

CCX Rangeland Soil Carbon Management Offsets

Exchange Soil Offsets (Rangeland Soil Sequestration)

Exchange Soil Offsets may also be issued to land owners who commit to increase Carbon Stocks realized on managed rangelands in approved geographic areas. Eligible projects include:

- a) Non-degraded rangeland managed to increase carbon sequestration through grazing land management that employ sustainable stocking rates, rotational grazing and seasonal use in eligible locations.
- b) Restoration of previously degraded rangeland through adoption of sustainable stocking rates, rotational grazing and seasonal use grazing practices initiated on or after January 1, 1999.

Exchange Soil Offsets will be earned at a specified rate of metric tons CO₂ per acre per year in eligible geographic areas. Verification shall be conducted in accordance with provisions contained in Chapter 10 of the CCX Rulebook. Appendix 9.5 provides the protocol and standards for rangeland sequestration Exchange Soil Offsets.

1. Rangeland Soil Carbon Reserve Pool

Each CCX XSO Project, or pool of projects, shall be required to place 20% of the Offsets it earns into a CCX Soil Carbon Reserve Pool as specified in section 9.9. of the CCX Rulebook. In cases where a registered project is found to be out of compliance with the provisions of this section, the project shall be deemed ineligible to earn Offsets and an appropriate quantity of Offsets in the Soil Carbon Reserve Pool shall be cancelled.

The CCX Rangeland Technical Advisory Committee shall examine the need for rules addressing suspension of Offset issuance in periods of extreme drought, as well as the appropriateness of cancelling Offsets held in the Soil Carbon Reserve Pool in such circumstances.

2. Eligible Project locations, Offset Issuance Rates

Eligible rangeland soil carbon management Offset Issuance rates are based on below-ground carbon sequestration rates established for designated Land Resource Regions. Additional Land Resource Regions may be added to the regions listed below. Issuance rates may also reflect the status of the land (degraded or non-degraded) prior to inception of project.

Eligible geographic areas are defined according to USDA Land Resource Region (LRR). Rangeland projects are also bounded by average annual precipitation levels for the specific region. Rangeland projects must take place in areas where long-term annual average precipitation is not less than 14” and not greater than 40”.

Rangeland Soil Carbon Management Offset Issuance rates are as follows (in metric tons CO₂/acre/year) (see also the Figure below):

Northwestern Wheat and Range Region (LRR B)

Sequestering practices on <u>non-degraded managed rangeland</u>	Restoration of <u>degraded rangeland</u>
0.12	0.20

California Subtropical Fruit, Truck, and Specialty Crop Region¹ (LRR C)

Sequestering practices on <u>non-degraded managed rangeland</u>	Restoration of <u>degraded rangeland</u>
0.16	0.16

Rocky Mountain Range and Forest Region (LRR E)

Sequestering practices on <u>non-degraded managed rangeland</u>	Restoration of <u>degraded rangeland</u>
0.12	0.28

Northern Great Plains Spring Wheat Region (LRR F)

Sequestering practices on <u>non-degraded managed rangeland</u>	Restoration of <u>degraded rangeland</u>
0.12	0.24

Western Great Plains Range and Irrigated Region (LRR G)

Sequestering practices on <u>non-degraded managed rangeland</u>	Restoration of <u>degraded rangeland</u>
0.27	0.40

