

NRCS CONSERVATION INNOVATION GRANT
Final Report, December 31, 2019

Grantee Entity Name: Indian Land Tenure Foundation	
Project Title: Using Carbon Markets to Finance Grassland Conservation and Rangeland Restoration on Tribal Lands	
Agreement Number: 16-009	
Project Director: Bryan Van Stippen, ILTF Co-Project Director: Dr. John Gunn, SIG-NAL	
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Project End Date: 9/30/2019	

A. PROJECT STATUS

Objective 1. American Carbon Registry Indian Lands Carbon Offset Project Guidance

American Carbon Registry staff and NICC Program Director have completed the development of the *Tribal Land Guidance Document*. NICC Program Director requested a peer review by Brian Pierson, Attorney, Godfrey & Kahn, Dylan Jenkins ACF CF, Vice President of Portfolio Development at Finite Carbon, Dr. John Gunn, Executive Director, Spatial Informatics Group – Natural Assets Laboratory (SIG-NAL), and staff from the Climate Action Reserve. Comments were received and adopted into the *Document*. The *Document* has completed the public comment period. The following link provides access to the Document:

<https://americancarbonregistry.org/carbon-accounting/guidance-tools-templates/guidance-for-carbon-project-development-on-tribal-lands-v1.0>

Objective 2. Pilot Carbon Offset Projects on Indian Lands

2a. Mapping of Pilot Area Carbon Offset Opportunities

For each of the three collaborating tribes (Santa Ana Pueblo, Comanche Nation, Lower Brule Sioux Tribe), the following outline was used to develop a web-based mapping tool (“web map”) to support an initial assessment of carbon offset opportunities. The process allowed for customization by the tribe to use the web map tool to support other objectives beyond carbon.

1. Facilitated in-person meeting to define the types of data and analytics required by natural resource planners and managers (and other user groups).
 - a. Solicit a pre-meeting questionnaire and incorporate results into meeting planning
 - b. Develop an understanding of data needs and uses from in-person meeting with potential users of the tool
 - c. Example data include: basic land use/land cover (including municipal infrastructure such as roads and buildings); ownership data (Fractional

- consolidation, land descriptions, surveys, appraisals); natural resource inventory data (e.g., BIA and USFS Forest Inventory and Analysis data); ecosystem markets inventory (e.g., biomass/carbon, drinking water, irrigation)
- d. Build and maintain a single spatial data repository using no-cost online platforms and data sources (open source platform).
 - e. Assemble data from available sources and process new datasets if necessary
 - f. Conduct quality control for datasets, provide meta-data (information about the data sources)
 - g. Set up data server based on identified needs (e.g., on-site, SIG-NAL site, other)
2. Develop web mapping user-interface based on spatial analysis needs.
 - a. Available data layers will be clearly identified
 - b. Simple queries will be developed based on user needs
 - c. Other analytical tools will be incorporated as needed
 3. Product demonstration and training (in person/or online)
 4. Project follow-up (e.g., 6 months after map completion)
 - a. Scheduled remote meeting with tribal project partners to ensure the web-mapping tools are meeting their needs
 - b. Provide additional support in the form of adding data or new analyses

The resulting web maps are password accessible and secure to each tribe and do not require ongoing subscriptions or specialized hardware/software (see Figure 1 for example layout).

Following web map development for the three initial collaborating tribes, we identified other opportunities to deliver this tool to tribes interested in understanding the potential to develop carbon offsets on their lands. Those tribes include: Bay Mills Indian Community, Michigan; Sault Tribe of Chippewa, Michigan; Red Cliff Band of Chippewa, Wisconsin; and Jamestown S'Klallam Tribe, Washington. These additional tribes benefitted from the formalization of the process described above and developed as a direct result of this CIG project.

