Cherokee Nation

STRATEGIC ENERGY PLAN

March 1, 2025

Chuck Hoskin Jr.,
Principal Chief

“Cherokee Nation is leading by example to foster a sustainable future, both locally and globally, for generations to come. Every day presents an opportunity to honor and protect our planet, not just through grand gestures but through daily actions. By combining science, service, and sustainability, we are poised to make even more positive change. On Earth Day and every day, we remember gratitude and careful stewardship for this planet we all share.”

Christina Justice,
Secretary of Natural Resources

“Throughout history, tribes have been the land’s natural stewards, nurturing a profound connection to the land that has sustained us since the beginning of time. As the largest tribe in the country, we carry a rich legacy of environmental guardianship that we are eager to continue to build upon. We embrace the opportunity to further energy goals and to be leaders in the realm of environmental stewardship. This journey is an exciting one, and a vital responsibility that we are committed to fulfilling for future generations.”

ENERGY VISION

Cherokee Nation envisions a future in which our energy is Clean, Smart, and Equitable.

ENERGY MISSION

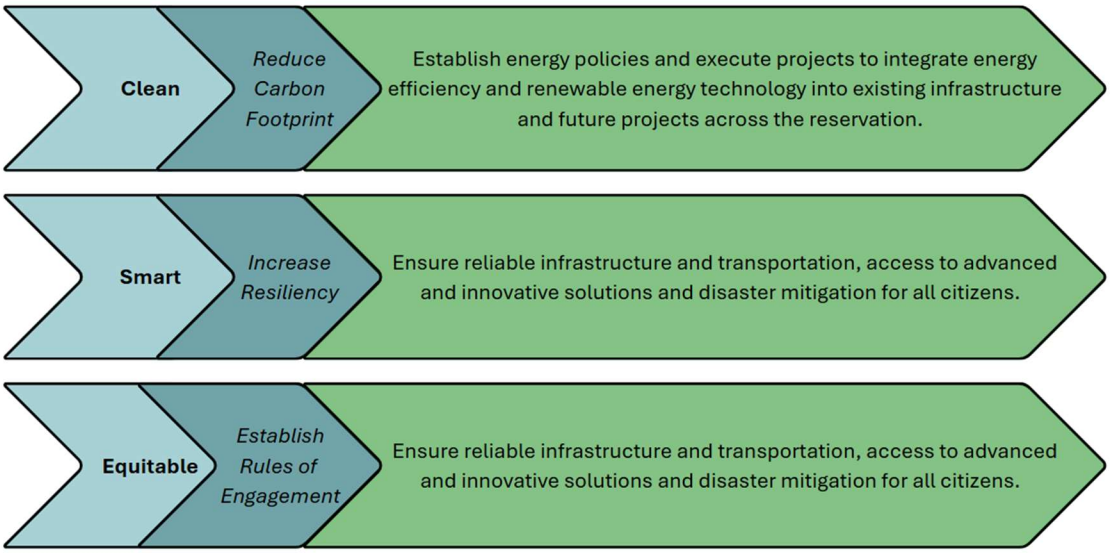
To reaffirm sovereignty and strengthen protections of the environment and Cherokee culture through clean, smart, and equitable policies and energy projects.

EXECUTIVE SUMMARY

In April of 2024, Principal Chief Chuck Hoskin Jr. issued Executive Order (EO) 2024-03-CTH, an *Executive Order on Further Environmental and Climate Change Goals*, which established the Cherokee Nation Task Force on Clean Energy (herein: Task Force). The goal of this Task Force is to, through its efforts, provide a cohesive path toward substantial reduction of the tribe's carbon footprint through the expansion of clean energy and carbon reduction projects.

In this vein, the Task Force has conducted comprehensive strategic planning efforts to provide a guide toward advancement of carbon reduction and energy resiliency activities. Over the last year, the Task Force has convened in numerous meetings, conducted formal interviews of key stakeholders, performed a largescale citizen survey, conducted industry research, analyzed quantitative and qualitative data, and utilized the findings to develop an Energy Vision and related priorities and recommendations, which are detailed in this document.

The Task Force developed the Energy Vision to provide a foundation for all energy related efforts moving forward: *Cherokee Nation envisions a future in which our energy is Clean, Smart, and Equitable*. This Vision shaped the development of an Energy Mission and related Guiding Principles. These Guiding Principles are designed to serve as foundational priorities for all energy projects of the tribe:



Under each Guiding Principle, the Task Force identified several areas of potential focus for future initiatives, including those related to operationalizing tribe-wide processes and developing innovative solutions to citizens' energy concerns. Additionally, the Task Force identified two areas of capacity improvement as necessary first-steps toward pursuit of the Energy Vision: 1) establishing a centralized energy department or program and 2) establishing a centralized data management system for utilities and infrastructure.

This document provides background information regarding the activities of the Task Force and the types of data collected and assessed to inform its conclusions. As a true strategic plan, this document is designed to be a living document, revisited periodically by the Task Force to ensure continued alignment with tribal and citizen priorities. Progress toward the goals stated herein will be provided to the Principal Chief in an Annual Report, as required under EO 2024-03-CTH.

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BACKGROUND

I. BACKGROUND

Cherokee Nation is the sovereign government of the Cherokee people, with a population nearing 500,000 citizens. Cherokee Nation's reservation, the boundaries of which were fixed by treaty in 1866, is made up of 6,950 square miles or 4,447,716 acres, spanning across all or parts of 14 counties in northeastern Oklahoma. With a mission to protect our inherent sovereignty, preserve and promote Cherokee culture, language, and values, and improve the quality of life for the next seven generations of Cherokee Nation citizens, the tribe is committed to pursuing meaningful projects to protect the resources that citizens rely upon and to ensure their availability and accessibility.

Over the past decade, energy demand has continued to rise due to population increases, technological advancements, economic development, and extreme weather events. With over 97% of the Cherokee Nation Reservation being rural, this increased demand is quickly outpacing the aging infrastructure for energy generation and delivery that serves some of Cherokee Nation's most vulnerable citizens. Rural communities are disproportionately impacted by service outages, causing particular concern during extreme weather events, when some homes may go without electricity for over a week at a time. According to the U.S. Department of Energy Low-Income Energy Affordability Data Tool[1], the average cost of energy within the Cherokee Nation Reservation is $2,619 annually, or $218 per month. Of all households within the Reservation, approximately 30% are considered energy burdened or energy impoverished, indicating that a large proportion of household income is dedicated to energy bills. As suggested by results from a Cherokee citizen survey, this proportion is likely much higher for Cherokee citizens specifically.

