

U.S. Experience with Term Conservation Easements

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1. Introduction

In Canada's southern landscapes where most land is privately held, conservation easements have become a key tool for the conservation and protection of ecologically sensitive lands. While federal, provincial, and municipal governments have over many decades established a number of protected areas in southern Canada, these governments are now not as well placed to directly advance land conservation in these landscapes.

The last half century, and in particular the past 25 years, have witnessed an increasing reliance on the part of governments to have private landowners working with non-government organizations lead efforts to protect and manage private lands for the conservation of biodiversity and maintenance of ecosystem health. Among the initiatives of governments to foster non-government efforts to conserve privately held land is the enactment by provincial governments of legislation enabling the use of and setting the conditions and requirements for conservation easements.

There is growing recognition that the current suite of tools for land conservation are not achieving desired conservation outcomes at landscape scales. At the same time, there is growing concern on the part of landowners about whether the environmental and societal benefits of privately held conservation properties is fairly compensated through conservation easements placed on land title in perpetuity. Consequently, while the focus of efforts to date has been on the use of conservation easements in perpetuity, there is increasing interest particularly on the part of landowners and some organizations for conservation easements of fixed duration. Although conservation agreements of varying duration are commonly put in place with landowners, usually with the objective to improve or enhance the quality of habitat, these are not tied to land title. Additionally, there is no evidence of the use in Canada of 'term' conservation easements.

As in Canada, the federal and state governments in the United States have supported and enabled the use of easements on land title to protect land for conservation and other outcomes. In most states, legislation provides for conservation easements of fixed duration as well as in perpetuity. Consequently, programs have been established in the United States that provide support for term conservation easements as well as those in perpetuity. While the focus of this paper is on the use of term conservation easements in the United States, federal programs that support conservation easements in perpetuity are also examined given their relevancy to easement valuation and other easement considerations. Beyond programs that support and promote conservation easements

whether in perpetuity or of fixed duration, other programs that support conservation in agricultural landscapes are also briefly examined.

In this paper, “*conservation easement*” refers to documents that are registered on land title, normally establishing restrictions or conditions on how the land can be used and managed, while “*conservation agreement*” refers to other agreements not tied to land title that often focus on management actions needed to maintain or enhance the natural values of the land such as restoring grasslands or wetlands, or enhancing the habitat quality of native prairie, for example, to meet the biological requirements of priority species for the land in question. In some programs in the United States, access to funding for conservation agreements is subject to a requirement that a conservation easement first be registered on land title.

2. Overview of State Conservation Easement Enabling Legislation³

This section is based upon a publication commissioned by the Land Trust Alliance of the United States that provided an overview state conservation easement enabling statutes. As the publication focused only on enabling statutes, it did not attempt to explore all the state laws that affect conservation easements. The publication was most recently updated in 2014 and consequently the information that follows may not reflect current statutory provisions related to conservation easements as such statutes are periodically updated and revised. The Land Trust Alliance advises that it is aiming to complete an update of this publication by December 2023. As with the Land Trust Alliance’s publication, this section should not be construed as legal advice and is not intended to be used as legal advice.

As in Canada, it is not the federal government in the United States that is vested with the authority to enact conservation easement enabling legislation. There is a long history of states enacting such legislation beginning as early as 1957, with 15 more states establishing conservation easement enabling legislation from 1969 to 1980. This growing interest on the part of the states to enact such legislation led to the adoption by the National Conference of Commissioners on Uniform

³ For the purposes of this report, a comprehensive review of state conservation easement enabling legislation was not possible. Rather, this report draws heavily from and is based upon the following publication commissioned by the Land Trust Alliance of the United States that provided an overview of such legislation:

A Guided Tour of the Conservation Easement Enabling Statutes, Robert H. Levin, Esq., Originally Published January 2010, Updated January 2014

State Laws (NCCUSL) of the Uniform Conservation Easement Act (UCEA) and accompanying Comments in 1981. Since then, except for North Dakota, all states have enacted some form of conservation easement enabling legislation, some modeled on the UCEA and some not. States remain active in this statutory area. In the 2000's, three states passed easement enabling legislation for the first time and many others have enacted substantive amendments.

As a model act, the UCEA, in and of itself, does not have the force of law in any state and must first be adopted by a state to have such force. Various state legislatures utilized the UCEA model differently with some recognizing that additional policy choices are necessary to provide comprehensive treatment of conservation easements. As a result, there is considerable variation among the conservation easement enabling statutes with respect to the various policy considerations that arise when enacting such legislation. Some statutes are concise, sticking to the UCEA's sole purpose of abolishing traditional common law restraints on perpetual easements⁴. Others include an array of additional provisions addressing a range of issues such as standing, amendment, termination, taxation and eminent domain. A brief discussion of the nature of such legislation with respect to those policy matters relevant to the purpose of this report is provided. This includes the purpose and duration of a conservation easement, and taxation of properties subject to a conservation easement.

As of January 2014, 28 states and the District of Columbia had adopted some version of the UCEA. Through the legislative process, most states had modified the UCEA to one degree or another, although Delaware, Minnesota and Nevada adopted nearly verbatim versions. Another 22 states had enacted easement enabling legislation that is not based on the UCEA. In most cases, these statutes pre-dated the UCEA.

Only one state, North Dakota, has not adopted any conservation easement enabling legislation. There is an enabling statute for historic preservation easements, although these are permitted solely for a term of years and not perpetually. Consequently, only the federal government is entitled to hold perpetual easements in this State. All other entities are limited to easements of maximum duration of 99 years, except for waterfowl production area easements which may not exceed 50 years (reduced from 99 years by a 2013 amendment). Additional barriers prevent non-profit

⁴ The Uniform Conservation Easement Act had a specific goal to abolish traditional common law restraints on perpetual and negative easements and thus is intentionally confined in scope, remaining silent or neutral on issues such as amendment, termination, taxation and eminent domain.

corporations from owning land outright and thus, there are no local, regional or state-specific land trusts in North Dakota.

Purpose of a conservation easement

The UCEA sets forth a comprehensive list of 12 different purposes for which a conservation easement may be created. More specifically, protection of the following types of attributes are identified in the UCEA as valid purposes of a conservation easement: (1) natural, (2) scenic, (3) open space, (4) agricultural, (5) forest, (6) recreational, (7) natural resources, (8) air or water quality, (9) historical, (10) architectural, (11) archaeological or (12) cultural. Most UCEA-based states have not modified this list. To the extent that there is variation, it has usually been to list additional purposes for greater clarity.

Duration of a conservation easement

The differences in statutory treatment of the duration of easements are relatively minor. Except for North Dakota, which does not have a conservation easement enabling statute⁵, every state allows for perpetual easements. A key consideration in providing for perpetual easements is federal tax law which, as in Canada, requires perpetual easements in order for a donor to claim a charitable tax deduction. Where states have diverged is in establishing the default duration of an easement. The UCEA, after a reference to the possibility of amendment or termination, provides that “a conservation easement is unlimited in duration unless the instrument creating it otherwise provides.” The vast majority of UCEA and non-UCEA statutes follow this approach of enabling conservation easements either of fixed duration or in perpetuity.

It is worth noting the provisions established in some states. Pennsylvania and West Virginia both require a minimum of 25 years for an easement while Montana sets a 15-year minimum. Alabama makes the default duration “the lesser of 30 years or the life of the grantor, or upon the sale of the property by the grantor.” Kansas has similar language. Finally, California, Florida and Hawaii require perpetual conservation easements. These are the only three states in which statutory term easements are expressly prohibited.

⁵ With respect to conservation easement legislation, the Legislative Assembly of North Dakota has acted to simply establish limits on the duration of such easements and has not enacted UCEA or other type of conservation easement enabling legislation.

Property Taxation

The UCEA is silent on how an easement affects property taxation, sticking to its chief purpose of abolishing the traditional common law constraints to perpetual easements. Twenty-two of the enabling statutes, however, affirmatively deal with the issue. Only one state, Idaho, expressly prohibits any property tax reduction arising from an easement. The remaining 21 either require or allow for reduced property tax valuation.

Of non-UCEA states, Montana, like Idaho, does not allow property tax reductions solely as a result of the grant of a conservation easement. The Montana statute essentially treats conservation easements as having no effect on the taxable value of property for assessment purposes. Nevertheless, landowners may petition for a reduction in property taxes to reflect the actual use of a property in line with the restrictions and requirements of a conservation easement.

Many state statutes (California, Colorado, Georgia, Indiana, Missouri, Nebraska, New Jersey, North Carolina, Oregon, South Carolina, Texas and Virginia) expressly provide that an easement-encumbered property is entitled to a property tax valuation that reflects the existence of the easement. Florida appears to follow the same rule, although the statutory language is less clear. Although no provision of Texas' enabling statute expressly establishes a reduced property taxation regime for conservation-easement encumbered properties, the statute includes a section establishing a property tax recapture if a conservation easement is terminated. This suggests that reduced property tax for such properties is possible. In 2001, Oregon amended its easement statute to allow a landowner to prospectively request that the assessor determine the property tax valuation reduction before granting an easement.

At least seven states (Illinois, Maine, Maryland, Massachusetts, New Hampshire, New York and Wisconsin) do not have any property tax reduction provision in the easement enabling statute, but do include one in the property tax code. In some cases, these property tax code provisions simply affirm that easements must or may be accounted for in the valuation of a protected property. In other states, the existence of an easement may qualify a property for a special classification program, such as the "Open Space Program" in Maine and Virginia.

It should be noted that simply requiring that easements be reflected in property tax valuations does not settle valuation questions. Local assessors often have a great deal of discretion in how they

account for the reduction of value attributable to easements, which can lead to a tremendous amount of variation from municipality to municipality in how easements affect property taxation. Furthermore, many states already allow “current use” or “production” (as opposed to highest and best use) valuation for properties under active agricultural or silvicultural use. Thus, any statutory language dealing with or remaining silent about whether a conservation easement should be reflected in the valuation of the protected property might have very little practical effect. Such is the case in states such as Colorado, Maine, Montana, New Hampshire, Vermont and Virginia.

3. Federal Conservation Easement Programs in the United States

The time available for the preparation of this report allowed only for a review of the programs of the two federal departments well known for programs that support conservation easements as well as other initiatives that support land and habitat improvements, enhancements and restoration: the U.S. Department of Agriculture and the U.S. Department of the Interior. The programs mentioned in this section are described more fully in Annex I.

United States Department of Agriculture

The U.S. Department of Agriculture (USDA) has several programs that support achieving agricultural and environmental objectives within agricultural landscapes. These programs are implemented by the Natural Resources Conservation Service (NRCS) or the Farm Service Agency (FSA). Of these two agencies, only the NRCS offers programs that support the use of conservation easements. Across all NRCS programs, there are currently more than 24,000 conservation easements protecting more than 5.3 million acres (approximately 2,145,000 hectares).

Natural Resources Conservation Service

Agricultural Conservation Easement Program

The Agricultural Conservation Easement Program (ACEP) aims to protect the agricultural viability and related conservation values of eligible land. The ACEP limits non-agricultural uses which negatively affect agricultural uses and conservation values, and protects grazing uses and related conservation values by restoring or conserving eligible grazing land, and protecting, restoring, and enhancing wetlands on eligible land.

The ACEP uses both perpetual and term CEs which focus on grasslands and wetlands and not explicitly on species (although lands may be selected because of the species present). The ACEP

offers two types of easements, a Wetland Reserve Easement (WRE) and an Agricultural Land Easement (ALE). The Wetland Reserve Easement initiative provides for easements of fixed duration as well as in perpetuity. Agricultural Land Easements are permanent unless a maximum term is established by State law.

Demand for conservation easements under the Program is high. While more than 500 applications are approved each year, NRCS personnel advise that over 90% go unfunded. Of approved applications, currently, the ratio of in perpetuity to term conservation easements is approximately 90:10. Landowners may opt for easements in perpetuity for various and differing reasons including for example tax benefits, family planning and legacy considerations (i.e. a farmer may wish to ensure that the lands remain in agricultural use in perpetuity), associated benefits such as access to other programs (e.g. with an easement in perpetuity, a landowner may receive up to 100% of the cost of restoration of the land), and the benefits of receiving additional financial capital for a permanent easement as compared to the lower payment for an easement of fixed duration. Most term conservation easements are Wetland Reserve Easements, although a program complementary to the ACEP, the Healthy Forest Reserve Program, also offers term conservation easements.

Wetland Reserve Easements

Under the WRE program, the NRCS pays for the easement and for restoration or enhancement costs, although the rates vary depending on whether the easement is permanent or of fixed duration. The WRE program supports easements that have a 30-year term or are for the maximum duration allowed by state law. Under either a 30-year easement or easement of other fixed duration, the NRCS pays 50 to 75 percent of the easement value for the purchase of the easement and between 50 to 75 percent of any restoration costs. For permanent easements, the NRCS pays 100 percent of the easement value for the purchase of the easement and between 75 to 100 percent of any restoration costs. Term conservation easements can be extended to easements in perpetuity with payment being 25% of the value of the easement at the time of conversion.