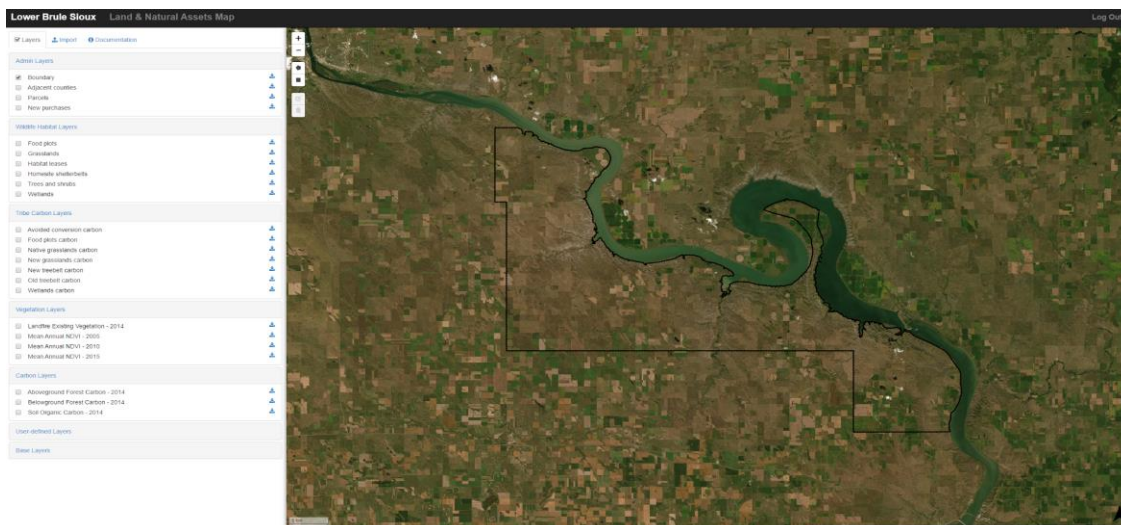


Figure 1. Example of Web Map interface developed for the collaborating tribes.

2b. Review of carbon offset methodologies

Each potential pilot project was assessed against a matrix of carbon offset methodologies developed by SIG-NAL. The matrix considered applicable methodologies from the American Carbon Registry (ACR), Climate Action Reserve (CAR), Verified Carbon Standard (VCS), and California Air Resources Board (ARB). Additionally, we evaluated the applicability of the Plan Vivo Standard – which is a platform that uses ecosystem service markets to support a mission of “engaging rural communities in sustainable land-use projects”. The Plan Vivo Standard has been used primarily in a developing world context but has been successful in delivering carbon offset revenue to communities engaged in land-use activities that increase carbon sequestration. Elements of the major offset program methodologies had applicability to the initial tribal lands evaluated (Santa Ana Pueblo, Comanche Nation, and Lower Brule Sioux Tribe). The primary obstacles to implementing these existing methodologies are the small parcel sizes and the need to implement a range of agricultural and rangeland practices to improve carbon sequestration. The methodologies are typically based on single practices, which would significantly increase the costs associated with verification of the offset projects. The forest carbon projects describe below are exceptions where the methodologies are well established and essentially one “improved forest management” practice is being implemented.

For the Lower Brule Sioux Tribe, we decided to pursue and approach that allowed us the flexibility of having multiple practices verified under one methodology. The Plan Vivo Standard allows this approach by requiring the project developer to propose the quantification methodology to be employed for each practice. We are able to use existing methodologies under ACR and CAR to provide the basis for the quantification of carbon practices listed below in Table 1.

2c. Prioritization of parcels for carbon project activities

Fond du Lac Band of Lake Superior Chippewa

The Fond du Lac Band of Lake Superior Chippewa has entered into a Memorandum of Understanding with NICC for the development of a carbon project. The Fond du Lac Band of Lake Superior Chippewa (FDL), located in northeastern Minnesota, is striving to reduce its carbon footprint and adapt to the impacts of climate change. Sustainability, energy efficiency, and the development of renewable energy are key goals, and FDL aims to protect the reservation and its resources for the cultural, spiritual, and physical well-being of its people.