Furthermore, Cherokee Nation itself has seen exponential growth in recent years to address the varied needs of citizens. Construction of advanced service facilities, including a new tribal hospital and a behavioral health treatment facility, is underway, and governmental services at every level are proceeding toward digitization of records, applications, and data tracking. These facilities and technological advancements allow the tribe to more effectively serve an ever-growing population but rely intrinsically upon the utility grid to provide continued essential services. Energy requirements grow as services are expanded, adding burden to the existing grid system. In this way, energy generation, distribution, and consumption are inherent concerns both for Cherokee citizens and the tribe itself.

Picture 1. Cherokee women at the 2024 Cherokee National Holiday. Courtesy of Cherokee Nation Facebook.

[1] U.S. Department of Energy, "Low-Income Energy Affordability Data (LEAD) Tool," https://www.energy.gov/indianenergy/low-income-energy-affordability-data-lead-tool

Along with the need to ensure reliable and adequate access to energy resources for our citizens and the services they utilize, Cherokee Nation also recognizes the responsibility we all share as stewards of the land upon which we reside. While technological advancements and economic development rely upon expanded or improved energy generation and distribution methodologies and infrastructure, such advancement must be balanced with responsible consideration of the natural and cultural resources that may be affected by such efforts.

Cherokee Nation has a long history of projects and initiatives that seek to mitigate or remediate negative impacts on the environment, ranging from Cherokee Nation department-level initiatives for paper use reduction and phase-out of fluorescent bulbs in offices, all the way to community-scale brownfields and Superfund remediation projects and landscape-scale habitat conservation initiatives. Other efforts, such as a centralized recycling program for government operations, seek to reduce environmental burden caused by essential tribal functions.

Cherokee Nation's Constitution establishes the cabinet position of Secretary of Natural Resources. This position oversees the governmental division of Natural Resources, managing initiatives such as those above and advising the Chief and Tribal Council on matters of policy related to environmental, conservation, sustainability, and other related concerns. The creation of this cabinet position attests to Cherokee Nation's high degree of value placed upon the connection between environment and culture, as well as the responsibility of the tribe as steward of our land. In recent years, this governmental division has grown substantially to house 10 departments and approximately 100 employees dedicated to preservation, improvement, and promotion of natural resources, including Land Management & Agriculture, Wildlife Conservation, Environmental Programs, Wildland Fire Management, Waste Management, Geographic Information Systems, Tribal Historic Preservation, Ethnobiology, Grants & Compliance, and an Administrative Operations department to support the functions of the division.

As clean energy technologies have become available, Cherokee Nation has expanded upon our project portfolio to include projects that marry the interrelated priorities of energy resiliency with environmental responsibility, seeking ways to develop clean energy solutions for citizens and government operations while reducing carbon emissions. Projects include energy generation projects, such as installation of solar panels on Cherokee community buildings; energy saving projects, such as incorporation of efficient materials and practices on new projects; and electric vehicle charging infrastructure development, such as free-to-the-public charging stations at Cherokee Nation facilities.

Recognizing that the need for such projects and initiatives grows as Cherokee Nation continues to expand services and develop capacities, it has become evident that strategic consideration of interrelated priorities is required in order to ensure intentional and environmentally responsible progress in the energy sector.

Picture 2. Principal Chief Chuck Hoskin Jr. signing the Executive Order to Further Environmental and Climate Change Goals at the Cherokee Nation Earth Day Celebration in April 2024. Courtesy of Tahlequah Daily Press.

As such, Principal Chief Chuck Hoskin Jr. signed into action the *Executive Order Limiting Single Use Plastic Bottles, Establishing a Task Force on Clean Energy, and Cherokee Nation Youth Climate Change and Environmental Protection Task Force (*short name: *Further Environmental and Climate Change Goals)* (2024-03-CTH) on April 17, 2024. Through this EO, he assembled the following leaders across Cherokee Nation to collaborate on the creation of a Strategic Energy Plan to guide the tribe in future energy endeavors and substantial reduction of the tribe's carbon footprint:

Task Force Standing Members

- **Chair: Christina Justice**, *Secretary of Natural Resources*
- **Dr. Corey Bunch**, *Chief of Staff*
- **Ed Fite**, *Chairperson,* Environmental Protection Commission
- **David Moore**, *Executive Director,* Management Resources
- **Jon Asbill**, *Senior Administrator,* Construction Projects
- **Dr. Stephen Jones**, *Executive Director,* Health Services (designee: **Christie Harris**, *Clinic Administrator III*, WPMHC)
- **Andy McMillan**, *Director of Economic Development & Special Projects*, Cherokee Nation Businesses
- **Todd Enlow**, *Executive Director*, Housing Authority of Cherokee Nation
- **Kim Teehee**, *Executive Director,* Government Relations

Additional advisory members were also identified and included in regular meetings, discussions, and other planning processes. These participating members contributed significant degrees of subject matter expertise and broad perspectives to the planning efforts. (See Section VII. Conclusion for a list of advisory members and contributors.)

Through review of past and current projects, results of large-scale citizen surveys, interviews with key stakeholders, consultations with field experts, assessment of existing policies and initiatives, analysis of Cherokee Nation energy and utility data, and collaborative workshops, this Task Force identified clear and overarching priorities of

the tribe as related to energy, ultimately building a plan that seeks to address not only energy sustainability, but also broad topics related to energy sovereignty and resiliency.

From these priorities, the Task Force developed a Vision, Mission, and set of Guiding Principles to serve as a framework for the development of future policies, initiatives, and projects. Taking these into consideration, the Task Force assessed current conditions within the tribe and developed recommendations for initial steps to take toward pursuit of successful carbon emission reduction and expansion of clean energy initiatives. The Task Force also identified critical capacity building needs to facilitate forward progress toward energy related goals and ensure the longevity and applicability of the Strategic Energy Plan into the future.

The interrelated priorities of the tribe, including those associated with sovereignty, environmental justice, citizen needs, and business and economic development, create a wide landscape of potential for Cherokee Nation as related to clean energy and carbon reduction. As such, the Task Force did not design this Plan to prescribe discrete projects to pursue, but rather to create a set of foundational goals and principles to guide decision making, which can be applied to any number of projects that the tribe may consider moving forward.

Moving forward, this Strategic Energy Plan will serve as a guide for identifying, prioritizing, and implementing projects and/or partnerships in a way that consistently aligns with the tribe's priorities, thereby ensuring that tribal resources are utilized most effectively in pursuit of long-term goals.

Picture 3. Cherokee Nation Color Guard at the 2023 Cherokee National Holiday. Courtesy of Cherokee Phoenix.