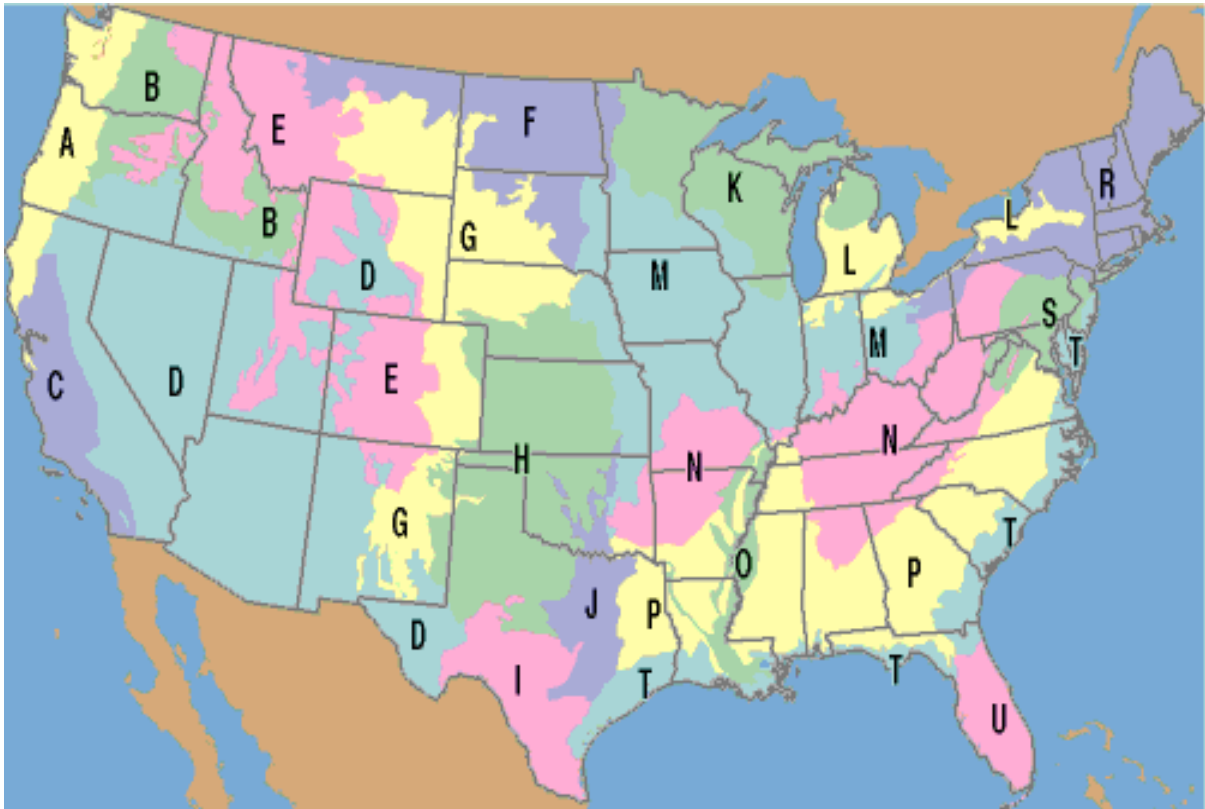
Central Great Plains Winter Wheat and Range Region (LRR H)

Sequestering practices on <u>non-degraded managed rangeland</u>	Restoration of <u>degraded rangeland</u>
0.20	0.52

Provided the project owner is able to present documentation sufficient to allow independent verification that recognized grazing practices have taken place historically, qualifying lands and practices may be issued CCX Rangeland Soil Carbon Management Offsets for the years 2003 and later.

¹ In this region, a key feature of the landscape is the Oak tree layer interspersed within rangelands. Research has shown that the native Oak trees have a positive impact on nutrient cycling, productivity and carbon storage in the soil system. Projects must have left the tree layer intact in order to qualify for Offsets.

Figure U.S. Land Resource Regions



Appendix Protocol for Verifying CCX Rangeland Soil Carbon Management Offset Projects

Introduction

This appendix summarizes the eligibility and verification requirements for CCX Rangeland Soil Carbon Management Offset Projects eligible for registration in Chicago Climate Exchange.²

Topics covered in this Appendix include:

- Overview of eligibility requirements and overall approach for generating Offsets from managed rangeland;
- Overview of a Protocol for verifying conforming projects;
- List of indicators for carbon-related management practices for rangeland.

Project Eligibility Requirements

Certain rangelands managed to enhance carbon storage in the soil are eligible for inclusion in the CCX Rangeland Soil Carbon Management Offsets program provided each of the following conditions are met (1-4):

1. The project takes place on rangeland, which is defined by the NRCS as:

“Land on which the historic plant community is principally native grasses, grasslike plants, forbs or shrubs suitable for grazing and browsing. In most cases, range supports native vegetation that is extensively managed through the control of livestock rather than by agronomy practices, such as fertilization, mowing, or irrigation. Rangeland also includes areas that have been seeded to introduced species (e.g., clover or crested wheatgrass) but are managed with the same methods as native range³.”