The Reservation covers 101,000 acres, including forested areas, undisturbed wetlands, and wild rice waters. Animals commonly found on the Reservation include black bear, timber wolf, fisher, marten, bald eagle, owls, and white-tail deer. FDL also retains fishing, hunting, and gathering treaty rights in the Ceded Territories (areas ceded by the Band in treaties signed in 1854 and 1837), which consist of eight (8) million acres in the Arrowhead Region of Minnesota. However, FDL sees these steps as necessary in order to protect resources for everyone, not just tribal members.

Experts predict that the climate in Minnesota will become warmer through the century, with more precipitation extremes ranging from flooding to drought. Air pollution is expected to increase as a

result of the warmer temperatures. These changes could lead to greater threats from invasive species, such as the emerald ash borer. Some species may leave the area as temperatures increase—the moose population in northern Minnesota is already decreasing. The loss of maple trees could mean a decrease in the amount of maple syrup collected from sugar bush locations. Flooding or drought can be very harmful to the production of wild rice, which requires relatively constant water levels.

Traditional knowledge shows that climate change is indeed occurring in the area. Besides the decrease in moose population and increase in the emerald ash borer, FDL members also talk of how deer are moving farther north. FDL fully recognizes what climate change can mean for their way of life and are committed to slowing or reversing the warming trends that have been occurring, through responsible action. Like other tribes, FDL cannot "move" to follow species that no longer live on the Reservation or in the Ceded Territories.

OFFSET PROTOCOL / METHODOLOGY: California compliance Improved Forest Management carbon offset project in forestlands owned by the Fond Du Lac Band of Lake Superior Chippewa (FDL)

ACREAGE OF PROJECT: Assessment showed that approximately 9,197 acres of forestlands owned by the FDL are eligible for a carbon offset project

PROTOCOL REGISTRY: ARB Compliance Offset Protocol for U.S. Forest Projects (ARB Protocol 2015)

PROJECTED OFFSET QUANTITY: The project is expected to yield approximately **405,252 Carbon Offset Credits (CCOs)**

ANTICIPATED MARKET AVAILABILITY: 2020

ANTICIPATED MARKET PRICE: A project encompassing these forestlands has the potential to generate an estimated \$4.1 million in net revenue to FDL in the first ten (10) years.

OTHER: FDL & NICC will partner to provide national press story for offsets, social equity, & related sustainability performance.

Leech Lake Band of Ojibwe

The Leech Lake Band of Ojibwe has entered into a Memorandum of Understanding with NICC for the development of a forest-based carbon project. The Native people of the Leech Lake Reservation in Minnesota are part of the Ojibwe tribe. The Ojibwe, also known as the Anishinaabe (ah-nish-i-NAH-bay) and the Chippewa, are the second largest tribe in North America. The original homeland of the Ojibwe stretched from Saskatchewan to Ontario in Canada, and in the United States it included parts of North Dakota, Minnesota, Wisconsin, Michigan and Ohio. The Leech Lake Band of the Ojibwe, determined to sustain this important cultural resource, is engaged in sustaining their wild-rice beds using approaches that respect and weave together both traditional knowledge and Western science. These efforts include monitoring the production of the rice beds to collect baseline information, combating invasive species, and seeking other ways to restore the ecological conditions in which wild rice flourishes.

OFFSET PROTOCOL / METHODOLOGY: California compliance Improved Forest Management carbon offset project in forestlands owned by the Leech Lake Band of Ojibwe (LLBO).

ACREAGE OF PROJECT: Assessment showed that approximately 16,900 acres of forestlands owned by the LLBO are eligible for a carbon offset project.

PROTOCOL REGISTRY: ARB Compliance Offset Protocol for U.S. Forest Projects (ARB Protocol 2015)

PROJECTED OFFSET QUANTITY: The project is expected to yield approximately **550,000 Carbon Offset Credits (CCOs)** in the first year; it will yield approximately 16,900 credits every year thereafter.