STAKEHOLDER ENGAGEMENT & DATA COLLECTION

II. STAKEHOLDER ENGAGEMENT & DATA COLLECTION

Task Force

The Clean Energy Task Force members represented the key stakeholders throughout the strategic planning process. The Task Force and advisory members, representing Natural Resources, Health Services, Construction, Management Resources, Housing, Transportation and Infrastructure, Business Development, and Emergency Management departments, provided a wide variety of expertise and unique insight into both service-based and operational considerations of government and business functions. This Task Force met monthly to shape the strategic planning process to uniquely meet the needs of the tribe while developing this Strategic Energy Plan.

The Task Force met a total of nine times in 2024 and 2025 for discussion-based workshops and presentations of collected data led by Task Force Chair, Secretary Christina Justice, and her team. Secretary Justice's team utilized the feedback and action items from the Task Force meetings to make progress outside of the monthly meetings to optimize the time the Task Force had together.

To support the Task Force members in the strategic planning process, a diverse set of additional stakeholders were consulted. Intentional stakeholder engagement is incredibly important in the strategic planning process to ensure representation of all perspectives. The Task Force utilized an energy survey of Cherokee citizens living within the reservation, the results of the Cherokee Nation Youth Climate Change and Environmental Protection Task Force, and the vast internal knowledge of the departments within the tribal government to add depth to the decisions made.

Citizens

Youth Survey.

As directed by the Executive Order on Further Environmental and Climate Change Goals, the Cherokee Nation Youth Climate Change and Environmental Protection Task Force was assembled consisting of five Cherokee youth citizens. This Youth Task Force developed and released a survey to collect the perspective of citizens aged 14-24, and submitted a report to Chief Hoskin, Jr. on August 15, 2024, which detailed recommendations for actions the tribe might take to address climate change and environmental concerns. The results of the survey and the Youth Task Force's subsequent recommendations to Chief Hoskin Jr. were taken into consideration by the Clean Energy Task Force in the development of this Strategic Energy Plan.

Picture 4. Cherokee Nation Youth Climate Change and Environmental Protection Task Force at the 2024 Earth Day Celebration. Courtesy of Tahlequah Daily Press.

All-Citizen Survey.

The Clean Energy Task Force released the 2024 Clean Energy Citizen Survey through the Gadugi Portal[2] on October 8, 2024, which was held open for responses for three weeks, closing on October 29, 2024. This survey collected data on a variety of energy topics including home energy use and cost, interest in energy efficiency, concerns for energy resiliency, and perspectives on clean energy technology being implemented within the Cherokee Nation Reservation. There was a total of 2,670 responses from Cherokee Nation citizens living within the reservation. The survey results were analyzed, and a report of those results was prepared by Secretary Justice's team and submitted to the Clean Energy Task Force on January 8, 2025, for consideration and incorporation into this Strategic Energy Plan.

Cherokee Nation Departments

Interviews & Qualitative Data.

Formal interviews were conducted by Secretary Justice's team with members of the Task Force as well as other tribal departmental leaders to understand and record the history of energy projects within the tribe as well as ongoing efforts and aspirational projects related to clean energy, environmental sustainability, or carbon reduction efforts. Because these historical and ongoing projects were pursued organically, their intended goals and outcomes offered insight into existing energy priorities across tribal functions. As such, all collected information was logged in a tracker and then analyzed to identify common themes and areas of interest as well as gaps in capacity or areas of hesitation. Results of that data analysis provided a foundation upon which recommendations for future initiatives were developed.

A total of eleven (11) formal interviews were conducted with representatives from the following departments, Cherokee Nation entities, and partners:

- Grants and Compliance, Natural Resources
- Facilities Management, Management Resources
- Construction Management
- Health Services
- Transportation and Infrastructure
- Environmental Programs, Natural Resources
- Emergency Management
- Cherokee Nation Businesses
- Francis Energy (external)

Analysis of data gleaned from these interviews resulted in a recorded 46 projects, practices, and future ideas related to energy.

Research & Quantitative Data.

Additional meetings were held to understand how energy data is managed by Cherokee Nation. Within the tribal government, there are varying methods by which buildings are managed and how utility bills are paid. The most common is a centralized billing system for the meter accounts within the lease pool, which is managed by the Financial Resources department in collaboration with Management Resources. This is a financial based system that manages over 1,000 utility accounts for electric, sewer, waste, water, and natural gas. Data from this system was taken to inform the current state of energy consumption and spending across

[2] Cherokee Nation believes in ᏕᏍᎩ or "Gadugi" (working together). The Gadugi Portal empowers tribal citizens to stay engaged and connected, allowing for the betterment of the tribe as a whole. This portal allows citizens to connect directly to services they need, respond to surveys created by various departments, update personal account information, and apply for financial assistance provided through the tribe.

government functions of the tribe, as well as to inform the calculation of Cherokee Nation's carbon footprint (see Section III. Data Analysis below).

Financial Resources also manages Cherokee Nation's transportation fleet data. Cherokee Nation owns approximately 470 tribally owned vehicles, a portion of which are electric, and has possession of approximately 420 GSA vehicles. Vehicles are allocated to and so managed by various departments throughout Cherokee Nation.

To gain additional context for Cherokee Nation's building infrastructure, meetings were held with the Cherokee Nation GeoData Center, which maintains the tribe's centralized facilities and assets database. This database, combined with staff's vast historical knowledge regarding buildings, provided necessary context for understanding the scope and limitations of existing data tracking systems, in addition to a more holistic picture of existing Cherokee Nation assets and facilities.

Throughout the reservation, Cherokee Nation and Cherokee Nation Businesses own a total of approximately 445 buildings including hospitals and health centers, community centers, casinos, and tribal administration buildings. Out of these buildings, Cherokee Nation and Cherokee Nation Businesses occupy 376 buildings for various functions. There are an additional 39 buildings that Cherokee Nation leases for programs to operate out of, some of which are outside of the boundaries of the reservation.

Policies & Past Directives from Cherokee Nation Leadership.
Past and existing policies, legislation, and orders passed by Cherokee Nation Administration were taken into consideration when identifying common themes and priorities among past and current initiatives. These added depth to the Task Force's consideration when developing the Guiding Principles and recommended initiatives put forth in this Plan.

As previously alluded to, the most relevant piece of policy is the Executive Order on Further Environmental and Climate Change Goals, which established this Task Force with the directive to "create a cohesive path to a substantial reduction in the tribe's carbon footprint through the expansion of clean energy and energy reduction projects." This focus on reduction of the tribe's carbon footprint is heavily valued by the Task Force.