The WRE program is complemented by the Wetland Reserve Enhancement Partnership (WREP), a voluntary program through which NRCS enters into agreements with eligible partners to carry out high priority wetland protection, restoration, and enhancement and to improve wildlife habitat. Under the WREP, for lands enrolled through wetland easements, NRCS will also develop and implement a Wetland Reserve Easement restoration plan that will restore, protect, and enhance the

wetland's functions and values. Partner contributions must equal at least 10 percent of the total estimated costs for easement acquisition related costs and restoration implementation costs.

Agricultural Land Easements

Under the ALE program, private and tribal landowners, land trusts, and other entities such as state and local governments are supported in establishing conservation easements that protect croplands and grasslands on working farms and ranches by limiting non-agricultural uses. The program protects grazing uses and related conservation values by conserving grassland, including rangeland, pastureland and shrubland.

With respect to payments to landowners, NRCS may contribute up to 50 percent of the fair market value of the agricultural land easement. Where NRCS determines that grasslands of special environmental significance will be protected, NRCS may contribute up to 75 percent of the fair market value of the agricultural land easement.

Healthy Forests Reserve Program

The NRCS also implements the Healthy Forests Reserve Program (HFRP) that helps landowners restore, enhance and protect forestland resources on private and tribal lands through easements and financial assistance. The HFRP provides financial assistance in the form of easement payments and cost-share for specific conservation actions completed by the landowner. Both 30-year and permanent easements are among the options for landowners in this program. For a 30-year easement, the landowner may receive 75 percent of the easement value of the enrolled land plus 75 percent of the average cost of approved conservation practices. For a permanent easement, the landowner may receive 100 percent of the easement value of the enrolled land plus 100 percent the average cost of approved conservation practices.

United States Department of the Interior

The U.S. Department of the Interior (USDOI) has several agencies whose programs and activities support protection and stewardship of conservation lands. These include the U.S. Fish and Wildlife Service (USFWS), the U.S. Forest Service, the National Park Service, and the Bureau of Land Management. The USDOI also enters into partnerships with state and local governments for land and water conservation. Of the USDOI agencies, only the USFWS offers a program that supports the use of conservation easements.

U.S. Fish and Wildlife Service

North American Wetlands Conservation Act

The North American Wetlands Conservation Act (NAWCA) authorizes a wetlands habitat program that provides grants to protect and manage wetland habitats for migratory birds and other wetland wildlife in the United States, Canada, and Mexico. The program supports public-private partnerships carrying out projects in the United States that further the goals of NAWCA. Projects must involve long-term protection, restoration, and/or enhancement of wetlands and associated uplands habitats for the benefit of all wetlands-associated migratory birds. Each grant and match dollar, except for indirect costs, must be linked to an acre acquired, restored, enhanced, and/or established.

Financial support is provided for the cost of acquisition of title or an interest in the land (i.e. a conservation easement) based on fair market value (the appraised value). “Acquisition” costs include those for fee-title acquisition and donation (transfer of title); conservation easement and lease acquisition and donation costs; and associated costs such as appraisal fees, legal costs and boundary surveys.

Under the program, easements and leases must include restrictions, allowed activities, and reserved rights that ensure the long-term protection of wetlands and associated uplands. Easements must be held by or transferred to a conservation organization (e.g. State or Federal conservation agency, or non-governmental conservation organization).

Conservation Easement Programs

The USFWS administers two conservation easement programs. For both programs, the USFWS holds the easement which is binding on all present and future landowners. The easements are perpetual or for the maximum duration allowed by state law.

Grassland easements

A grassland easement (also known as a habitat easement) pays landowners to permanently keep their land in grass. Land covered by a grassland easement may not be cultivated. Mowing, haying and grass seed harvesting are restricted and may be delayed until after July 15 each year. Property subject to a grassland easement remains on local tax rolls.

Wetland easements

Similarly, a wetland easement pays landowners to permanently protect wetlands. Wetlands protected by an easement cannot be drained, filled, leveled or burned. If these wetlands dry up naturally, they can be farmed, grazed or hayed. Wetlands covered by an easement are mapped, and a copy of the easement and map(s) is provided to the landowner. Property subject to a wetland easement remains on local tax rolls.

Federal Land and Habitat Enhancement Programs in the United States

Similar to the preceding section on conservation easements, the time available for the preparation of this report allowed only for a review of a number of the land and habitat enhancement programs of the same two federal departments: the U.S. Department of Agriculture and the U.S. Department of the Interior. As these programs are not the focus of this report, information on some of the enhancement programs implemented by one of these two departments is summarized in Annex II. The information is provided to help clarify the role and purpose of conservation easement versus land and habitat enhancement programs.

In summary and as a general observation on the distinctions between conservation easement programs described above and land and habitat enhancement programs summarized in Annex II, the former focus mainly on establishing restrictions that protect the land and habitat, and do not place obligations on landowners to undertake actions to maintain or enhance the land or habitat subject to a conservation easement. If ‘obligations’ are placed on the landowner, they are limited in scope and do not extend beyond such obvious requirements as allowing the conservation easement holder to monitor for compliance with the easement. For some easement programs, such as the Wetland Reserve Enhancement Partnership Program, there may be a requirement for a conservation plan with support from the relevant government agency.

Conversely, land and habitat enhancement programs provide financial incentives and other support to landowners to undertake actions that improve or enhance the environmental and other benefits of the land. Funding is provided through conservation agreements, however, unlike easement programs, the agreements are not tied to land title. Generally, such agreements are of shorter duration as compared to term conservation easements.

4. Valuation

In this section, we use the simple framework presented in figure 1 to highlight salient issues in the pricing of conservation easements. Figure 1 depicts all existing grassland within a region (such as the targeted grassland regions of Alberta or Saskatchewan) on the horizontal axis and anticipated net private returns to landowners if that land is converted to a more intensive use such as annual cropland. The grassland acreage has been ordered from left to right according to increasing anticipated net benefits of conversion. Net benefits of conversion are equal to the sum of the discounted stream of additional returns minus conversion costs if the land is converted to an alternative use. Net benefits of conversion are negative to the left of point “D.” These parcels are not worthwhile converting in the foreseeable future due to soil characteristics and local infrastructure that make crop production difficult. Net benefits of conversion are positive to the right of point “D.” These grassland parcels are at risk of conversion to cropland production. Lawley (2019) provides a more detailed description of this framework in the context of Prairie Pothole habitat.

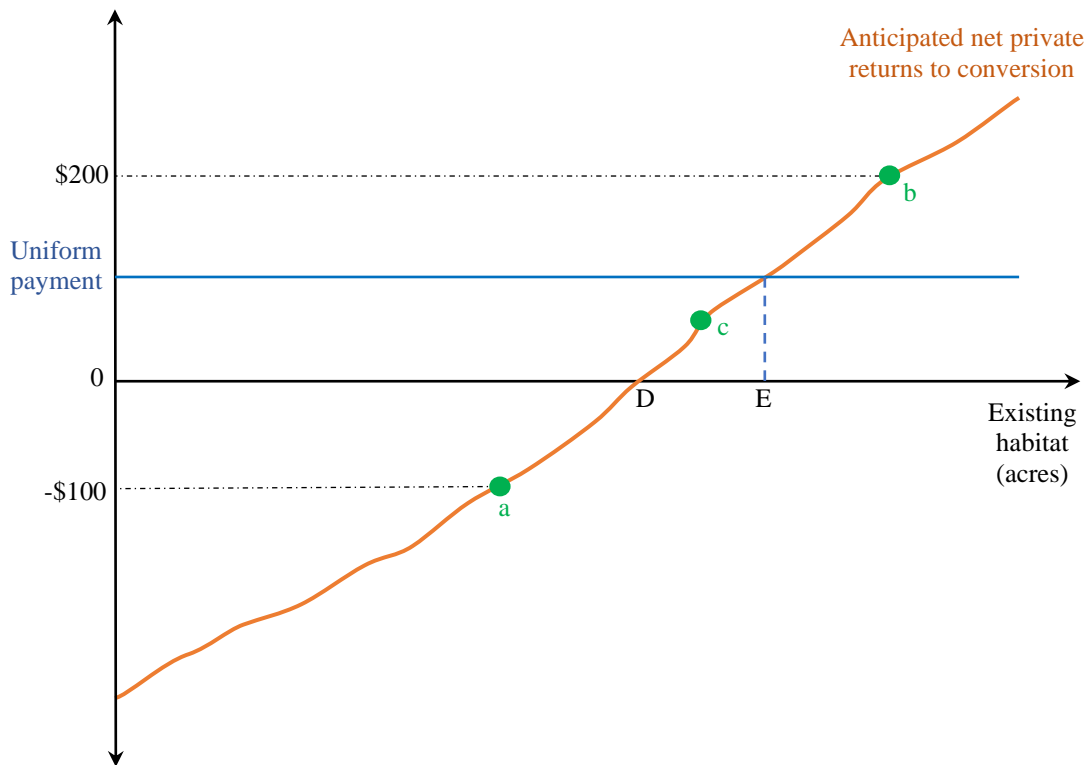


Figure 1: Anticipated net private returns of converting grassland to cropland

The net benefits of conversion can vary widely across land parcels. As an example, consider a landowner with a quarter section of land that is currently rented out as pasture. Assume that the pasture is rented for \$25/acre and if converted to cropland the same plot of land could rent for \$45/acre. The landlord pays property taxes in both situations, and we assume property taxes do not change with land use. The annual net private benefit of converting grassland to cropland for the landowner is equal to \$20/acre. Assuming one-time conversion costs of \$200/acre and a 5% discount rate, the discounted stream of annual net returns is equal to \$32,000 or \$200/acre (parcel ‘b’ on figure 1). The private net returns to converting grassland will be higher on some land parcels and lower on others. For example, if the annual private benefit of converting grassland to cropland is \$5/acre and the up-front conversion costs are \$200/acre, the discounted stream of annual net returns is equal to -\$100/acre (parcel ‘a’ on figure 1). The private net returns to conversion will be negative on a substantial number of parcels; they have not been converted previously which suggests their current use is the highest use value.

The private net benefits of converting to an alternate use as displayed in figure 1 trace out the total opportunity cost to the landowner of placing land in an easement. This is the cost to the landowner of encumbering land with an easement. It is important to distinguish this cost to the landowner from the benefit to society of securing land in an easement. These two values can be very different. The basis of a voluntary conservation program, such as an easement program, is that the social benefits of placing land in an easement exceeds the private costs of doing so. Land that does not meet these criteria should not be enrolled in the easement program.⁶

In the following discussion, the social benefits of a grassland easement include the biodiversity, carbon sequestration, and other ecological services from grassland preservation. These social benefits may exceed the private opportunity costs to the landowner. In situations where social benefits exceed private opportunity costs, encumbering grassland with an easement can be mutually beneficial—with an unlimited budget the government or conservation agency is willing to pay a price higher than the opportunity cost of the landowner. The price that is paid for the easement determines the division of the net benefits (social benefits minus private opportunity costs) of the conservation easement. A higher easement price transfers more of the net benefits to

⁶ Lawley and Towe (2019) discuss several conservation program design issues related to additionality, information asymmetry, and moral hazard.

the landowner, whereas a lower easement price transfers more of the net benefits of the easement to society.

Determining the “appropriate” price for an easement has typically involved attempts to estimate the opportunity costs of the conservation easement. If the methodology used to estimate the opportunity costs is credible, this approach can be used to establish the minimum price a landowner will accept for an easement. All else equal, landowners prefer higher easement prices; prices above the minimum acceptable price will also incentivize the landowner to enrol land in an easement. From the perspective of the conservation agency, lower prices allow the agency to protect more grassland on a fixed budget. That said, an “appropriate” or “fair” price can be well above the private opportunity costs of the easement.⁷

Landowners’ decision problem

Conservation easements are entered into voluntarily, by both the conservation agency and the landowner. A primary point of negotiation is the price paid for the easement. Landowners who choose to enroll land in a conservation easement are trading off future options in return for a one-time payment. This section briefly discusses the decision problem facing the landowner.

A landowner with land currently in grassland faces three potential choices: 1) the landowner can “convert now” and earn cropland returns in the current period and all future periods, minus the one-time cost of converting the land from grassland to cropland; 2) the landowner can choose to “ease now,” earning grassland returns in the current period and in all future periods plus a one-time conservation easement payment; and 3) the landowner can “wait and see” what happens to future crop returns and conservation easement payments. In the “wait and see” scenario the landowner continues to earn grassland returns in the current (and future) period and retains the option to earn 1) cropland returns minus the one-time conversion costs in a future period or 2) earn grassland returns plus the easement payment in a future period.

Miao, Hennessy, and Feng (2022) derive the minimum easement payment when these three options are available to the landowner. They show that the minimum easement payment compensates

⁷ In many private goods and services markets the prices received by sellers exceed the opportunity costs of producing the product or service. We know that the price in the market is less than the maximum price the consumer is willing to pay and greater than the minimum price the producer is willing to accept. The division of the net benefits of trading the good or service depends on relative bargaining power and information asymmetry (and other factors) between the consumer and the producer of the good or service.

landowners according to option value, which is comprised of an intrinsic value and a time value. The intrinsic value is tied to the private anticipated net returns to conversion as depicted in figure 1 (the intrinsic value is zero for all land where the net returns to conversion are negative and the intrinsic value is equal to the net returns if they are positive). The time value component of the option value is positive on parcels where the returns to “convert now” are lower than the returns to a “wait and see” strategy; retaining the option to observe future changes in cropland returns, grassland returns, and easement payments has value. This implies that the minimum easement price is positive for all land parcels, even parcels that are not currently at risk of conversion.