ANTICIPATED MARKET AVAILABILITY: 2020

ANTICIPATED MARKET PRICE: A project encompassing these forestlands has the potential to generate an estimated \$8.7 million in net revenue to LLBO in the first ten (10) years.

OTHER: LLBO & NICC will partner to provide national press story for offsets, social equity, & related sustainability performance.

Keweenaw Bay Indian Community

The Keweenaw Bay Indian Community has entered into a Memorandum of Understanding with NICC for the development of a carbon project. The Keweenaw Bay Bands of Lake Superior Chippewa Indians is a federally recognized Indian tribe and the successor in interest of the L'Anse Band of Chippewa Indians. The L'Anse Reservation is both the oldest and largest reservation in Michigan. It was established under the Treaty of 1854. The U.S. Supreme Court has interpreted the Treaty of 1854 as creating permanent homelands for the Chippewa (Ojibwa Anishnabek) signatories to the treaty. The Treaty of 1842, which ceded lands to the federal government, was one of the largest land cession agreements ever made between the US Government and Indian tribes. It does include provisions and stipulations that the Chippewa retain their rights to fish, hunt and gather on these ceded lands. The reservation consists of 54,000 acres with approximately 14,000 acres owned by the tribal community.

OFFSET PROTOCOL / METHODOLOGY: California compliance Improved Forest Management carbon offset project in forestlands owned by the Keweenaw Bay Indian Community (KBIC)

ACREAGE OF PROJECT: Assessment showed that approximately 18,300 acres of forestlands owned by the KBIC are eligible for a carbon offset project

PROTOCOL REGISTRY: ARB Compliance Offset Protocol for U.S. Forest Projects (ARB Protocol 2015)

PROJECTED OFFSET QUANTITY: The project is expected to yield approximately **307,500 Carbon Offset Credits (CCOs)** in the first year; it will yield approximately 18,200 credits every year thereafter.

ANTICIPATED MARKET AVAILABILITY: 2020

ANTICIPATED MARKET PRICE: A project encompassing these forestlands has the potential to generate an estimated \$3.7 million in net revenue to KBIC in the first ten years.

OTHER: KBIC & NICC will partner to provide national press story for offsets, social equity, & related sustainability performance.

Koda Energy

NICC in conjunction with the American Carbon Registry developed a protocol to develop carbon credits for Koda Energy. The [AMS-I.C.: Thermal energy production with or without electricity](#) protocol was approved in May of 2019. The methodology quantifies emission reductions associated with the displacement of fossil fuels by renewable energy technologies that supply users with thermal energy. Koda Energy Koda is a 23.4 MW biomass heat and power plant utilizing the following fuels to produce the 220,000 lb/hr of high-pressure steam at 900 degrees F. This steam is used to drive the turbine generator and send heat to Rahr Malting Company to replace an average of 70 million cubic feet of natural gas consumption each month at their plant.

OFFSET PROTOCOL / METHODOLOGY: American Carbon Registry (ACR) CDM Approved Methodology AMS-I.C., Version 20.0 - Thermal energy production with or without electricity

PROJECTED OFFSET QUANTITY: 76,000 ERTs (credits) over 10 years (7,600/yr)

ANTICIPATED MARKET AVAILABILITY: 2020

ANTICIPATED MARKET PRICE: \$250,000 over ten (10) years

OTHER: Koda & NICC will partner to provide national press story for offsets, social equity, & related sustainability performance.

Lower Brule Sioux Tribe

Potential carbon offset project parcels were identified in collaboration with Dr. Shaun Grassel, wildlife biologist in the Department of Wildlife, Fish, and Recreation (DWFR) at the Lower Brule Sioux Tribe (LBST). The tribe has been restoring native grasslands from agricultural production for the last 16 years. In addition, other NRCS cost-share practices have been implemented throughout the parcels leased by the DWFR from the Lower Brule Sioux Tribe (see Table 1). The offset project is being implemented on 11,628 acres scattered throughout the LBST Reservation. The long-term “permanence” of the project will be secured through consecutive leases that total 50 years.