Additional policy that was considered by this Task Force was the Cherokee Nation Environmental Policy within the Cherokee Nation Code and, specifically, the Reduce, Reuse, and Recycle Act of 2009. These policies lay out goals of energy usage reduction and improved recycling services while maintaining the top priority of preserving Cherokee land and culture.

Picture 5. Cherokee Nation W.W. Keeler Tribal Complex. Courtesy of Cherokee Nation Website.

DATA ANALYSIS

III. DATA ANALYSIS

Current Utility Data Analysis

To ensure a future that aligns with the Cherokee Nation Energy Vision, the Task Force needed to understand the current energy landscape. As of 2025, there is no energy data management system for utility bills or a centralized digital database for mileage totals for tribal or GSA vehicles. As such, there is no method of readily ascertaining the tribe's comprehensive cost of utilities or energy usage across all facilities. With a tribe as expansive as Cherokee Nation, determining a precise baseline carbon footprint is a complex task and one that will take cross-departmental cooperation and creation of new systems and processes.

Though comprehensive data is lacking, using the data available through the lease pool financial management system, the Task Force analyzed electric and natural gas utility data for approximately 400 buildings to roughly assess the current state of carbon emissions associated with utility usage.

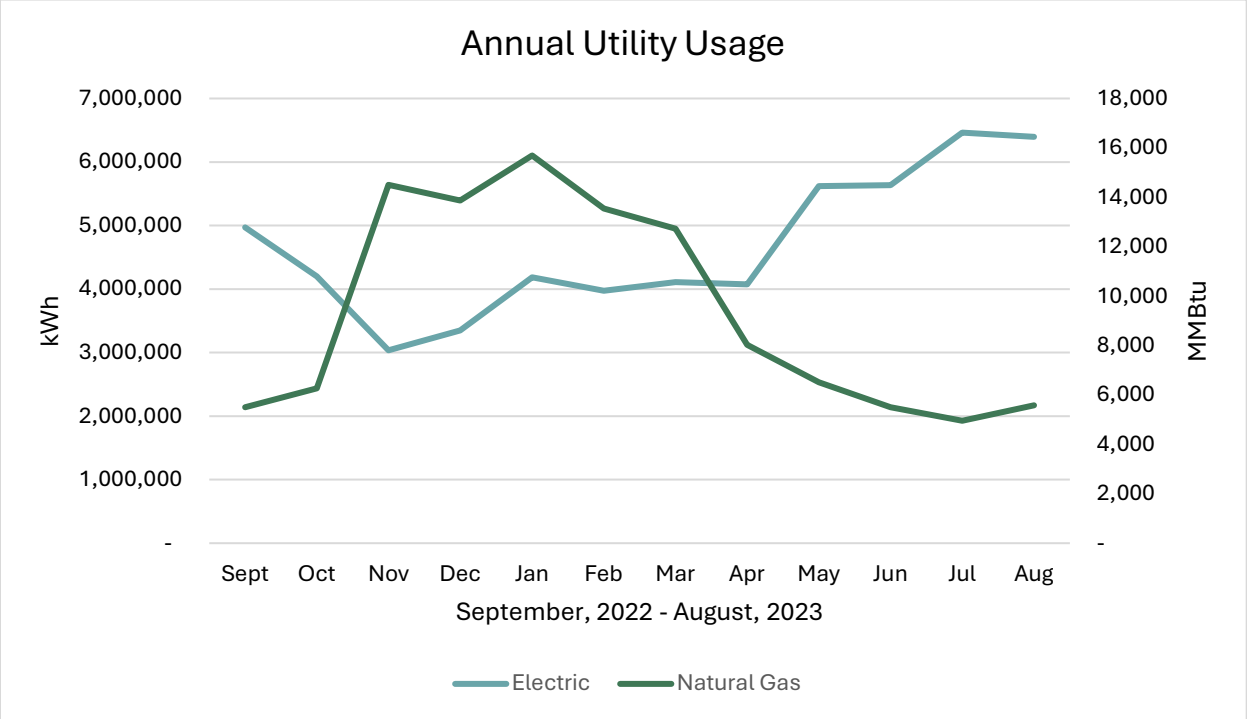


Figure 1. Estimated energy load from available data of buildings included in Cherokee Nation centralized utility bill payment system utilizing the most recent, usable data (September 2022 to August 2023)

Total Electric Usage: 56,019,029 kWh
Total Natural Gas Usage: 112,704 MMBtu

Carbon accounting quantifies the carbon emissions released to the atmosphere due to the consumption of energy. Carbon accounting standards specify different methods of calculation for different types of emissions. A direct emission, or an emission released at the site of the facility owned by Cherokee Nation (e.g., the emissions released from the combustion of natural gas in a boiler to heat a facility) is considered Scope 1. An indirect emission, or an emission released from the generation of an energy source done off-site (e.g., electricity from a grid that is supplied by coal, natural gas, and renewable electricity generation) is considered Scope 2. Each of these categories have unique carbon accounting methodologies. (See Appendix 1 for additional information on Scope 1 and 2 emissions.) The calculation for this report was completed using the U.S. Environmental Protection Agency's "Greenhouse Gas Equivalencies Calculator- Calculations and References."[3] The associated carbon emissions of the annual energy usage of lease pool buildings are calculated in Figure 2.

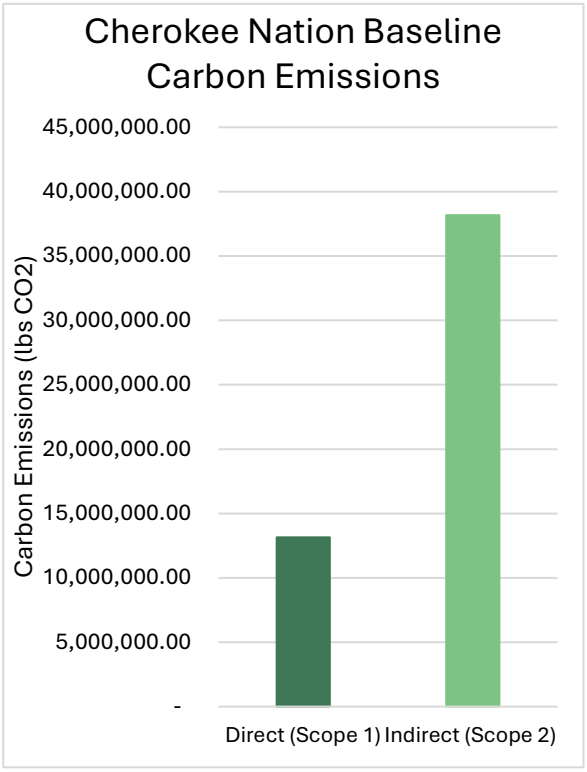


Figure 2. Estimated Scope 1 and 2 emissions from available data of buildings included in Cherokee Nation centralized utility bill payment system utilizing the most recent, usable data (September 2022 to August 2023

Scope 1 Carbon Emissions: 13,146,445.9 pounds CO2 or 5,963.2 metric tons CO2
Scope 2 Carbon Emissions: 38,170,993.5 pounds CO2 or 17,314.3 metric tons CO2
Total Carbon Footprint: 51,317,439.36 pounds CO2 annually

Past Carbon Reduction Efforts

Cherokee Nation has implemented a variety of projects aimed at reducing the tribe's direct impact on the environment and supporting carbon offsetting activities for Cherokee citizens. These projects are varied in both nature and scope, and include activities that will require further analysis to determine total carbon emission offset in future reports. However, electrification projects implemented in recent years have been assessed for quantifiable carbon emission reduction.