Miao, Hennessy, and Feng (2022) show that a reduction in the conversion cost incentivizes conversion and will increase the minimum easement price. Consistent with this, government regulations that make conversion more costly or constrain conversion in some way (legislation restricting drainage or conversion, species at risk legislation, or safe harbour agreements) will decrease the minimum easement price.

Farmland prices and net private returns to conversion

There is a direct link between the net benefit of converting land and farmland values in alternative uses. The standard capitalization model of farmland values suggests that the price of farmland is a function of the present value of future net returns accruing to the landowner. In regions with substantial non-agricultural development pressure, the value of farmland reflects development potential. In regions with less development pressure, farmland values will reflect net returns from crop or livestock production, depending on which is expected to be most profitable. The simple capitalization model, assuming zero development potential, suggests that the value of a grassland parcel at time t is given by:

$$(1) \quad V_g(t) = \int_0^{t^*} r_g(t)e^{-it} dt + \int_{t^*}^{\infty} r_c(t)e^{-it} dt - Ce^{-it^*}$$

where $r_g(t)$ is the net returns to grassland at time t , $r_c(t)$ is the net returns to cropland on the same parcel at time t , C is the cost of converting grassland to cropland, and i is the discount rate. The first term, $\int_0^{t^*} r_g(t)e^{-it} dt$, adds up discounted annual net returns to maintaining the land in grassland from the current year to the conversion year t^* ; the second term, $\int_{t^*}^{\infty} r_c(t)e^{-it} dt$, adds

up discounted annual net returns to cropland from the conversion year t^* into perpetuity; the final term Ce^{-it^*} is the discounted value of conversion costs incurred in year t^* .

A simple interpretation of the capitalization model suggests that the grassland will be converted now if the current net returns to cropland exceed the sum of the current net returns to grassland and the current cost of converting. The fact that a parcel of land is currently in grassland suggests that 1) the current net returns to grassland on that particular property for that landowner exceed the current net returns to cropland after accounting for conversion costs and/or 2) the current landowner has strong non-pecuniary preference for maintaining the land in grassland.

The capitalization formula also suggests that land currently in grassland may be converted at some point in the future, depending on the evolution of net returns to cropland relative to the net returns to grassland. If the land is simply not suited to annual crop production, then there is no conversion potential and equation (1) simplifies to the first term.

Under certain assumptions about the *evolution of net returns*, the capitalization formula suggests the following relationship at the time of conversion:

$$(2) \quad r_c \geq r_g + iC.$$

In the year grassland is converted, t^* , the net returns to cropland will equal or exceed the net returns to grassland plus conversion costs adjusted by the discount rate. This suggests that increases in the discount rate, the returns to grassland, and conversion costs will delay the conversion date. Higher returns to cropland will justify conversion at an earlier date.

The choice to maintain land in grassland when net returns to cropland (minus conversion costs) exceed net returns to grassland implies that the landowner is leaving money on the table. This could be the case for several reasons, including lifestyle choices, a preference for conserving grassland, or the difficulty in calculating and evaluating net returns to alternative uses of the land.

Despite the potential that individual land parcels may not be converted even if a simple comparison of net returns suggests it should, we expect that farmland values will tend to reflect the capitalized value of land as presented in equation (1). Although farmland may be thinly traded, well-functioning credit markets and publicly available information about land capability and climatic conditions suggest that farmland prices will reflect the net returns to operating the land.

The capitalization model presented in equation (1) can be simplified to consider a parcel of land that will remain in its current use indefinitely. This simplification provides a straightforward approach to thinking about the value of agricultural land:

$$(3) \quad V_a = \frac{r_a}{i-\gamma}$$

where V_a is the per acre value of agricultural land, r_a is the net return in its current use, i is the discount rate, and γ is a new term that accounts for anticipated annual growth in returns to the current use. Note that an increase in the discount rate, i , reduces the value of agricultural land and an increase in the anticipated growth in farming returns, γ , increases the value of agricultural land. Deaton and Lawley (2022) describe the formula in more detail and discuss potential limitations of the capitalization approach when examining farmland values.

The following three examples help clarify the relationship between farming returns, farmland prices, and net private returns to conversion:

- 1) Consider a parcel of land currently in cropland with current net cropland returns of \$150/acre. This net return is expected to stay constant into the foreseeable future and the discount rate is 5%. The capitalization formula above suggests the land parcel should sell for \$3,000/acre. If cropland net returns are expected to grow by 1% per year, then the current price of the land parcel is expected to be \$3,750/acre.⁸
- 2) Consider a parcel of grassland that is not worthwhile converting any time in the foreseeable future.⁹ The net return to grassland on this parcel of land is \$30/acre and the discount rate is 5%. If the net return to grassland is not expected to change over time, then this parcel will sell for \$600/acre. If grassland net returns are expected to increase by 1% annually, then the current sale price increases to \$750/acre.
- 3) Consider land currently in grassland earning \$30/acre but could be converted at a one-time cost of \$200/acre and then earn an annual net return of \$150/acre in cropland. Assuming

⁸ Assuming constant cropland returns, the per acre price of the cropland is $V_c = \frac{r_c}{i} = \frac{150}{.05} = \$3,000$; with 1% annual growth in cropland returns, the per acre price of farmland is $V_c = \frac{r_c}{i-\gamma} = \frac{150}{.04} = \$3,750$.

⁹ As an example, perhaps the parcel is not well-suited to crop production and the anticipated net return to cropland is \$35/acre. The annual gain due to conversion is \$5/acre. If conversion cost is \$200/acre, then the net benefit of converting is negative \$100/acre (the difference between discounted annual gains to conversion of $\frac{5}{.05} = \$100$ and the conversion costs of \$200).

cropland returns will remain constant, this land parcel is expected to sell for \$2,800/acre, the difference between the discounted net returns to cropland and the upfront conversion costs.¹⁰

The point of these three examples is that farmland value reflects returns to alternative land uses in their highest value use, after adjusting for potential conversion costs. Land in “permanent” grassland (negative net private returns to conversion) is lower priced than grassland that can be converted (positive net private returns to conversion). All else equal, land in permanent grassland will sell at a lower price than grassland that can be converted. Grassland that can be converted to cropland will be priced to reflect the potential returns to cropland net of conversion costs. This implies that at-risk grassland will sell at prices very close to cropland with similar underlying soil quality and climatic conditions.

Farmland values are also directly related to minimum easement prices, which explains why many conservation organizations base easement payments on the market value of land. The minimum price for a perpetual easement on the grassland parcel at risk of conversion (example number 3 above) is equal to \$2,200/acre (the discounted value of the difference between cropland and grassland returns, minus the cost of conversion).¹¹ The easement payment for this at-risk parcel is approximately 80% of the market value of the land parcel. Applying 80% to the zero-risk “permanent” grassland parcel (example number 2 above) suggests the easement price should be \$480/acre. It can be difficult to identify low-risk from high-risk parcels, and even if they can be identified, the minimum accepted easement price should compensate the landowner for time value as identified by Miao, Hennessy, and Feng (2022). Payments based on the market value of land are implicitly accounting for differences in risk of conversion.

It is important to acknowledge that farmland markets do not perfectly incorporate all available information into land prices. Local competition for land will influence farmland prices and the thinness of farmland markets can allow for systematically overpriced or underpriced farmland. That said, farmland buyers and sellers (including farmland investment firms) have good

¹⁰ Assuming constant cropland returns, the net present value of the land in cropland is $V_c = \frac{r_c}{i} = \frac{150}{.05} = \$3,000$; buyers are willing to pay \$3,000 minus the \$200 cost of conversion, \$2,800 per acre.

¹¹ The minimum perpetual easement price, P_E , compensates for the difference between cropland and grassland returns net of conversion costs, $P_E = \frac{120}{.05} - 200 = \$2,200$.

information about potential returns to land in alternative uses and have substantial financial stakes in the outcomes of farmland sales and prices.

Alternative payment approaches

There are several alternative means of determining payments for conservation easements. This section will describe several of these approaches, with a broad overview of the potential impacts of these approaches on the easement program.

Reverse Auction

The objective of a reverse auction is to extract bids that trace out the opportunity costs of the landowners who bid. Reverse auctions use competition between sellers to drive down the price that the buyer pays. From a strict cost perspective, this increases the ability of the conservation agency to protect more land within a fixed budget. Auctions can also be used as price discovery tools in situations with limited information on the distribution of opportunity costs and the market clearing price.

In a well-designed competitive auction environment with many potential sellers the bids will equal the opportunity costs of enrolling land. In practice, the bids often exceed the opportunity costs, with landowners extracting information rents.¹² In figure 1, the bids landowners submit for conservation easements should trace out the anticipated private net returns curve. With sufficient competition, the bids will be very close to the private net returns. As the number of potential sellers falls, sellers will submit higher bids; bids will be above, but positively correlated with, the private net returns curve.

A challenge to cost-effective procurement of conservation easements arises out of uncertainty about the opportunity costs facing landowners. Conservation dollars should be spent on at-risk land parcels, but the challenge is in identifying those parcels. In theory, price discovery through a reverse auction will help to identify parcels that have high conversion risk (the private net returns to conversion are positive and high) from parcels that have very low risk of conversion (net private returns to conversion are negative). Reverse auctions could be used to uncover relationships between parcel characteristics and risk of conversion (as measured by bids for conservation easements). Early experimentation using reverse auctions could be used as the basis for setting

¹² In situations with few sellers, landowners have an incentive to bid above their true opportunity costs.

administratively determined prices for conservation easements. This appears to be the approach used by DUC when first formulating guidelines for perpetual conservation easement purchases in the early 2000s (Brown et al. 2011).

Some caution is warranted in the use of reverse auctions. First, past reverse auctions have had low participation rates, which can limit the extent of competition in the bidding process. Second, the reverse auction format can be difficult to understand, again limiting participation and potentially introducing substantial noise into bid prices. The bids for perpetual conservation easements in the Brown et al. (2011) reverse auction ranged from \$2.50/acre (1% of assessed land value) to \$750/acre (432% of assessed land value). Bids for wetland restoration with 12-year agreements ranged from \$83/acre to \$1000/acre on cropland and \$0/acre to \$391/acre on forage land in the reverse auction described in Hill et al. (2011). Variation in bids in past reverse auctions are due to a combination of 1) actual differences in opportunity costs, where opportunity costs are low on the low-bid parcels and high on the high-bid parcels; 2) strong conservation motives of current owners of low-bid parcels; and/or 3) confusion about the true opportunity costs leading to under and over-priced bids. It is typically difficult to identify the importance of these three sources of variation, which reduces the value of the reverse auction as a price discovery tool.

Reverse auctions may systematically attract bidders with strong conservation motives. The Hill et al. (2011) article finds that bidders in their reverse auction were more likely to have participated in previous environmental programs. These bidders may submit low bids; basing administratively determined prices on these low bids may price higher cost bidders with environmentally beneficial easements out of the market. It is also important to note that both Brown et al. (2011) and Hill et al. (2011) find that perpetual conservation easements are unattractive to landowners who are concerned about the impact the easements will have on the resale value of their land. Hill et al. (2011) offer both conservation easements and 12-year agreements; they receive zero bids for perpetual conservation easements, suggesting a strong preference for shorter-term easements among the landowners in their study region.

Uniform per acre payment

Conservation agencies sometimes offer uniform per acre payments. This is illustrated in figure 1, where a uniform per acre payment of approximately \$100 is depicted. At this payment level, landowners with parcels to the left of point 'E' are willing to enroll in an easement while

landowners to the right of point ‘E’ are unwilling to enroll in an easement. A uniform per acre payment excludes a potentially large set of high-priced easements from the conservation easement program, instead focussing on lower priced easements.

Lawley and Towe (2014) conduct an analysis of the impact of conservation easements on farmland values in a program where a substantial number of the easements were purchased for a uniform price of \$100/acre.¹³ Lawley and Towe (2014) find that the discount on eased property was approximately \$86/acre during the study period. This result is consistent with the logic presented in figure 1, which suggests that conservation easements will tend to be placed on land to the left of point E if a uniform per acre payment is used. This will also tend to be the land with the lowest risk of conversion. If conservation agencies can target at risk land, then we expect land parcels similar to point ‘c’ in figure 1 to be enrolled in easements. The price of easements estimated in Lawley and Towe (2014) therefore reflects the average price of a subsample of all potential easement land in Manitoba. It is possible—perhaps likely—that most of the potentially eased land lies to the right of point E and that the payments required to enroll this higher-risk land was substantially higher than the \$100/acre being offered at the time. The easement price estimated in Lawley and Towe (2014) is a function of the type of land that was being eased and should not be thought of as the “price” of easements.

Per acre payment based on land value

Conservation agencies operating in the US and Canada often adjust conservation easement prices by the value of the land. As an example, the two US conservation programs we discuss later in this report determine payments as a share of the market value of land. A clear advantage of this approach is that it is easy to administer; the conservation agency can quickly determine offer prices in a transparent manner at low cost. As opposed to a uniform payment, setting a direct link between the price of the land and the easement payment allows the agency to enroll land from the full set of land parcels, from the lowest priced land to the highest priced. Landowners with higher valued land will receive a higher payment, consistent with the notion that an encumbrance on their land carries a larger discount. The per acre payments will trace out the anticipated net returns of

¹³ Lawley and Towe (2014) examine conservation easements in Manitoba, where the Manitoba Habitat Heritage Corporation (MHHC) accounted for a majority of the easements. MHHC had a policy of offering a percentage of assessed value up to a maximum of \$100/acre. Due to relatively high assessed values, most easements were signed for \$100/acre.

conversion depicted in figure 1 if there is a strong correlation between the value of the land and the net returns to conversion. We return to this approach with a more detailed discussion in the section describing USFWS and NRCS conservation easements.