Table 1. Lower Brule Sioux Tribe Pilot Offset Parcel Summary.

Carbon Practice	NRCS Practice Code	NRCS Conservation Practice	Acres	CO2	N2O	CO2e	Per Year Mg CO2e	Total Accum. Mg CO2e	16 years or less Accum. Mg CO2e
Avoided Conversion (Grassland)	512	Forage and Biomass Plantings - Full Conversion	881	0.27	0.10	0.37	326.05	5,216.78	5,216.78
Food Plots	329	Conventional Tillage to No Till	556	0.22	0.13	0.35	194.49	2,112.81	2,085.60
Native Grassland (no date of establishment)	512	Forage and Biomass Plantings - Full Conversion	2,957	0.27	0.10	0.37	1,094.05	17,504.86	17,504.86

Carbon Practice	NRCS Practice Code	NRCS Conservation Practice	Acres	CO2	N2O	CO2e	Per Year Mg CO2e	Total Accum. Carbon Mg CO2e	16 years or less Accum. Carbon Mg CO2e
New Grassland	512	Forage and Biomass Plantings - Full Conversion	6,016	0.27	0.10	0.37	2,225.98	38,527.37	34,124.94
New Treebelt	380	Windbreak/Shelterbelt Establishment	323	1.00	0.08	1.08	348.41	4,809.50	4,685.79
Old Treebelt	380	Windbreak/Shelterbelt Establishment	187	1.00	0.08	1.08	201.86	8,727.93	3,228.51
Wetlands	390	Riparian Herbaceous Cover	709	1.10	0.08	1.18	836.13	4,352.50	1,352.13
TOTALS			11,628				5,226.99	81,251.76	68,198.62

Comanche Nation

The web-mapping portion of the carbon project with the Comanche Nation was completed and identified 1,700 acres avoided conversion of grasslands and shrublands to crop production and additional lands where low-till practices could have been implemented. Due to internal Comanche Nation staff turnover, the carbon assessment will not be conducted. At this time the NICC and SIG-NAL have completed all work with the Comanche Nation.

Santa Ana Pueblo

Following web-mapping completion and site visits, the Santa Ana Pueblo was not interested in pursuing a formal carbon offset project. However, as discussed below under Objective 2f, the Pueblo was interested in exploring the potential benefits of applying compost to rangelands. They were primarily interested in the potential productivity benefits of adding compost and agreed to a pilot project to provide an opportunity for the rangelands management team to implement the compost additions and monitor over time.

2d. Project development and offset transactions

Lower Brule Sioux Tribe

The Lower Brule project prospectus (“Project Information Note”) has been approved by Plan Vivo. Plan Vivo is a registered Scottish charity, which has created a set of requirements for smallholders and communities wishing to manage their land more sustainably. Plan Vivo has developed the Plan Vivo Standard, which is a framework for Payments for Ecosystem Services (PES) schemes for rural smallholders and communities dependent on natural resources for livelihoods. Eligible activities (for generating Plan Vivo Certificates) are afforestation and agroforestry, forest conservation, restoration and avoided deforestation. Plan Vivo project design is community-led.

Communities decide which land use activities (e.g. woodlots, agroforestry, forest conservation) will best address threats to local ecosystems and are of interest and value to them. We are continuing to develop this project by preparing a comprehensive Project Design Document outside of the grant period and anticipate the third-party verification to occur in late 2020.

2e. Aggregation of Small Projects

As discussed above, one challenge of developing offset projects on tribal lands is the variety of agricultural and rangeland activities being implemented across many parcels. This challenge is compounded by the land tenure status of much of this land as trust lands with multiple allotment holders. The Comanche Nation lands are a good example of this challenge and we were not able to overcome this in the face of the additional logistical challenges with staffing changes at the tribe. However, with favorable tenure status (such as the LBST example), the approach allowed within the Plan Vivo Standard to have multiple practices distributed across many parcels is a promising mechanism that we are continuing to explore with other Native American tribes and Alaska Native Villages.