[3] U.S. Environmental Protection Agency, "Greenhouse Gas Equivalencies Calculator – Calculations and References," https://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator-calculations-and-references

Since 2017, Cherokee Nation has been increasing infrastructure for charging of electric vehicles within the Reservation. Currently, 32 electric vehicle (EV) chargers have been installed throughout the Reservation at various locations, such as the W.W. Keeler Tribal Complex, casinos, and health clinics (see Appendix 2 for complete map).

Picture 6. Electric vehicle chargers with solar canopy at the Hard Rock Hotel & Casino Tulsa. Courtesy of Francis Energy.

Most of these chargers are free and available to the public. While many pull from the grid, 12 of the chargers utilize a solar canopy to deliver power to vehicles carbon-free, 11 of which have tracking capabilities. In 2023 and 2024, the chargers with data tracking capabilities administered a total of 238,085 kWh of electricity to electric vehicles. Assuming an electric vehicle can drive approximately 3.6 miles per kWh4, the chargers have powered 857,106 miles of low emission travel in the past two years. Utilizing the broad assumption that an average vehicle will achieve 22.8 miles per gallon[5], the Task Force estimated that 37,592 gallons of gasoline have been diverted from combustion and release of the associated carbon emissions.

Using these estimations, an estimated *305,623 pounds of CO2* are being diverted from entering the atmosphere due to these chargers annually.

Under Principal Chief Hoskin Jr.'s *Housing, Jobs and Sustainable Communities Reauthorization Act of 2022,* Cherokee Nation has implemented 15 solar panel systems on community buildings throughout the reservation through its Community Solar Project, introducing 181 kW of carbon-free energy to offset energy burden of Cherokee communities. As of January 2025, these systems have produced over 481,900 kWh of carbon-free energy to power essential Cherokee Nation community centers and gathering places, resulting both in overall carbon reduction within the Reservation as well as cost-savings to those community centers.

Picture 7. Cherokee Nation Administration at solar installation site. Courtesy of Anadisgoi.

Annually, an estimated *176,704 pounds of CO2* are being diverted from entering the atmosphere through this project.

[4] U.S. Environmental Protection Agency, "Greenhouse Gas Equivalencies Calculator – Calculations and References," https://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator-calculations-and-references

[5] ibid.

Citizen Engagement Results

Youth Climate and Environmental Task Force Survey Results.

Through the results of their targeted survey, the Youth Task Force produced recommendations for Cherokee Nation to address climate change and environmental degradation. The survey received 408 responses from Cherokee youth across the country, over half of which were from within Oklahoma. The top three concerns identified by the youth participants were pollution, climate change, and water issues and over 80% of participants agreed that they believe that climate change impacts the environment. The Youth Task Force provided recommendations that focused on provision of education and outreach, expansion of waste management efforts, and prioritization of environmental protections of land and waterways. The recommendations of Cherokee youth are essential to ensure the resulting energy plan will sustain and contribute to the prosperity of the next seven generations of Cherokee people and so are held in high regard.

2024 Clean Energy Citizen Survey Results.

A critical piece that informed all aspects of the Strategic Energy Plan was the 2024 Clean Energy Citizen Survey. The survey consisted of a combination of multiple choice and open-ended questions. Through the excellent responses, the following topics were identified as areas of primary interest by the citizens. A selection of relevant results is discussed below, and complete results from the survey can be requested from Natural Resources.

In the responses, Cherokee Nation citizens prioritized reducing utility bills and energy usage. These costs are a burden on citizens and many of the initiatives recommended by this Task Force are aligned with alleviating this burden. Energy efficiency was a key topic covered within the survey and citizens identified financial support for energy efficient upgrades, education on low-cost actions, and increasing their energy knowledge as key areas of interest.

The following figure is created directly from responses of the participants in a “Select All That Apply” question on residential energy efficiency equipment upgrades.

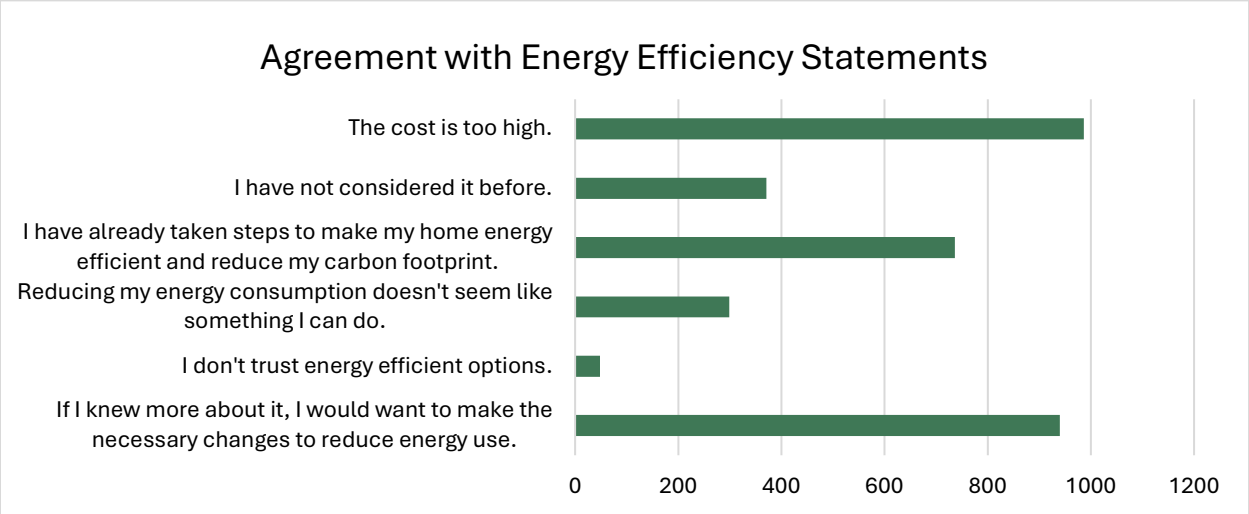


Figure 3. Results from the 2024 Clean Energy Citizen Survey.