Before and after appraisal

Conducting a before and after appraisal is an attempt to trace out the opportunity cost curve as presented in figure 1. The accuracy of this approach depends on the ability of the appraiser to estimate the *causal* impact of the easement. This requires access to many sale transactions of comparable land parcels, some sold with an easement and others without. Alternatively, the appraiser can examine the value of comparable land sales prior to conversion and post-conversion.

The accuracy of this estimation method depends on the ability of the assessor to find comparable land sales. This is not a simple task. Likely the most significant difficulty is in overcoming selection bias. Selection bias occurs when easements are not randomly assigned across the landscape. For instance, it is likely that landowners will enroll lower valued land with lower option value first (Lawley and Towe 2014). This implies that easements are systematically placed on lower valued land; a simple comparison of eased and non-eased land values will tend to overestimate the impact of the easement on land values. Lawley (2021) presents evidence consistent with sample selection bias in professional appraiser assessments of the impact of hog barns on residential property prices in Manitoba.

The opportunity cost of the easement is a function of the value of giving up the option to convert at some point in the future. From a more theoretical perspective, it is sometimes assumed that landowners are profit maximizing and that the current use must reflect the most profitable use. This will be true in many cases, but there are instances where this will not hold. Current landowners may be locked into a certain type of farm operation, but this does not imply that the current use will be preferred by a future landowner. Future landowners may want to convert the land to crop production and removing this option will affect the resale value of the land. Further, Miao, Hennessy, and Feng (2022) show that retaining the option to convert has value even on parcels unlikely to be converted even in the distant future.

Lawley and Towe (2014) use econometric approaches to estimate the average impact of an easement on land values over the first decade of conservation easements in Manitoba. Access to the full population of easements in the province over a 10-year period provided a relatively small

sample size. It was possible to estimate an average effect with this sample size. An appraiser estimating the impact of *individual* easements has a much more challenging task; it is difficult to imagine that this can be done in a cost-effective manner for a large (or even small) conservation easement program.

Per acre payment based on income in alternative uses

The approaches discussed above can all be thought of as attempts to estimate or proxy the anticipated net benefits of conversion. An income-based approach is a more direct attempt to estimate opportunity costs.

Calculating income in alternative uses is challenging due to limits on data availability and significant variability in the potential net returns across different land bases and farms. Many assumptions need to be made to calculate alternative returns associated with different land uses, including underlying yield potential of the land, the ability of the individual farmer to effectively produce and market crops versus livestock, the efficiency of the farm operation due to economies of scale, and the quality and extent of regional infrastructure supporting crop versus livestock production. Many of these variables are not observable but can have a significant impact on the returns to alternative land use choices. These factors help to explain why observationally similar land parcels can persist in different land uses for many years and even decades.

At best, an income-based approach can capture the *current* returns and costs associated with conversion, averaged across a set of farms as defined by the analyst. In theory, the analyst can account for variation in potential returns using information on soil quality, local weather, and availability of or potential for local infrastructure to support conversion. In practice, accounting for these variables and their impact on net returns to conversion is difficult and “engineering/cost analysis” approaches to calculating net returns to land use conversion do a poor job of predicting actual land use changes (Lubowski, Plantinga, and Stavins 2006). Future changes in crop and livestock returns, production costs, and conversion costs are typically not accounted for in a meaningful way because these variables are so difficult to predict. Like price formation in farmland markets, the private net returns to conversion estimated by an analyst will reflect short-term returns and costs based on recent experience and perhaps predictions a few years into the future. The analyst conducting an income-based approach is also forced to make an explicit assumption about the appropriate discount rate.

The income-based approach extrapolates net returns from cropland to grassland that has not been converted. The analyst is implicitly assuming that the two locations are comparable in terms of their underlying ability to support crop and livestock production. Yet, the fact that one is in crop production and the other remains in grassland is informative and suggests that it is possible their underlying productivity is not the same.

An advantage of using farmland values as a basis for easement prices is that farmland prices incorporate available information about discount rates and the best potential use of individual land parcels from the perspective of potential buyers and sellers who have “skin in the game.” If a parcel of land in grassland is not worthwhile converting—it is “permanent” grassland due to climatic or soil productivity limitations—then it will be priced accordingly. A grassland parcel that can be profitably converted to cropland will sell for a higher price, approaching the value of cropland on similar quality land.

As mentioned above, the income-based approach estimates *average* income from cropland and grassland, and it is challenging to adequately account for underlying heterogeneity in land parcels. Income-based estimates using average returns may suggest that low-valued “permanent” grassland parcels have high potential returns in cropland, leading an analyst to calculate an easement payment greater than the market value of the land. In this situation, the agency purchasing conservation easements may be better off purchasing the land parcel (and managing the purchased land directly or donating to a conservation agency or other group who can manage the land) rather than paying a higher price for an easement.

Pricing approaches of US conservation agencies

Several US government agencies administer conservation programs placing conservation easements on existing and restored grassland and wetlands in the US Prairie Pothole Region. This section describes the approach to pricing these easements along with a discussion of the likely impacts of the approach on the market for easements and the overall effectiveness of the easement program. We start with a discussion of the easements employed by the USFWS followed by the wetland restoration easements used by the NRCS.

US Fish and Wildlife Service

The USFWS purchases minimally restrictive conservation easements on wetland and grassland in the Prairie Pothole Region of the United States. These easements prohibit the landowner from converting the wetland or grassland but allow the landowner to use the property for grazing or haying.¹⁴ These easements are thought to have a small impact on the value of the land. The USFWS purchases approximately 500 of these easements annually. Given the large number of easement purchases and the difficulty in before and after fee appraisal impacts described above, the agency uses an “administratively determined payment (ADP).”¹⁵

The ADP is calculated as follows. First, the agency estimates the market value of the land—the adjusted assessed land value (AALV)—using a multiplier to adjust the assessed land value determined by the local tax authority. This multiplier is constructed by comparing land sales to assessed land values in a defined market area. The information needed for construction of this ratio—sale prices and assessed values—is readily available from county assessors offices.¹⁶ A concern with comparison of assessment values across regions is that local tax authorities may generate different assessments of identical properties due to differences in methodology and underlying assumptions. Annual construction of the ratio by region accounts for these differences. This also addresses situations where assessments are not updated on an annual basis.

In the second step of the calculation of the per acre ADP, the agency multiplies the AALV by approved wetland or grassland indices. The indices are set with the objective of achieving a 40 to 70% annual acceptance rate.¹⁷ The per acre payment is applied to the total number of wetland or grassland acres in the easement. A 50% reduction in value is allowed for wetlands considered difficult to drain (typically defined as wetlands more than 20 acres in size with open water).¹⁸

¹⁴ A grassland minimally restrictive conservation easement protects grassland to maintain vegetative cover. The land can be used for grazing and can be mowed after July 15. A wetland minimally restrictive conservation easement protects wetland areas so they are not drained, filled, leveled, or burned. Wetland areas that dry up naturally can be used for farming, grazing, or haying.

¹⁵ The procedure of setting administratively determined payments for acquisition of minimally restrictive conservation easements is described at <https://www.fws.gov/policy-library/341fw6#section611>.

¹⁶ Similar data is available through online portals in Saskatchewan and Manitoba. Lawley (2018) uses datasets obtained from these online portals to examine determinants of farmland prices in the two provinces. Similar data is likely available in Alberta.

¹⁷ The annual acceptance rate is equal to the number of signed easements divided by the total number of easement offers made by the USFWS in one year.

¹⁸ Wetlands can be temporary wetlands currently farmed or wetlands on land currently in the Conservation Reserve Program (CRP).

The indices are expressed as a percentage. Both the wetland and grassland indices increase as the AALV increases. For example, in North Dakota in 2008, the wetland index was set at 60% for the lowest value land and gradually increased to 70% for the highest value land. The North Dakota grassland easement index started at 35% for the lowest value land and increased to 45% for the highest value land. If needed, the indices can be adjusted annually to better hit the targeted acceptance rate of 40 to 70%.¹⁹

There are several advantages of the approach used by the USFWS. The administered prices can be computed quickly based on readily available information. The system is transparent, and the agency can make offers in a timely fashion. Scaling the indices according to land value has the effect of increasing payments to the higher valued land, which potentially contain wetland and grassland at higher risk of conversion. It is also likely that conversion costs on low valued land are roughly the same as conversion costs on high valued land; setting a higher index on the higher valued land accounts for “fixed” conversion costs that comprise a lower share of net returns to conversion on higher valued land. Further, holding land value constant, the approach used by USFWS offers higher easement payments on wetlands relative to grasslands. This approach appears to account for the fact that wetland acreage carries a larger land value discount than equivalent grassland acreage. Evidence from Manitoba reported in Lawley (2014) suggests that a one percent increase in wetland acreage reduces land value by 1.5% while a one percent increase in bush/pasture and native hay acreage reduces land value by less than 1%. One implication of this result is that the incentive to convert wetland acreage is greater than the incentive to convert grassland.

Adjusting the easement payment according to 1) land value, 2) grassland versus wetland, and 3) permanence of the wetland is one approach to correlate payments with the true opportunity costs of enrolling land in an easement.²⁰ Payments correlated with true opportunity costs are more likely to enroll conservation easements from land across the full distribution of land values.

The fact that 40 to 70% of easement offers are accepted is informative. It implies that a large share of the ADP offers made by the USFWS are below the anticipated net private returns to conversion.

¹⁹ From “Sample Wetland and Grassland Index,” found at <https://www.fws.gov/policy-library/e1341fw6>.

²⁰ The strength of the correlation is not known. The correlation could be estimated using several years of data on land sales with easements and land sales without easements. Detecting heterogeneous impacts of easements along additional dimensions would require a large sample of easements and land transactions. This may be available in the US PPR, where the easement program has been in place for several decades.

Figures 2 through 5 build on the framework introduced in figure 1 to depict four *potential* scenarios that are consistent with these rejection rates. These figures incorporate the “minimum required easement price” as described in Miao, Hennessy, and Feng (2022). The minimum required easement price traces out the anticipated net returns to conversion on the “convert now” acres that are at risk of conversion and the time value associated with the “wait and see” acres that have low to zero current risk of conversion.

In figure 2, a large share of the potential easement acres offered by landowners are at zero risk of conversion (the anticipated net private returns to conversion are negative) and there is a positive correlation between the anticipated returns to conversion and the ADP offered by the agency. Easement offers will be accepted by landowners if the ADP exceeds the minimum easement price. Offers will be rejected when the ADP is less than the minimum easement payment. In this scenario the agency protects a lot of acres that are not at risk of conversion. In this scenario, attempts to estimate the impact of easements on land values will find that the impact is zero (or very small) for easements on the “zero-risk” acres and is low for the set of accepted easement acres with a low risk of conversion. On average, the easement agency will find that its easements have only a small impact on farmland values.²¹

²¹ This is consistent with the USFWS perception that its easements have a small impact on farmland prices.