2f. Adaptation of Existing Offset Methodology to New Geography

As indicated in the proposal, we had already identified an opportunity to test the adaption of a carbon offset methodology currently only approved for use in California. Our intent was to work with the Carbon Cycle Institute to adapt the existing ACR Compost Additions to Grazed Grasslands methodology, developed for California rangelands, to a New Mexico context. The Department of Natural Resources of the Pueblo of Santa Ana has indicated a willingness to test the methodology on trust lands under their management. The compost methodology adaptation was intended to build on a 2014 USDA CIG-funded project (Marin Carbon Project and the Carbon Cycle Institute) in California. The Pueblo of Santa Ana has produced compost in the past from biosolids, horse manure, and wood chips. Production and use of compost within the Pueblo would provide an economic benefit by eliminating hauling and tipping fees currently incurred for disposal of organic material. Following a site visit and subsequent discussions with Santa Ana Pueblo rangelands management staff, a pilot project applying composts to rangelands was initiated. Under the guidance of project collaborator Dr. Jeffrey Creque of the Carbon Cycle Institute, the Santa Ana Pueblo applied ¼ to ½” of compost of 3 1-acre test sites in 2016. Soil samples were taken before and after the application for the purposes of long-term monitoring (Figure X below). Moderate increases in soil carbon % were observed at 2 of the 3 sites, however the short-term trends are not expected to show dramatic differences. According to the research supporting the development of the California methodology, the benefits accrue later as the soil incorporates the organic material of the compost, which then increases water holding capacity and subsequently increases productivity.

The pilot project of the three one (1) acre test sites has been completed and proven to be successful. The photos below indicate the clear impact of the compost application where the vegetation has responded within the test sites. The Santa Ana Pueblo has developed a small compost facility using green waste materials from the Tamaya Resort, golf course, and stables. However, the Pueblo concluded they were not interested in pursuing widespread implementation of compost application on their rangelands. While this was disappointing to the project team, the further implementation

of this activity is not precluded and still may come about as the Santa Ana Pueblo monitors the progress of the test sites.

Objective 3. Expand Outreach and Education Network

The National Indian Carbon Coalition, over the duration of the four-year Conservation Innovation Grant period, has made significant impact with outreach and education to tribal nations, Alaska Native Villages and Corporations, and Native Hawaiian groups through attendance at tribal and environment related conference either as an attendee, vendor, or presenter. Below is the list of the events attended by the National Indian Carbon Coalition Program Director.

- Vendor, 7th Tribal Land Staff National Conference Santa Ana Pueblo, New Mexico, March 21-23, 2017.
- Participant, Heating the Midwest Conference, Minneapolis, Minnesota, April 10-11, 2017.
- Participant, Navigating the American Carbon World, San Francisco, California, April 18-21, 2017.
- Vendor, 35th Annual Native American Fish & Wildlife Society Conference, Rapid City, South Dakota, May 2-5, 2017.
- Presenter, First Nation Development Institute Regional Training in Conservation Planning and Opportunities through Ecological Stewardship, Billings, Montana, May 31- June 2, 2017.
- Vendor, 41st Annual National Indian Timber Symposium, Yakima, Washington, June 26-30, 2017.
- Vendor, Bureau of Indian Affairs Partners in Action Conference, Shakopee, Minnesota, July 17-20, 2017.
- Presenter, KCA Intertribal Land Use Committee, Lawton, Oklahoma, July 31, 2017
- Vendor, 2017 Tribal Lands & Environment Forum, Tulsa, Oklahoma, August 15-17, 2017.
- Affiliated Tribes of the Northwest Indians Fall Annual Convention, Spokane, Washington, September 18-21, 2017.
- Vendor, 2017 Food Sovereignty Summit, Green Bay, Wisconsin, October 2-5, 2017.
- Participant, Carbon Offset Workshop, Appalachian State University, Boone, North Carolina, October 5-7, 2017.
- Vendor, 74th National Congress of American Indians Annual Convention & Marketplace, Milwaukee, Wisconsin October 16-20, 2017.
- Vendor, 2017 Intertribal Agriculture Council Annual Conference, Las Vegas, Nevada, December 11-15, 2017.
- Vendor, Reservation Economic Summit, Las Vegas, Nevada, March 5-9, 2018.
- Vendor, Heating the Midwest, Cloquet, Minnesota, May 1-4, 2018.
- Participant, NRCS Conservation Planning Bootcamp, Lincoln, NE, May 7-25, 2018.
- Vendor, 42nd Annual National Indian Timber Symposium, Quinault Indian Nation, Ocean Shores, Washington, June 4-8, 2018.