Need for increased energy resilience is another significant takeaway, as many citizens expressed their concerns with poor insulation and home weatherization, interest in home generators and decreasing dependency on the grid, and need for resources in the case of a power outage.

Additional survey questions were used to gauge the citizens' support for various clean energy technologies, the results of which can be seen in the following figure. The strong support for residential solar panels seen here was reinforced as a main priority of the citizens in other questions in the survey.

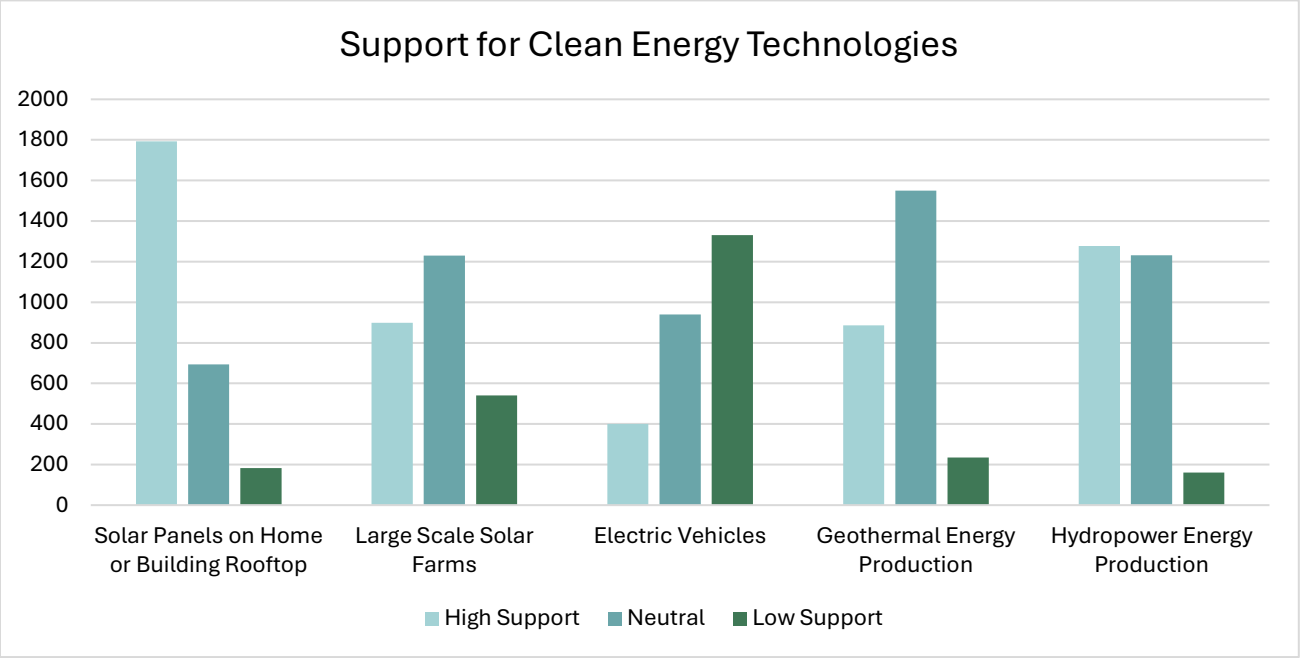


Figure 4. Results from the 2024 Clean Energy Citizen Survey.

The final question of the survey was an open response call for suggestions on what energy projects citizens would like to see Cherokee Nation pursue. Each answer was read and thoughtfully considered, and findings were synthesized into common themes. These responses indicated a clear focus on protecting the Cherokee people, land, animals, and resources while in pursuit of any energy project or program. This essential value is considered in all principles, initiatives, and other recommendations put forth in this Plan.

CREATING A LASTING VISION

IV. CREATING A LASTING ENERGY VISION

All collected data was analyzed, synthesized, and then presented to the Clean Energy Task Force for discussion with the goal of creating the Energy Vision, Energy Mission, and cascading set of priorities to be used as a guide for future projects, programs, and policies. In-depth conversations took place to discuss feasibility, usefulness, and intentional wording of concepts to identify key themes of the analyzed data.

Through multiple iterations, this body centered in on three simple concepts that could be easily conveyed but that accurately captured the common themes of all data that was collected:

Clean, Smart, and Equitable

These concepts became the basis for the Energy Vision and guided the resulting recommendations of this Task Force. The Energy Mission was created to bring additional context to the Vision and solidify alignment with the Cherokee Nation Mission.

Energy Vision

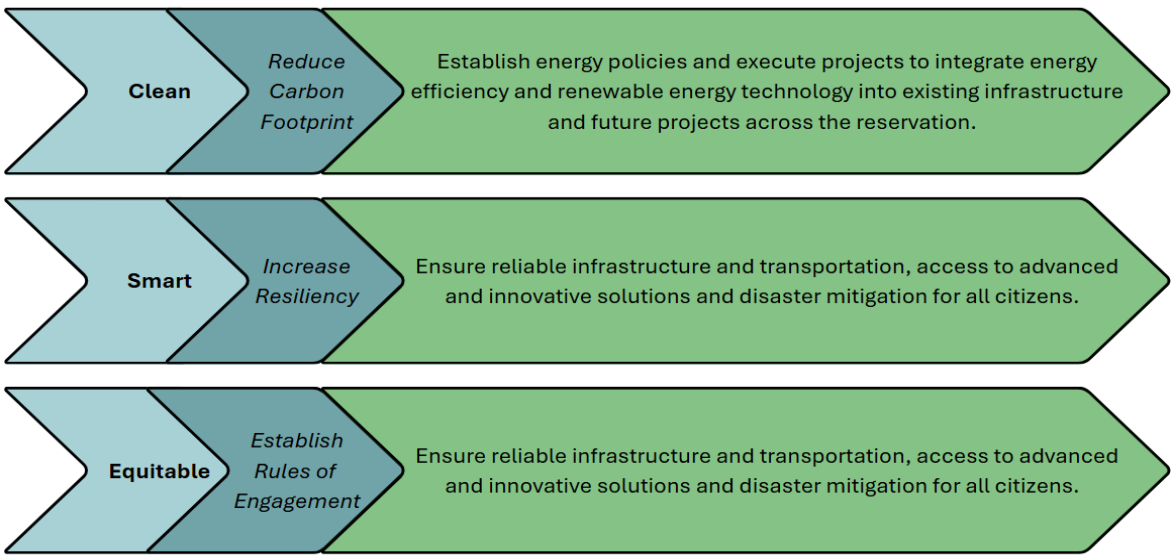
Cherokee Nation envisions a future in which our energy is Clean, Smart, and Equitable.