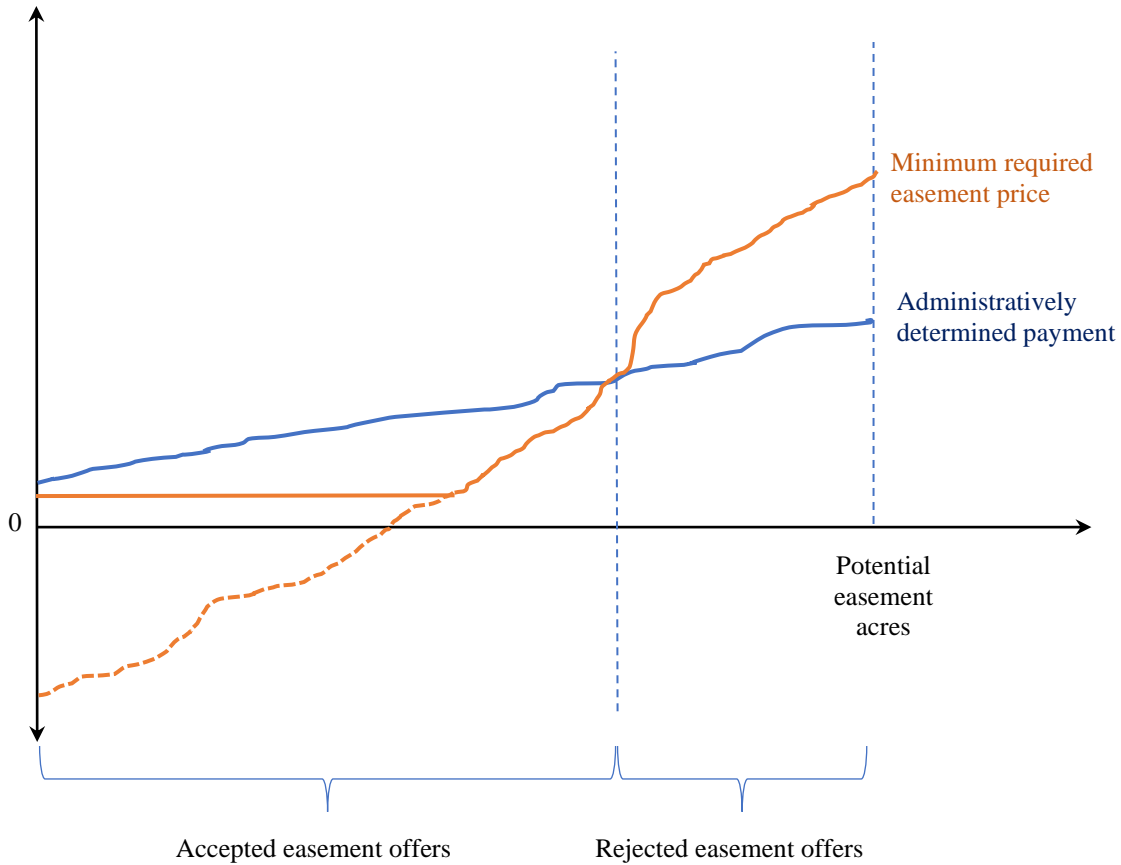


Figure 2: Positive correlation between ADP and anticipated net returns to conversion

Figure 3 depicts a situation where a substantial share of potential easement acres is at zero risk of conversion, but there is a negative relationship between anticipated net private returns to conversion and the ADP. Like the scenario depicted in figure 2, in this scenario the agency overpays for the zero-risk acres and underpays for the high-risk acres. This has implications for the cost of easement purchases and for the number of acres that can be protected in an easement. This scenario highlights the importance of achieving a strong correlation between the easement price and the private net returns to conversion.²²

²² In this scenario, a fixed payment would allow the agency to protect more habitat on a given budget. The scenario presented in figure 2 suggests the opposite; a fixed payment would overcompensate the lowest risk acres relative to the administered payment, leading to fewer acres protected on a given budget.

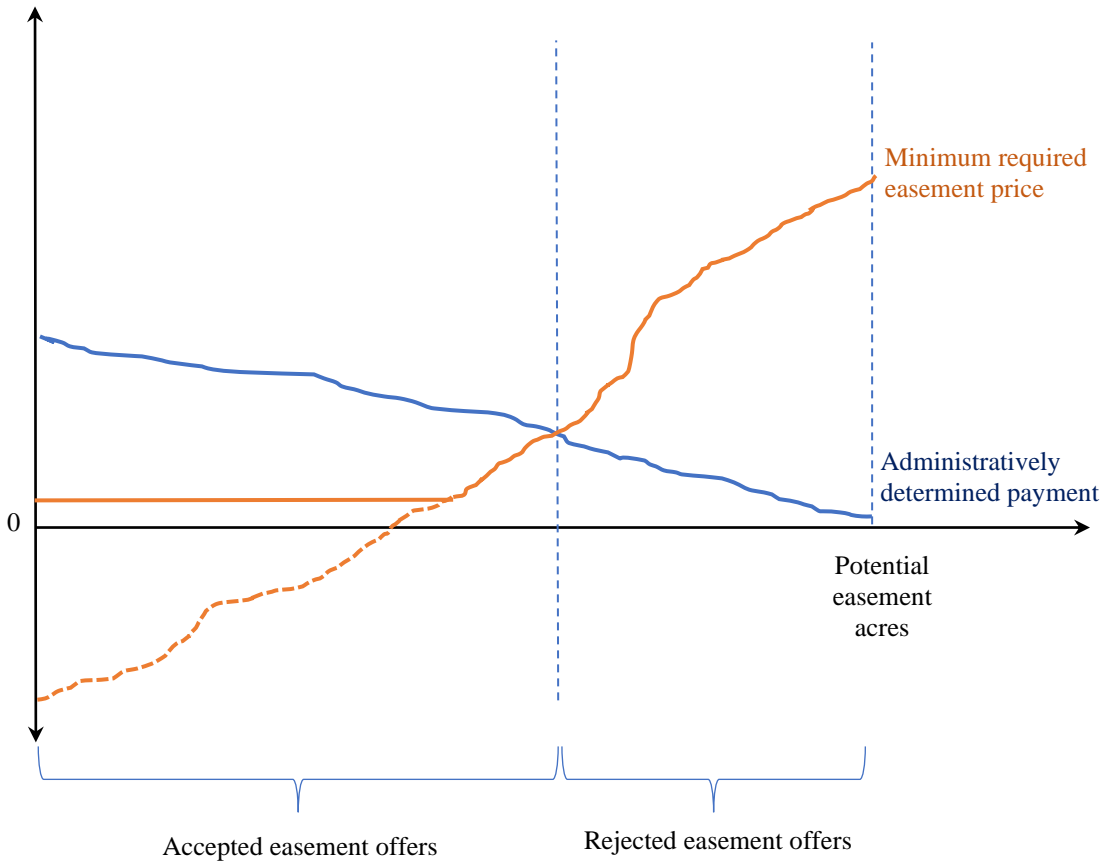


Figure 3: Negative correlation between ADP and anticipated net returns to conversion

Figure 4 depicts a scenario where all potential easement acres are at risk of conversion and there is a positive relationship between anticipated returns to conversion and ADPs. In this scenario, acceptance rates of 40 to 70% imply that the ADP systematically underpays the acres with the lowest risk of conversion and overpays on acres with the highest conversion risk. The accepted easements will be on the acres with the highest conversion risk. This is a preferred outcome if the agency is interested in preserving the highest risk acres first. The ADPs depicted in figure 4 increase at a greater rate than the anticipated returns to conversion. The USFWS payment schedule may accomplish this; payments are based on land values and the *percentage* payment increases as land values increase. In this scenario, the accepted easements will tend to be on the highest valued land and estimates will suggest that easements have a large impact on the sale value of encumbered parcels.

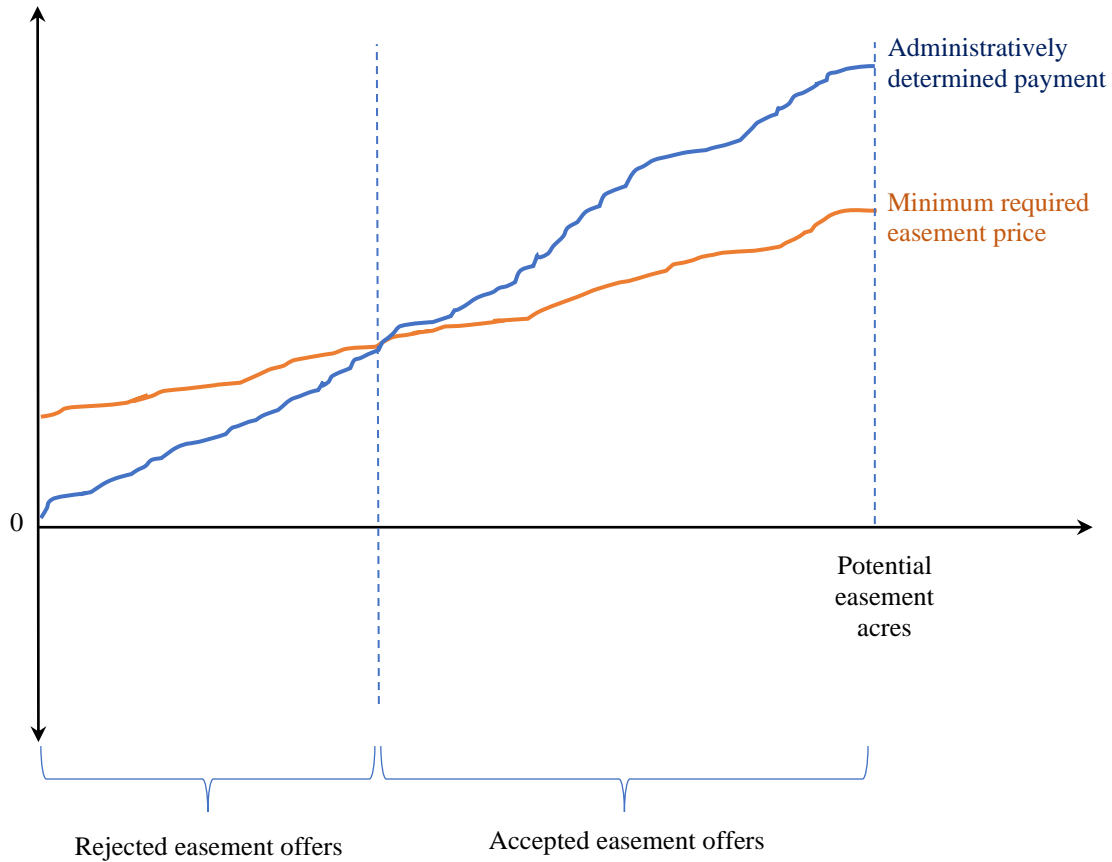


Figure 4: All grassland at risk of conversion

The three scenarios depicted in figures 2 through 4 assume that the lines tracing out the minimum easement payment and the ADP cross at a single point. This does not have to hold, and it is likely that the two lines cross at multiple points and the agency is protecting a mix of low-risk and high-risk grassland and wetlands. Figure 5 presents a best-case scenario for an easement program using an ADP based on assessed land values with 40% to 70% targeted acceptance rate. In this scenario the ADP traces out the minimum easement payment; the fair market value approach overprices and underprices easements across the full distribution of potential minimum easement prices. In situations where the ADP is above the minimum easement price, the landowner will accept the easement offer. Offers will be rejected in cases where the ADP is below the minimum easement price. Targeting an acceptance rate of 40% to 70% ensures that the ADP is never too far above or too far below the minimum easement price.

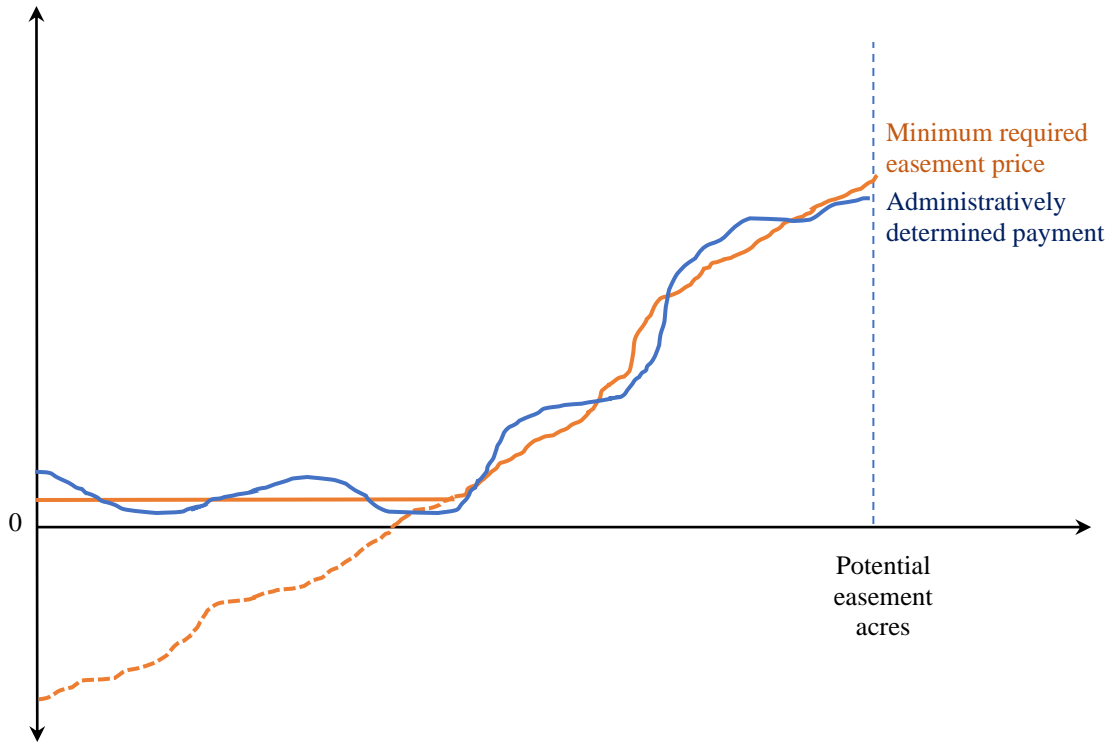


Figure 5: A best-case scenario for the administratively determined payment

Attaining this best-case scenario requires that the conservation agency does a good job of correlating its ADP with the minimum easement price. The USFWS adjusts the ADP according to land value, grassland versus wetland, and permanence of wetlands in an effort to correlate easement payments with the minimum easement price.

The analysis presented in figures 2 through 5 does not account for the social benefits of conserving grasslands. A well-designed program will maximize the social benefits minus the private costs of the conservation easements. Discussion with the USFWS suggest that the agency prioritizes easements on grassland and wetlands with the highest environmental benefits. Easement payments are offered on the highest benefit acreage using the ADP as discussed above. This approach does not maximize the social benefits minus the private costs but is perhaps a reasonable approach given the difficult task of monetizing the environmental benefits of conservation. An alternative approach—similar to the approach used in reverse auctions—is to construct an environmental benefit index that can be used to construct a ratio of the ADP to environmental benefits.

