



# Cattle Producer's Handbook

Range and Pasture Section

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## Global Climate Change: Opportunities and Challenges for Rangeland Managers

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Carbon dioxide (CO<sub>2</sub>) is one of the major greenhouse gases contributing to global climate change. The burning of fossil fuels by is a primary source of CO<sub>2</sub>. Methane and nitrous oxide are more potent greenhouse gases but occur in much smaller quantities. The current focus of reducing greenhouse gases on rangeland is on sequestering CO<sub>2</sub>, because CO<sub>2</sub> from the atmosphere can be captured by plant photosynthesis and trapped in the soil. Rangelands can act as organic carbon soil sinks.

Research is beginning to shed light on management practices that may improve the carbon sequestering capacity of rangelands. This is becoming both economically and environmentally important. This fact sheet explores current economic opportunities as well as management challenges to consider in regards to storing CO<sub>2</sub> in rangeland soils.

Current economic opportunities allow rangeland owners to sell carbon offset credits in the commodity market. These offset credits are purchased by businesses, municipalities, or individuals that want to mitigate their "carbon footprint." The Chicago Climate Exchange (CCX) sets the contract specifications for the exchange program. The CCX is the world's first and North America's only active, voluntary, legally binding trading system to work toward reduction of greenhouse gas emissions. In addition to rangeland improvement projects, the CCX offers credits to the following projects: agricultural methane, landfill methane, coal mine methane, agricultural soil carbon, forestry, and renewable energy.

### Basic CCX Specifications for Rangeland Soil Carbon Management

Offset credits can be issued to rangeland owners who commit to increased carbon sequestration through grazing land management in eligible geographic areas. Eligible geographic areas are defined according USDA

Land Resource Regions and include only rangeland sites where long-term annual average precipitation is not less than 14 inches and not greater than 40 inches.

Eligible project types on rangeland include:

- Non-degraded rangeland managed to increase carbon sequestration through grazing land management that uses light to moderate stocking rates and sustainable livestock distribution.
- Restoration of previously degraded rangeland through adoption of sustainable stocking rates, rotational grazing, and seasonal use grazing practices initiated on or after Jan. 1, 1999.

Offsets are issued at standard rates depending on project type and location. Rates vary from 0.12 to 0.52 metric ton of CO<sub>2</sub> per acre per year. Fig. 1 maps out the USDA Land Resource Regions.

Offset projects involving less than 10,000 metric of CO<sub>2</sub> equivalent per year should be registered and sold through an Offset Aggregator. An Offset Aggregator is an entity that serves as the administrative representative, on behalf of offset project owners, of multiple offset-generating projects.

The following documentation is required to participate in the program: (1) map and photos of the property; (2) evidence of previously degraded status as defined by USDA NRCS, if applicable; (3) evidence of stocking rate (i.e., ranch records, grazing plan); and (4) Range Management Plan including project narrative, utilization, season of use, plant productivity, average grass height, dominant species, invasive species, precipitation, and drought mitigation. Offsets may be issued for each year that verifiable grazing practices have been implemented from 2003 to 2010.

Since January 2008 prices for carbon offset credits have ranged from \$1 to over \$7 per metric ton. For more information on the exchange visit [www.chicagoclimatx.com](http://www.chicagoclimatx.com).