2. The project is in a geographic area for which data on soil sequestration rates for rangeland are available to CCX. Figure 9.x maps these areas.
3. Project involves rangeland management practices that include use of **all** of the following tools:
 - a. Light or Moderate Stocking rates;
 - b. Sustainable Livestock Distribution which includes:

² CCX staff are working with verification and rangeland experts to develop a full verification protocol.

³ In many cases, Rangeland refers to areas in the Western part of the U.S., while the general term “Grazing Lands” is used in regions East of the Mississippi. The use of the term Rangeland in this protocol is a land use designation and not a geographic designation. Land that fits the above definition of Rangeland *may* be eligible for CCX Rangeland Soil Offsets whether it is nominally referred to as Rangeland or Grazing Land provided that appropriate crediting rates can be established.

- i. Rotational grazing
- ii. Seasonal use.

The Natural Resources Conservation Service (NRCS) Field Office Technical Guides publish guidelines for managing the controlled harvest of vegetation with grazing animals. Stocking rates and livestock distribution criteria are defined according to County and State in the NRCS “Prescribed Grazing Specification” code.

In most regions Rangeland that can be classified as degraded prior to inception of the project is eligible for different crediting rates. Degraded rangeland indicators specific to soil carbon storage are listed below and include soil surface loss or degradation and heavy stocking rates (exceeding carrying capacity of project land).

- 4. The project owner can demonstrate that its rangeland holdings outside of the Project are sustainably managed.

Documentation of Rangeland Management Practices

Conformance with the above eligibility requirements may be documented using the following methods (to be confirmed via site visit by CCX-approved verifier):

- Photographs of project site (e.g. aerial, remote sensing)
- Ranch records of stocking rates and grazing rotation patterns
- Records from agricultural extension agents or other agencies performing a monitoring function.

NRCS indicators of degraded rangeland related to below-ground carbon storage

The U.S. Natural Resources Conservation Service (NRCS) has established indicators of degraded rangeland that are published in *“Interpreting Indicators of Rangeland Health”* (U.S. Natural Resources Conservation Service, 2005). Eligibility to earn CCX Rangeland Soil Carbon Management Offsets based on restoration of degraded rangeland requires that the included rangelands must fall under the NRCS designation “Extreme” or “Moderate to Extreme” for indicators 1 and 2, and “Slight to Moderate, Moderate, Moderate to Extreme or Extreme” for indicator 3 to qualify as degraded. The applicable indicators are summarized below. A project site may qualify as degraded if any of the following indicators are present.

Indicator: Bare Ground

Indicator	Degree of Departure from Ecological Site Description and/or Ecological Reference Area(s)	
	Extreme	Moderate to Extreme
Bare Ground	Much higher than expected for the site. Bare areas are large and generally connected.	Moderate to much higher than expected for the site. Bare areas are large and occasionally

		connected.
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Indicator: Soil Surface Loss or Degradation

Indicator	Degree of Departure from Ecological Site Description and/or Ecological Reference Area(s)	
	Extreme	Moderate to Extreme
Soil Surface Loss or Degradation	Soil surface horizon absent. Soil structure near surface is similar to, or more degraded, than that in subsurface horizons. No distinguishable difference in subsurface organic matter content.	Soil loss or degradation severe throughout site. Minimal differences in soil organic matter content and structure and subsurface layers.

Indicator: Annual Production

Indicator	Degree of Departure from Ecological Site Description and/or Ecological Reference Area(s)			
	Extreme	Moderate to Extreme	Moderate	Slight to Moderate
Annual Production	Less than 20% of potential production for the site based on recent weather.	20-40% of potential production for the site based on recent weather.	40-60% of potential production for the site based on recent weather.	60-80% of potential production for the site based on recent weather.