Natural Resources Conservation Service

The NRCS uses appraisals to determine the prices of wetland conservation easements. The NRCS places conservation easements (perpetual or term) on restored wetlands. Appraisers are used to generate land valuation estimates of comparable properties with different land uses typically enrolled in wetland easements. The “fair market value” of land used by NRCS is based on the lower of 1) an individual assessment carried out for a specific parcel of land following a “Uniform Standards for Professional Appraisal Practices” or an “Area-wide Market Analysis,” 2) the geographic area rate cap (GARC), or 3) an amount voluntarily offered by the landowner.²³ In Washington State, very few easements are signed in a year and so they will tend to rely on lower-cost individual appraisals rather than a more expensive area-wide analysis for the entire state.²⁴ In Minnesota, many easements are signed annually and so the cost of an area-wide analysis is spread across more potential easement properties.

As an example, a 2018 Area-wide Market Analysis for seven designated areas in the State of Minnesota provides estimates of per acre sales values for “Cropland” and “Non-cropland” for seven regions of Minnesota. Cropland is defined as “tilled land, Conservation Reserve Program, or hay-in rotation” and non-cropland is defined as “native grassland, pasture land, wildlife land, woodland, and wetlands without cropland history.”²⁵ The land considered in comparable sales is predominantly level, low-lying areas of cropland, pasture, and woodland. The analysis reports the low price, high price, and average price for each region and land classification (cropland and non-cropland).

Easement payments are calculated as 1) a percentage of the fair market value or 2) the GARC. NRCS staff suggest that the GARC is typically set at 85% of the assessed value of the land, and might range from 70% to 90% depending on state. As an example, the State of Montana established the following 2021 GARCs in the northern portion of the state: \$2,764/acre on irrigated cropland,

²³ Guidelines for enrollment and acquisition are provided here:

<https://directives.sc.egov.usda.gov/viewerFS.aspx?hid=20095>

²⁴ See a description of the easement compensation procedure here:

[https://www.nrcs.usda.gov/sites/default/files/2022-](https://www.nrcs.usda.gov/sites/default/files/2022-09/LTP%20Easement%20Compensation%20Procedure%20for%20FY23%20ACEP%26WRE%20Applications.pdf)

[09/LTP%20Easement%20Compensation%20Procedure%20for%20FY23%20ACEP%26WRE%20Applications.pdf](https://www.nrcs.usda.gov/sites/default/files/2022-09/LTP%20Easement%20Compensation%20Procedure%20for%20FY23%20ACEP%26WRE%20Applications.pdf)

²⁵ The Area-wide Market Analysis is available at:

https://www.nrcs.usda.gov/wps/cmیس_proxy/https/ecm.nrcs.usda.gov%3A443/fncmis/resources/WEBP/ContentStream/idd_60C6AB66-0000-C231-9F7B-582885AE6D51/0/AG-3C78-P-16-0185_0004+-+Minnesota+Market+Analysis.pdf

\$850/acre on dry cropland, and \$608/acre on pasture/range land.²⁶ In the western portion of North Dakota, the 2023 GARC Cropland (Non-cropland) values for 30-year easements range from \$750/acre (\$406/acre) in Divide, Burke, and Williams counties (northwest ND) to approximately \$1,300/acre (\$850/acre) in Burleigh county (mid ND).

For additional context, Table 1 presents farmland values, rental rates, implied capitalization rates, 30-year rental values, and 30-year GARCs for four North Dakota counties, by cropland and pasture.²⁷ The results suggest that cropland is being priced at a capitalization rate ranging from 2.1% to 3.1%, and pasture is capitalized at a rate of 1.2% to 2.1%. Implied capitalization rates within the 2 to 3% range are comparable to recent US ten-year constant maturity treasury (CMT) rates; the ten-year CMT is thought to be a reasonable proxy for US farmland capitalization rates (Schnitkey et al. 2022).

At the implied capitalization rates presented in table 1, the 30-year cropland rental income ranges from \$710/acre in Divide County to \$1,219/acre in Burleigh County. The 30-year pasture rental income ranges from \$257/acre to \$550/acre in Divide and Burleigh, respectively. The 30-year GARCs exceed the 30-year rental income in all counties for both cropland and pasture; this suggests easement payments exceed potential rental income. As a rough benchmark, the 30-year GARCs offered in these four counties are between 54 and 69% percent of average cropland value and 39 to 72% of average pasture values. This is roughly consistent with a perpetual easement payment equal to 85% of farmland value, discounted by 50 to 75% to determine the 30-year term easement payment. At these rates, the 30-year term easement payment should range from 43% to 64% of farmland values.²⁸

Land eligible for the NRCS program includes farmed or converted wetlands that have been altered for agricultural production but can be restored. This program therefore involves restoration of

²⁶ The 2021 GARCs for Montana are available at:

https://www.nrcs.usda.gov/wps/cmismis_proxy/https://ecm.nrcs.usda.gov%3A443/fncmis/resources/WEBP/ContentStream/idd_60113979-0000-C31A-B971-CF3EE8822F9B/0/GARCmapWRE2021_final.pdf

²⁷ Average farmland values and rental rates are obtained from:

<https://www.land.nd.gov/sites/www/files/documents/Surface/Rent%20Survey/2023%20County%20Rents%20and%20Prices%20North%20Dakota.pdf>; GARC Cropland Values from:

<https://www.nrcs.usda.gov/sites/default/files/2023-02/ND-FY2023-ACEP-WRE-GARC-Comparison%20Map-Cropland%2030%20year.pdf>; GARC Non-cropland values from: <https://www.nrcs.usda.gov/sites/default/files/2023-02/ND-FY2023-ACEP-WRE-GARC-Comparison%20Map-Non-Cropland%2030%20year.pdf>.

²⁸ If the perpetual easement payment is 85% of farmland value, then the 30-year term easement payment should range between 43% (85% x 50%) and 64% (85% x 75%).

wetlands followed by an easement on the restored wetland acres. An easement paid on restored wetland acres should cover the reduction in property value due to the wetland, which will be equal to the foregone benefits from restoring a previously converted wetland. Paying for a *restoration* easement is fundamentally different from paying for a *preservation* easement, where the minimum easement price is equal to the private *net* benefits of converting the existing grassland or wetland.

Table 1. North Dakota average farmland values, rental rates, and GARCs, by selected county

	County			
	Burleigh	Divide	Hettinger	Dunn
	Cropland			
Cropland Value (\$/acre)	2,013	1,252	1,833	1,875
Cropland Rent (\$/acre)	63.00	35.30	48.40	39.40
Implied capitalization rate	3.1%	2.8%	2.5%	2.1%
30-year rental value (\$/acre)	1,219	710	1,013	870
30-year Cropland GARC (\$/acre)	1,313	750	1,260	1,020
GARC as % of average cropland value	65%	60%	69%	54%
	Pasture			
Pasture Value (\$/acre)	1352	640	988	1691
Pasture Rent (\$/acre)	23.90	11.00	20.80	21.00
Implied capitalization rate	1.8%	1.7%	2.1%	1.2%
30-year rental value (\$/acre)	550	257	460	526
30-year Pasture GARC (\$/acre)	848	405	712	653
GARC as % of average pasture value	63%	63%	72%	39%

Notes: All farmland values, rental rates, and GARCs are expressed in 2023 US dollars per acre. The implied capitalization rate is given by $\delta = \frac{Rent}{Value}$, where $\delta = i - \gamma$. The 30-year rental value is the net present value of the 2023 rental rate discounted 30 years at the implied capitalization rate.

Option for term easements. The NRCS easement program allows for term easements of 30 years, where the payment is equal to 50 to 75% of the price paid for a perpetual easement. This adjustment likely reflects time value of money (discount rate) adjustments associated with shorter duration easements. To explore this point, table 2 presents potential conservation easement payments assuming hypothetical private annual net benefits of conversion of \$120/acre minus a one-time conversion cost of \$200/acre. The private net benefits of conversion are then discounted at rates of 2%, 3%, 5%, 10%, and 20% over a perpetual term and over 20-year, 30-year, and 40-year terms.

The easement payments in table 2 are equal to the discounted present value of the stream of annual net benefits due to conversion. The figures presented in the table indicate that the perpetual easement payments associated with low discount rates are much higher than the perpetual easement payments for the same series of cash flows discounted at a higher rate. The discount rate can be thought of as the weight that is placed on income streams at different points in the future. A high discount rate places less weight on future income streams, while a low discount rate places more weight on future income. If the discount rate is sufficiently high, then income earned 30 years into the future will receive almost zero weight in the present value calculation. This is why the perpetual easement payment is approximately equal to the 30-year easement payment when a 20% discount rate is used.

Table 2. Discount rates and perpetual versus term conservation easement payments

	Discount rate (<i>i</i>)				
	2%	3%	5%	10%	20%
Perpetual easement (PE) (\$/acre)	5,800	3,800	2,200	1,000	400
20-year term easement (20-TE) (\$/acre)	1,762	1,585	1,295	822	384
20-TE as % of PE payment	30%	42%	59%	82%	96%
30-year term easement (30-TE) (\$/acre)	2,488	2,152	1,645	931	397
30-TE as % of PE payment	43%	57%	75%	93%	99%
40-year term easement (40-TE) (\$/acre)	3,083	2,574	1,859	973	400
40-TE as % of PE payment	53%	68%	85%	97%	100%

Notes: Values above are based on hypothetical private annual benefits of conversion of \$120/acre minus a one-time conversion cost of \$200/acre. The perpetual easement payment is calculated as the net present value of an infinite stream of annual net benefits minus first period conversion cost: $NPV = \frac{\$120}{i} - \200 . The term easement payment is calculated as the net present value of a *t*-year stream of annual net benefits minus period one conversion cost: $NPV = \sum_t \frac{\$120}{(1+i)^t} - \200 .

Selecting the appropriate discount rate is challenging. The discount rate should be approximately equal to the discount rate used by participants in the land market (land buyers and sellers). One approach is to use implied capitalization rates like those calculated in table 1.²⁹ Various market

²⁹ Relationships between capitalization rates, farmland values, and farmland rental rates are often influenced by non-farm factors such as residential and commercial demand for farmland. For example, price to rent ratios in Ontario

rates could also be used. Schnitkey et al. (2022) use the ten-year CMT as a proxy for US farmland capitalization rates. The ten-year Government of Canada (GOC) benchmark bond yield follows the ten-year CMT and is perhaps an appropriate proxy for capitalization rates in Canada. Ten-year GOC bond yields have ranged from 5% in the early 2000s to 0.5% in 2020. The April 2023 rate is hovering around 3%. Alternatively, in Canada, rates on non-residential mortgages extended to businesses hovered between 3.5 and 4.5% for several years before dropping below 3% in 2020. As of February 2023, non-residential mortgage rates had increased to 6.5%.

Table 2 shows that a discount rate of 5% the appropriate payment for a perpetual easement on this hypothetical parcel is \$2,200/acre. The payment for a 30-year term easement at the same discount rate of 5% is \$1,645/acre, which is approximately 75% of the permanent easement price. Discount rates between 2 and 3% imply 30-year term easement payments should be 43% to 57% of the perpetual easement payment. The 30-year term easement payments used by NRCS range from 50 to 75% of the perpetual easement payment; the lower bound on the percentage payment coincides with a discount rate of between 2 and 3% and the upper bound corresponds with a discount rate of 5%. NRCS is pricing 30-year term easements *as if* it is using a discount rate of 2-3% to 5%.

Table 2 also presents term conservation easement payments for 20-year and 40-year terms. Holding the discount rate constant, the 20-year (40-year) term easement payments are always lower (higher) than the 30-year term easement payment, consistent with the shorter (longer) discounting horizon. Assuming a 2 to 5% discount rate, the 20-year term easement payment ranges from 30 to 53% of the perpetual easement payment and the 40-year term easement payment ranges from 68 to 85% of the perpetual easement payment.

A perpetual easement permanently removes the option to convert habitat. Since the future is uncertain, retaining that option has value. A 30-year term easement is irreversible for 30 years but when the term expires the owner has the option to convert. The discounted term easement prices presented in table 2 partially account for this difference in irreversibility. It is important to acknowledge the psychic costs of perpetual easements arising out of a concern that future generations will view the choice to permanently enroll land in an easement as a mistake.³⁰ If

exceed price to rent ratios in Saskatchewan due to substantial residential/commercial demand for Ontario farmland and the resulting impact on the non-farm component of Ontario farmland values that province. Implied capitalization rates need to be interpreted with this in mind (Deaton and Lawley 2022 explore this in more detail).

³⁰ Miao, Hennessy, and Feng (2022) suggest that landowners worry future generations will think “Dad was had.”

psychic costs are substantial, the minimum price required for a term easement will fall relative to the minimum price for a perpetual easement (even after the discount rate accounts for time value of money). The relative merits of perpetual versus term easement also depends on the outside investment options available to the landowner. The higher up-front perpetual easement payment provides the landowner with more capital to invest in new farmland or other assets. This is consistent with landowners' apparent preference for perpetual easements in the USFWS easement program;³¹ the relative attractiveness of term easements versus perpetual will depend on relative magnitudes of payments for the two types of easements.

NRCS staff estimate that 80 to 90% of wetland easements are permanent. NRCS staff attribute this preference for permanent easements to the possibility that landowners will receive tax benefits for permanent easements, retiring farmers wish to preserve land for the long-term, and landowners benefit from the larger upfront perpetual easement payments.