Energy Mission

To reaffirm sovereignty and strengthen protections of the environment and Cherokee culture through clean, smart, and equitable policies and energy projects.

Guiding Principles

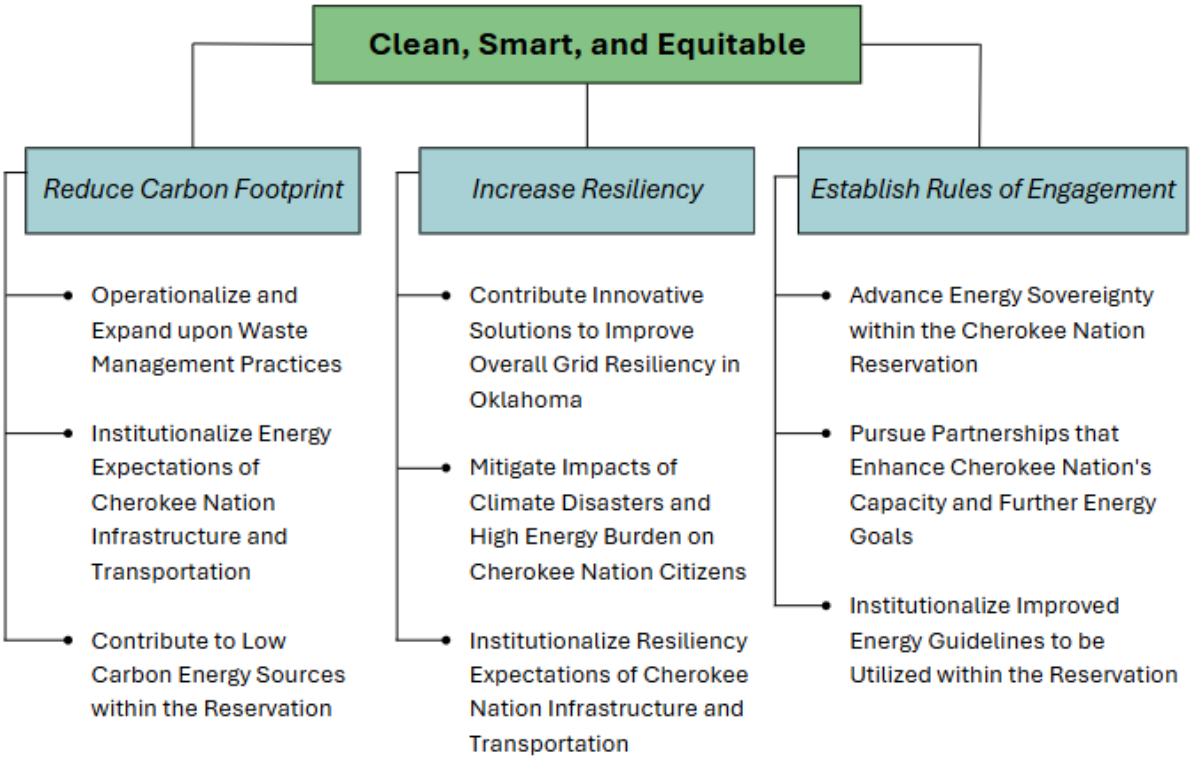
Three Guiding Principles were derived from the Energy Vision after extensive consideration of data collected throughout the strategic planning process. These Guiding Principles make up the core recommendations of this Task Force for realistic and comprehensive improvement of energy conditions for citizens, the environment, and the tribe as a whole:



IMPLEMENTING THE VISION AND GUIDING PRINCIPLES

V. IMPLEMENTING THE VISION AND GUIDING PRINCIPLES

Utilizing the Guiding Principles, this Task Force identified related initiatives to be pursued in order to facilitate the strategic advancement of the tribe. These initiatives represent the culmination of common themes discovered through analysis of all collected data and will serve as meaningful steps toward achieving the overall Vision of ensuring Cherokee Nation's energy future is clean, smart, and equitable.



The Guiding Principles and subsequent initiatives are intended to be largely unchanging and representative of core values of the tribe and its citizens. Revisions should only be made by a convened body determined adequate by leadership. This cascading set of values and priorities do not suggest specific deliverables—as interest and ability to execute specific projects will change over time—thereby allowing these Principles to serve as a stable framework for decision-making well into the future.

Clean: Reduce Carbon Footprint

Establish energy policies and execute projects to integrate energy efficiency and renewable energy technologies

According to the Clean Energy Citizen Survey, over 95% of participants agree with the statement, "I value the environment and believe that it should be protected."

When considering energy practices that will benefit the environment, the Task Force recommends pursuit of initiatives that align with actions resulting in carbon emission reduction. It was a clear directive of the EO from Chief Hoskin Jr. that this Plan must include a pathway to substantial carbon reduction for the tribe. Prior to this order, Cherokee Nation had already made a significant effort in assisting with the clean energy transition in northeastern Oklahoma through investment in solar and EV charging infrastructure, commitment to energy efficient infrastructure, and the implementation of a recycling program, indicating that this area is a preexisting priority for the tribe.

In support of the Clean Guiding Principle, several areas of recommendation for future efforts and expansion were identified:

Operationalize and Expand Upon Waste Management Practices

Waste management has been a priority of the tribe for over a decade. At Cherokee Nation's landfill, there is an existing initiative to divert organic vegetation waste from the landfill by recycling it as mulch. The recycling program established by the Reduce, Reuse, and Recycling Act of 2009, processes paper and cardboard from tribal administration buildings near Tahlequah, Oklahoma. As identified by almost all interviews that took place with department leaders, there is a need for increased recycling and waste management infrastructure for tribal administration buildings and a need for the process to be realigned with the existing Cherokee Nation Code. Recommendations from the Youth Task Force reiterate expansion of recycling operations as a method for reducing the tribe's environmental impact and note potential expansion into addressing food waste, especially within business operations. Furthermore, respondents of the citizen survey administered by the Task Force indicated that recycling was something that they would like to see Cherokee Nation prioritize.

