constrained by the fiduciary duty to generate income.

This report examines strategies to satisfy both the fiduciary mandate of the trust and the goal of conservation. The authors recommend specific methods to improve the available tools and strategies to advance conservation outcomes on state trust lands:

- **Expand the use of conservation sales and leases.**
- **Improve the utility of contributory value in the master planning process.**
- **Increase access to ecosystem services markets.**
- **Streamline land tenure adjustment.**

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