From a conservation agency perspective, term easements allow the agency to periodically re-optimize the location of conservation investment. The ability to reoptimize the spatial allocation of investment has value if the spatial evolution of agricultural and residential development changes over time or if the spatial distribution of climate change impacts is uncertain and changes in unexpected ways, as explored in Ando and Mallory (2012). If the conservation agency wishes to re-enroll land at expiration of a 30-year term it will have to pay a higher future price for the easement due to appreciation in farmland values. Although farmland prices will appreciate during the 30-year term, the price of the term easement is lower than the price of the perpetual easement and the agency can earn a market rate of return on the difference for the next 30 years. Alternatively, the agency can use the savings to protect more grassland acreage today.

³¹ Our interview with Ken Fowler of the FWS realty office suggest that term easements are not offered because 1) FWS was finding that wetlands in term easements were sometimes converted when the term expired and 2) landowners preferred the larger perpetual easement payment because it could be quickly re-invested into the farm operation through farmland and equipment purchases.

5. Key Findings

These findings are primarily based on a review of conservation easement programs administered by the Natural Resources Conservation Service of the U.S. Department of Agriculture and the U.S. Fish and Wildlife Service of the Department of Interior.

Overview of Conservation Easement Legislation and Federal Programs

1. There is a long history of states enacting conservation easement legislation beginning as early as 1957. Since the adoption of the Uniform Conservation Easement Act (UCEA) and accompanying Comments in 1981, except for North Dakota, all states have enacted some form of conservation easement enabling legislation, some modeled on the UCEA and some not. States remain active in this statutory area. In the 2000's, three states passed easement enabling legislation for the first time and many others have enacted substantive amendments.
2. The UCEA provides that "a conservation easement is unlimited in duration unless the instrument creating it otherwise provides." The vast majority of UCEA and non-UCEA statutes follow this approach of enabling conservation easements either of fixed duration or in perpetuity.
3. Every state except for North Dakota allows for perpetual easements. Some states have established a minimum duration for conservation easements while three states expressly prohibit term conservation easements.
4. Similar to Canada, U.S. federal tax law requires perpetual easements in order for a donor to claim a charitable tax deduction.
5. The U.S. Department of Agriculture (USDA) has several programs that aim to protect and sustain the agricultural viability and conservation values of agricultural landscapes. These programs are implemented by the Natural Resources Conservation Service (NRCS) or the Farm Service Agency (FSA). Of these two agencies, only the NRCS offers programs that support the use of conservation easements. Across all NRCS programs, there are currently more than 24,000 conservation easements protecting more than 5.3 million acres (approximately 2,145,000 hectares).
6. The NRCS administers the Agricultural Conservation Easement Program (ACEP) which limits non-agricultural uses that negatively affect agricultural uses and conservation values, and

protects grazing uses and related conservation values by restoring or conserving eligible grazing land, and protecting, restoring, and enhancing wetlands on eligible land.

7. The ACEP offers two types of easements, a Wetland Reserve Easement (WRE) and an Agricultural Land Easement (ALE). The WRE program provides for easements of fixed duration as well as in perpetuity. ALEs are permanent unless a maximum term is established by State law. Most term conservation easements are WREs, although a complementary program, the Healthy Forest Reserve Program, also offers term conservation easements.
8. Demand for conservation easements is high. More than 500 applications to the NRCS are approved annually with more than 90% of applications going unfunded. Of approved applications, the current ratio of in perpetuity to term conservation easements is approximately 90:10.
9. Landowners may opt for easements in perpetuity for various and differing reasons including for example tax benefits, family planning and legacy considerations (i.e. a farmer may wish to ensure that the lands remain in agricultural use in perpetuity), associated benefits such as access to other programs (e.g. with an easement in perpetuity, a landowner may receive up to 100% of the cost of restoration of the land), and the benefits of receiving additional financial capital for a permanent easement as compared to the lower payment for an easement of fixed duration.
10. Under the WRE program, the NRCS pays for the easement and for restoration or enhancement costs. The WRE program supports easements that have a 30-year term or are for the maximum duration allowed by state law. Under such term easements, the NRCS pays 50 to 75 percent of the easement value for the purchase of the easement and between 50 to 75 percent of any restoration costs. For easements in perpetuity, the NRCS pays 100 percent of the easement value and between 75 to 100 percent of any restoration costs. Term conservation easements can be extended to easements in perpetuity with payment being 25% of the value of the easement at the time of conversion.
11. With respect to the ALE program which protects cropland and grassland, the NRCS may contribute up to 50 percent of the fair market value of the agricultural land easement. Where NRCS determines that grasslands of special environmental significance will be protected, NRCS may contribute up to 75 percent of the fair market value of the agricultural land easement.

12. The U.S. Fish and Wildlife Service (USFWS) of the Department of Interior administers two conservation easement programs. For both programs, the USFWS holds the easement which are perpetual or for the maximum duration allowed by state law. Under a grassland easement (also known as a habitat easement), land may not be cultivated. Mowing, haying and grass seed harvesting are restricted and may be delayed until after July 15 each year. Under a wetland easement, wetlands cannot be drained, filled, leveled or burned. If the wetlands dry up naturally, they can be farmed, grazed or hayed.
13. The U.S. Department of Agriculture and the U.S. Department of the Interior both offer land and habitat improvement or enhancement programs that complement easement programs. These programs provide financial incentives and other support to landowners to undertake actions that improve or enhance the environmental and other benefits of the land. Funding is provided through conservation agreements, however, unlike easement programs, the agreements are not tied to land title and are of shorter duration than term conservation easements.

Valuation

Payments for conservation easements in the US easement programs we examine are derived from estimates of the fair market value of the land. Perpetual easement payments are calculated as a percentage of fair market value, and term easement payments are calculated as a share of the perpetual easement payment. Landowner interest in these long-running conservation easement programs is strong; a small share of easement applications is approved every year.

14. The anticipated net private returns to converting grassland to cropland varies across the landscape; conversion of some existing grassland will generate net private returns to the landowner, and converting some existing grassland will not be worthwhile for current and future landowners into the foreseeable future. Attempts to preserve existing grassland should target grassland that is ecologically valuable and is expected to be at risk of conversion.
15. The value of agricultural land is equal to the discounted value of the expected annual stream of income from the land. Grassland that can be profitably converted to cropland (at some point in the future) will sell at a higher price than grassland that cannot be profitably converted to cropland.
16. There is a direct link between land value and the impact of conservation easements on land values; a grassland conservation easement reduces the value of the land if the grassland could

be profitably converted to cropland (conversion to cropland would generate net private returns). The reduction in value due to the easement is equal to the lost profitability (foregone net income stream) of converting grassland to cropland.

17. There are several approaches to setting prices for easements; all are attempts to quantify the impact of the easement on income streams and as a result, on land values:

- Reverse auctions: use competition between landowners to set easement price through bids; the extent of competition between landowners will influence bid prices.
- Payment based on land value: used by many agencies, including the USFWS and NRCS programs discussed in this report. Can be computed with publicly available information on assessed values of land; transparent and easy to calculate; captures multiple sources of variability throughout landscape (soil productivity, neighboring livestock/crop infrastructure, neighboring land uses).
- Before and after appraisal: uses information on the value of land with an easement and the value of comparable lands without an easement. This approach is subject to sample selection bias which will tend to overestimate the impact of easements on land values; significant information requirements; relies on expertise of individual assessors; case-by-case assessment.
- Income in alternative uses: Uses an income approach to quantify alternative income streams in different land uses; data-intensive; relies on expertise of individual analyst; forces extrapolation of income streams on land converted to cropland to land not yet converted to cropland (sensitive to sample selection bias); relies on average numbers across large geographic regions; analyst forced to assume a discount rate for calculation of perpetual easement payment.
 - Estimates of potential income gains due to converting grassland to cropland can result in easement payment calculations that exceed the value of the land; if easement payment exceeds market value of land, conservation agency may be better off purchasing the land outright.

18. USFWS offers permanent conservation easements on wetland and grassland acres. Applications from landowners are screened to ensure they meet environmental objectives of the program (a small share of applications pass the initial screening). Easement payments are

based on estimated land values for individual land parcels. Land values are estimated following a multi-step process:

- Parcel-level assessed values are used; obtained from county property tax assessment offices (publicly available)
- A land value multiplier is calculated; the sales values of land sold in the same geographic region in the last several years are compared with their assessed values; The ratio of sales price to assessed value price (on the parcels that have sold) is used to create a county-level multiplier; that multiplier is used to adjust the value of parcels that will potentially be eased.
- The estimated land value for each *individual* parcel in an easement is used to calculate the easement price; the easement price is calculated as a percentage (less than 100%) of the estimated land value. This payment percentage is referred to as an index; USFWS sets different indices for wetland and grassland acres (the wetland index is higher than the grassland index).
 - For example, in North Dakota in 2008, the wetland index was set at 60% for the lowest value land and gradually increased to 70% for the highest value land. The North Dakota grassland easement index started at 35% for the lowest value land and increased to 45% for the highest value land.
- This approach uses readily available information, is easy to calculate, and is transparent.
- This approach captures inherent differences in land parcels between different landowners and within a single landowner's land base; adjusts for substantial variation in land productivity, local livestock and crop infrastructure, and suitability for an easement.
 - This approach attempts to achieve a strong positive correlation between the easement offer and the minimum acceptable easement price (opportunity cost of the easement); figures 2 through 5 demonstrate the importance of a positive correlation.
- This approach can be used in a Canadian setting; municipal/county assessment records and sales data are publicly available in Saskatchewan and Alberta; The ratio of sales price to assessment value can be used to construct an annual multiplier that varies by municipality/county or larger geographic region; indices can be set according to local conditions and conservation objectives.

19. NRCS offers permanent and term conservation easements across the U.S. through the Wetland Reserve Easements program. Environmental criteria are used to screen applications. The WRE is a restoration program, as opposed to the preservation program operated by the USFWS. This report focusses on activities in the northern Plains states (primarily North Dakota and Montana)
- Easement payments are based on the fair market value of the property
 - The fair market value is used to calculate a geographic area rate cap (GARC), which is set as a percentage of the fair market value of the land
 - NRCS staff suggest that the perpetual-GARC is set at 85% of the fair market value (ranges from 70 to 90% across states); payments (as a share of fair market value) in a restoration program will tend to be higher than payments in a preservation program
 - Term easement payments are set at 50 to 75% of the value of a perpetual easement payment; NRCS staff suggested that it is typically closer to 75%
 - Calculations presented in table 1 are based on average county-level land values in North Dakota and regional 30-year GARCs; the small sample of North Dakota regions we examined in detail suggests the 30-year GARC ranges from 40 to 70% of agricultural land value; this is roughly consistent with a perpetual GARC set at 85% and then discounted by 50 to 75% to convert to a 30-year term easement payment.
 - Table 2 shows that the NRCS 30-year term easement payment of 50 to 75% of the permanent easement payment is consistent with application of a discount rate of between 2-3% and 5%.
 - NRCS staff suggest that most easements (80 to 90%) are permanent, rather than 30-year terms; landowners potentially receive tax benefits for permanent easements, retiring farmers wish to preserve land for the long-term, and landowners benefit from the larger upfront payment from perpetual easements

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Annex I

Conservation Easement Programs³²

1. United States Department of Agriculture

Natural Resources Conservation Service (NRCS)

Agricultural Conservation Easement Program

a) Wetland Reserve Easements

Wetland Reserve Easements (WREs) help private and tribal landowners protect, restore and enhance wetlands. Land eligible for WREs includes privately held farmed or converted wetlands that were previously degraded due to agricultural uses and can be successfully and cost-effectively restored. NRCS prioritizes applications based the easement's potential for protecting and enhancing habitat for migratory birds and other wildlife.

To enroll land for WREs, NRCS enters into purchase agreements with eligible private landowners or Indian tribes that include the right for NRCS to develop and implement a Wetland Reserve Plan of Operations (WRPO). Such Plans detail practices to help protect, restore, and enhance the wetland's functions and values.

Payments to landowners vary depending upon the Wetland Reserve enrollment option chosen by the landowner. Options include:

Permanent Easements – NRCS pays 100 percent of the easement value for the purchase of the easement. Additionally, NRCS pays between 75 to 100 percent of the restoration costs.

30-year Easements – Under 30-year easements, NRCS pays 50 to 75 percent of the easement value for the purchase of the easement. Additionally, NRCS pays between 50 to 75 percent of the restoration costs.

Term Easements - Term easements are easements that are for the maximum duration allowed under applicable State laws. NRCS pays 50 to 75 percent of the easement value for the purchase of the term easement. Additionally, NRCS pays between 50 to 75 percent of the restoration costs.

30-year Contracts – 30-year contracts are only available to enroll acreage owned by Indian tribes and program payment rates are commensurate with 30-year easements.

³² For the purposes of this paper, federally, only the programs of the U.S. Department of Agriculture and the U.S. Department of Interior were examined. These two Departments implement easement programs with explicit conservation objectives.