- Presenter, Minnesota Tribal Environmental Council, Grand Portage, Minnesota, June 28, 2018.
- Vendor, 2018 BIA Partners in Action conference, Potawatomi Casino & Resort, Milwaukee, Wisconsin, July 17-19, 2018.
- Vendor, 2018 Tribal Lands & Environment Forum, Spokane, Washington, July 13-17, 2018.
- Presenter/Vendor, 2018 L.E.A.D Institute Conference, Morongo Casino Hotel & Resort, Cabazon, California, September 26-28, 2018.
- Exhibitor, United South and Eastern Tribes (USET) Annual Conference, Seneca Nation of Indians, October 8-11, 2018.
- Exhibitor, National Conference of American Indians (NCAI) 75th Annual Convention & Marketplace, Denver, Colorado, October 21-25, 2018.
- Presenter/Exhibitor, 2018 Kawerak Regional Conference, Nome, Alaska, November 5-9, 2018.
- Presenter, Michigan Tribal Environmental Council, Keweenaw Bay Indian Community, Baraga, Michigan, December 3-4, 2018.
- Exhibitor, Intertribal Agriculture Council (IAC) Annual Membership Meeting, Las Vegas, December 10-14, 2018.
- Attendee, Powering Local Leadership: A Summit on Energy & Resilience, Appleton, Wisconsin, January 24-25, 2019.
- Presenter/Exhibitor, 9th Tribal Land Staff National Conference, Shakopee Mdewakanton Sioux Community, Shakopee, Minnesota, March 26-28, 2019.
- Attendee, MTERA Regional Energy Workshop, Potawatomi Hotel & Casino, Milwaukee, Wisconsin, May 8-9, 2019.
- Attendee/Moderator, 7th Annual Workshop of Rising Voices, Center for Atmospheric Research in Boulder, Colorado, May 14-17, 2019.
- Attendee, Climate Change Adaptation for Tribes and Tribal Partners, Bay Mills, Michigan, May 3-5, 2019.
- Vendor, 43rd Annual National Indian Timber Symposium, Seminole Tribe of Florida, Hollywood, Florida, June 10,14, 2019.
- Vendor, 26th Annual Hawai'i Conservation Conference, Honolulu, Hawaii, July 9-12, 2019.
- Presenter, 2019 Soil and Water Conservation Society Conference, Pittsburgh, Pennsylvania, July 29-August 1, 2019.
- Vendor, 2019 Tribal Lands & Environment Forum, Palm, Springs, California, August 19-22, 2019.
- Vendor/Presenter, 2019 Food Sovereignty Summit, Green Bay, Wisconsin September 23-26, 2019.

Along with outreach, the National Indian Carbon Coalition has developed promotional materials in the form of the [Nation Indian Carbon Coalition website](#) and the National Indian Carbon Coalition Newsletter (two (2) volumes have been published one in 2016 and one in 2018) which are attached as PDF files.