For all Wetland Reserve Easement options, NRCS pays all costs associated with recording the easement in the local land records office, including recording fees, charges for abstracts, survey and appraisal fees and title insurance.

b) Wetland Reserve Enhancement Partnership

Through the ACEP, the NRCS also offers the Wetland Reserve Enhancement Partnership (WREP), a voluntary program through which NRCS enters into agreements with eligible partners to carry out high priority wetland protection, restoration, and enhancement and to improve wildlife habitat.

Although not an easement program, the WREP is closely tied to WREs. Through WREP, partners work with NRCS to help restore, protect and enhance enrolled wetlands directly with private landowners and Indian tribes through the purchase of an NRCS Wetland Reserve Easement. Eligible lands, which include farmed or converted wetland habitat that can be successfully and cost-effectively restored, may be enrolled under permanent easements, 30-year easements, or 30-year contracts (for acreage owned by Indian Tribes). For lands enrolled through wetland easements, NRCS will also develop and implement a Wetland Reserve Easement restoration plan that will restore, protect, and enhance the wetland's functions and values.

Partner contributions must equal at least 10 percent of the total estimated costs for easement acquisition related costs and restoration implementation costs. Proposals that provide partner contributions greater than 10 percent are given higher consideration in the selection process.

c) Agricultural Land Easements

Agricultural Land Easements (ALEs help private and tribal landowners, land trusts, and other entities such as state and local governments protect croplands and grasslands on working farms and ranches by limiting non-agricultural uses of the land through conservation easements. The program protects grazing uses and related conservation values by conserving grassland, including rangeland, pastureland and shrubland.

For land to be eligible, one of the following four criteria must also be met. Land parcels must:

- protect prime, unique, or other productive soil
- provide protection of grazing uses and related conservation values
- contain historical or archeological resources
- further a state or local policy consistent with the purposes of ACEP-ALE.

With respect to payments to landowners, NRCS may contribute up to 50 percent of the fair market value of the agricultural land easement. Where NRCS determines that grasslands of special environmental significance will be protected, NRCS may contribute up to 75 percent of the fair market value of the agricultural land easement.

Healthy Forests Reserve Program

The Healthy Forests Reserve Program (HFRP) helps landowners on a voluntary basis restore, enhance and protect forestland resources on private and tribal lands through easements and financial assistance. The specific objectives on the Program are to:

- promote the recovery of endangered and threatened species under the Endangered Species Act;
- improve plant and animal biodiversity; and
- enhance carbon sequestration.

It provides landowners with 10-year restoration agreements and 30-year or permanent easements for specific conservation actions. For acreage owned by an American Indian tribe, there is an additional option of a 30-year contract. Some landowners may avoid regulatory restrictions under the Endangered Species Act on the use of their land by restoring or improving habitat for a specified period of time.

The HFRP provides financial assistance in the form of easement payments and cost-share for specific conservation actions completed by the landowner.

The program offers four options:

1. 10-year restoration cost-share agreement for which the landowner may receive 50 percent of the average cost of approved conservation practices,
2. 30-year easement for which the landowner may receive 75 percent of the easement value of the enrolled land plus 75 percent of the average cost of approved conservation practices,
3. 30-year contract on acreage owned by Indian Tribes, or
4. permanent easements for which landowners may receive 100 percent of the easement value of the enrolled land plus 100 percent the average cost of approved conservation practices.

2. United States Department of the Interior

U.S. Fish and Wildlife Service (USFWS)

North American Wetlands Conservation Act (NAWCA)

The NAWCA authorizes a wetlands habitat program that provides grants to protect and manage wetland habitats for migratory birds and other wetland wildlife in the United States, Mexico, and Canada.

For grants to recipients in the United States, there is a Standard Grants Program and a Small Grants Program (grants not exceeding \$US 250,000). Both Programs are competitive, matching grant programs that support public-private partnerships carrying out projects in the United States that further the goals of NAWCA. Projects must involve long-term protection, restoration, and/or enhancement of wetlands and associated uplands habitats for the benefit of all wetlands-

associated migratory birds. Under these Programs, each grant and match dollar, except for indirect costs, must be linked to an acre acquired, restored, enhanced, and/or established.

Under these Programs, the cost of acquisition of title or an interest in the land (i.e. a conservation easement) is an eligible expense based on fair market value (the appraised value). Acquisition includes fee-title acquisition and donation (transfer of title), and conservation easement and lease acquisition and donation. Eligible acquisition expenses also include associated costs such as appraisal fees, legal costs and boundary surveys. In addition, annual payments for 10-year conservation agreements (or the maximum duration allowed by State law) are eligible expenses. Organizations and agencies are encouraged to adopt and implement the practices and procedures described in the U.S. Land Trust Alliance's Land Trust Standards and Practices.

Both Grant Programs require that easements and leases ensure long-term wetlands and associated upland protection by requiring that they:

- include restrictions, allowed activities, and reserved rights that ensure long-term wetlands and associated uplands protection
- be legally enforceable by organizations that can demonstrate ability or experience in enforcing easement terms
- be recorded pursuant to state law
- be held by or transferred to a conservation organization (e.g. State or Federal conservation agency, or non-governmental conservation organization)

Conservation Easement Programs

The USFWS administers two conservation easement programs. For both programs, the USFWS holds the easement which is binding on all present and future landowners. The easements are perpetual or for the maximum duration allowed by State law.

a. Grassland easements

A grassland easement (also known as a habitat easement) is a legal agreement signed with the United States of America, through the U.S. Fish and Wildlife Service, that pays landowners to permanently keep their land in grass. Landowners who sell a grassland easement to the Service agree to maintain permanent vegetative cover such as forbs, grasses, and low shrubs. Many landowners plan on never putting their land into crop production and can benefit from the added cash incentive of a grassland easement. Land covered by a grassland easement may not be cultivated. Mowing, haying and grass seed harvesting are restricted and may be delayed until after July 15 each year. This specific restriction is designed to help grassland nesting species, such as ducks and pheasants, complete their nesting before the grass is disturbed. Property subject to a grassland easement remains on local tax rolls. By selling easements, landowners receive funds to pay down debt, reinvest in capital improvements, or buy other lands to maintain and/or expand working lands.

b. Wetland easements

In the United States, the Prairie Pothole Region is located within the northern Great Plains in parts of Iowa, Minnesota, Montana, North Dakota, and South Dakota. Characterized by thousands of shallow wetlands known as potholes, the Prairie Pothole Region provides habitat for globally significant populations of breeding waterfowl. In addition, the Prairie Pothole Region is important as breeding and migratory habitat for many species of grassland and wetland-dependent birds.

A wetland easement is a legal agreement signed with the United States of America, through the U.S. Fish and Wildlife Service, that pays landowners to permanently protect wetlands. Landowners who sell a wetland easement to the Service agree that wetlands protected by an easement cannot be drained, filled, leveled or burned. If these wetlands dry up naturally, they can be farmed, grazed or hayed. Wetlands covered by an easement are mapped, and a copy of the easement and map(s) is provided to the landowner. The easement contract is recorded at the county courthouse Register of Deeds office. No signs are placed on the property. Property subject to a wetland easement remains on local tax rolls. By selling easements, landowners receive funds to pay down debt, reinvest in capital improvements, or buy other lands to maintain and/or expand working lands.

Annex II

Land and Habitat Enhancement Programs

1. U.S. Department of Agriculture

The U.S. Farm Bill supports farmers, ranchers, and forest stewards through a variety of conservation, farm loan, safety net and disaster assistance programs. The conservation programs support achieving agricultural and environmental outcomes within agricultural landscapes. The main USDA conservation programs are implemented by either the Natural Resources Conservation Service or the Farm Service Agency of the U.S. Department of Agriculture.

Natural Resources Conservation Service

The conservation support programs of the NRCS include the Conservation Stewardship Program, the Environmental Quality Incentives Program and the Regional Conservation Partnership Program. Only the Conservation Stewardship Program is briefly discussed here.

Conservation Stewardship Program

The Conservation Stewardship Program (CSP) supports landowners seeking to improve grazing conditions, increase crop resiliency, or develop wildlife habitat. The NRCS can custom design a CSP plan to help landowners meet their goals by identifying natural resource problems in their operation and providing technical and financial assistance to solve those problems or improve stewardship of their land in an environmentally beneficial and cost-effective manner. The program is implemented through contracts and the producer is supported by an NRCS conservation planner throughout the entire contract process.

Where landowners are already taking steps to improve the condition of the land, the NRCS works individual producers to develop a conservation plan that outlines and enhances existing efforts, using new conservation practices or activities, based on the management objectives of the landowner. Producers implement practices and activities in their conservation plan that increases environmental benefits of their land while improving their agricultural operations. For example, cover crops may be enhanced through a shift to a multi-species cover crop or implementation of a deep-rooted cover crop to break up soil compaction and further improve soil health.

CSP provides annual payments to producers for implementing new practices, and for operating and maintaining existing conservation efforts. Under the CSP, a higher payment rate is offered when a producer implements a suite of enhancements. CSP contracts are for five years, and producers can compete for a contract renewal if the producer fulfills the initial contract and agrees to achieve additional conservation objectives.

Payments are based on two components:

- payments to maintain the existing level of conservation, based on the land uses included in the contract and an NRCS assessment of existing stewardship at the time of enrollment, and
- payments to implement additional conservation activities.

Farm Service Agency

The Farm Service Agency oversees a number of voluntary conservation-related programs that work to address a range of farming and ranching related conservation issues including:

- drinking water protection
- reducing soil erosion
- wildlife habitat preservation
- preservation and restoration of forests and wetlands
- aiding farmers whose farms are damaged by natural disasters

Of these programs, only the Conservation Reserve Program and the Conservation Reserve Enhancement Program are briefly discussed here.

Conservation Reserve Program (CRP)

The CRP is a land conservation program in which, in exchange for a yearly rental payment, farmers enrolled in the program agree to remove environmentally sensitive land from agricultural production and plant species that will improve environmental health and quality. Contracts for enrolled land are from 10 to 15 years in length. The long-term goal of the program is to re-establish land cover to improve water quality, prevent soil erosion, and reduce loss of wildlife habitat.

Conservation Reserve Enhancement Program (CREP)

The CREP is an offshoot of the CRP that leverages federal and non-federal funds to target specific State, regional or nationally significant conservation concerns identified by government and non-government organizations. In exchange for removing environmentally sensitive land from production and establishing permanent resource conserving plant species, farmers and ranchers are paid an annual rental rate along with the federal and non-federal incentives that may be specified in the CREP agreement. Participation is voluntary and similar to the CRP, the contract period is typically 10 – 15 years.

In addition to State and Tribal Governments, the FSA can partner with non-profits, private companies and foundations.

2. U.S. Department of Interior

Conservation Banking

Conservation banking is a market-based system for conserving species and their habitat. It consists of a partnership between a landowner, one or more government agencies, and the community of developers and others who implement or fund projects that adversely affect endangered or threatened species, candidate species, other species of concern. In exchange for permanently protecting and managing land for these species of interest, the USFWS approves a specified number of habitat or species credits that the bank owners may sell to developers and other project proponents who need to offset project impacts to the same species occurring at another location within the community.

If the USFWS gives conceptual approval of a property as a conservation bank, the landowner must cooperate on the development of a Conservation Bank Agreement (CBA). The CBA is a contract between the landowner, the USFWS, and possibly other government agencies if the landowner is also seeking credits for resources regulated by other agencies.

As a condition of the CBA, the landowner needs to:

- (a) grant a perpetual conservation easement to an appropriate organization;
- (b) develop an adaptive management plan for the long-term stewardship of the property; and
- (c) fund an endowment to cover the long-term operation of the conservation bank property, including monitoring and management of the site.

Habitat Conservation Plans

A Habitat Conservation Plan (HCP) is a planning document designed to accommodate economic development to the extent possible by authorizing the limited and unintentional take of listed species when it occurs incidental to otherwise lawful activities. The plan is designed not only to help landowners and communities but also to provide long-term benefits to species and their habitats.

HCPs describe the anticipated effects of the proposed taking, how those impacts will be minimized or mitigated, and how the conservation measures included in the plan will be funded.

If the USFWS determines that an HCP meets the specified criteria, it issues an incidental take permit. After receiving an incidental take permit for activities that would otherwise result in the unlawful take of listed species, the landowner can move forward with their project or activity having the assurance that such take will not be in violation of the Endangered Species Act (ESA).

HCPs provide for the protection and management of habitat for the species covered by the HCP as the incidental take permits make the elements of the HCP legally binding. Violating the terms

of such a permit may constitute unlawful take under the ESA. While incidental take permits have expiration dates, the identified mitigation measures may extend into perpetuity.

Candidate Conservation Agreements

The USFWS considers candidate species to be those plants and animals that are candidates for listing under the ESA. These are species for which information regarding their biological status and threats is sufficient to propose them as threatened or endangered, but listing is currently precluded by higher priority listing activities. Although candidate species are not subject to the legal protections of the ESA, proactive conservation efforts for them can, in some cases, eliminate the need to list them under the ESA.

A CCA is a formal, voluntary agreement between the Service and one or more parties to address the conservation needs of candidate species or species that may become candidates in the near future. Participants voluntarily commit to implement specific actions designed to remove or reduce threats to the covered species. The degree of detail in CCAs can vary widely, and there are no specific permits or assurances associated with them.

The Service has entered into many CCAs, primarily with other federal agencies and states. Local governments, tribes, private landowners, and other entities may also participate. Some CCAs have been so successful that listing the covered species was not necessary.