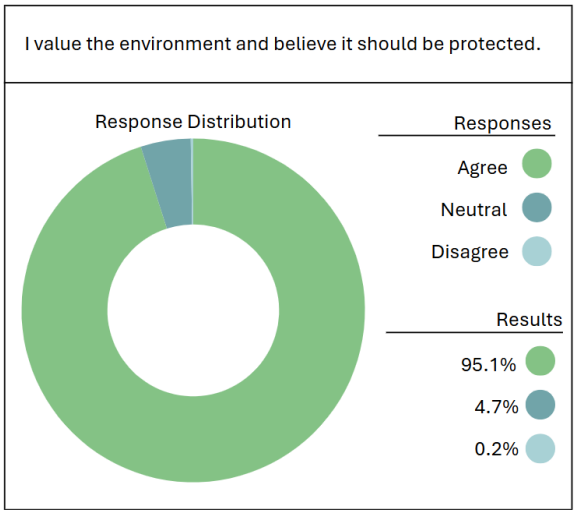


Figure 5. Results from 2024 Clean Energy Citizen Survey

Institutionalize Energy Expectations of Cherokee Nation Infrastructure and Transportation

There have been a variety of successful campaigns to improve energy management of infrastructure and transportation across the tribe. The Natural Resources Environmental Programs staff have made very impressive

progress with The Sustainability Alliance, a Tulsa, OK based organization, and have achieved the Gold Status for their efforts in making their building energy efficient and environmentally conscious through lower-cost and action-based measures. The purchasing of electric vehicles, including electric buses, has been pursued but various departments have faced barriers in obtaining vehicles to meet their needs. While the Management Resources department is pursuing very high energy standards for all new construction including multiple LEED Gold certified buildings, there is a large amount of infrastructure owned by Cherokee Nation that is old and contains out-of-date equipment. A Cherokee Nation set of expectations for energy efficiency and energy practices would be applicable for not only completing an audit of older buildings but also standardizing new construction to optimize cost savings. To implement effective changes across operations, energy data management for utility usage and fleet mileage will be necessary (see Section VI. First Steps).

Contribute to Low Carbon Energy Sources within the Reservation

Energy production remains largely unexplored by Cherokee Nation but there is interest in entering this market as owning energy production can lead to increased sovereignty and resiliency for the tribe. Over the years, Cherokee Nation has implemented 15 solar panel systems on community buildings and three solar panel canopies connected to electric vehicle chargers throughout the reservation (see Appendix 2). As northeastern Oklahoma grows and develops, additional capacity in the electric grid will be necessary to continue to power the tribal buildings that provide essential services to citizens and the surrounding communities. Establishment of a clean but diverse mix of energy sources will meet this demand while contributing to resiliency during extreme weather events. As improvements are made to energy infrastructure, renewable and environmentally conscious energy production methods should be explored to remain in alignment with the goals of Cherokee citizens. Survey responses indicated strong support for protection of the environment and an associated belief that clean energy projects benefit the environment. The majority of citizens are supportive of utility-scale renewables as long as Cherokee Nation natural and environmental resources are held in the highest priority.

Picture 8. Electric vehicle chargers with solar canopy at the Cherokee Nation Anna Mitchell Cultural & Welcome Cetner. Courtesy of Francis Energy.

Smart: Increase Resiliency

Ensure reliable infrastructure and transportation, access to advanced and innovative solutions, and disaster mitigation for all citizens.

According to results of the citizen survey, 57% of participants consider themselves worried about a power outage and 40% of participants reported that they *do not* have a safe place to go if a power outage does occur.

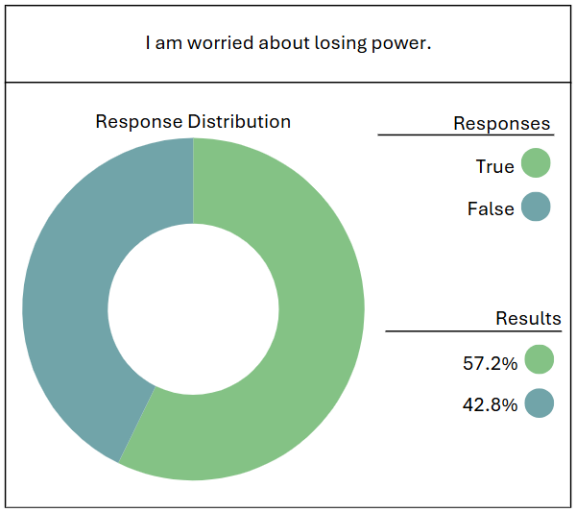


Figure 7. Results from 2024 Clean Energy Citizen Survey

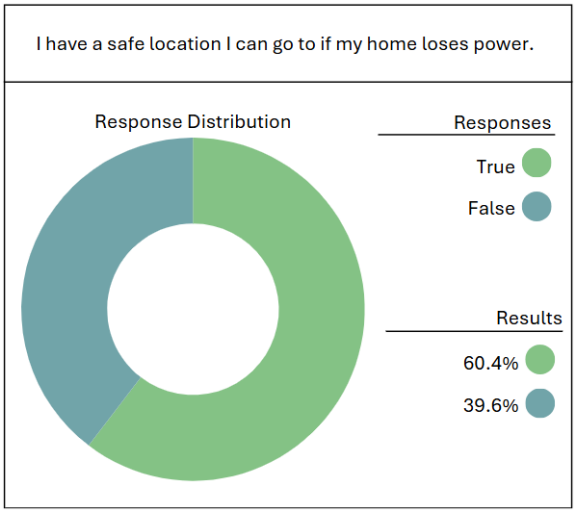


Figure 6. Results from 2024 Clean Energy Citizen Survey

To mitigate the impact and frequency of power outages for citizens, the Task Force identified resiliency as a key consideration for energy related projects moving forward. According to the U.S. Department of Energy, energy resiliency is "the ability of the grid, buildings, and communities to withstand and rapidly recover from power outages and continue operating with electricity, heating, cooling ventilation, and other energy-dependent services."[6] A resilient system is not only reliable but also prepared with a mitigation plan to lessen the immediate impact of disruptions, as well as the tools necessary to get critical services back to normal operation after disaster. In various tribal departments, addressing resiliency concerns has already been identified as a key priority.

In support of the Smart Guiding Principle, several areas of recommendation for future efforts and expansion were identified:

Contribute Innovative Solutions to Improve Overall Grid Resiliency in Oklahoma

Severe weather conditions including high winds, rain, ice storms, and severe thunderstorms regularly cause significant power outages within the reservation. Over 97% of the approximately 7,000 square mile reservation is rural, which often results in greater risk and length of service disruption caused by aging infrastructure and distance from the utility provider. Citizens showed significant concern about the lack of grid resiliency and indicated desire for support for backup energy sources at their residences in the survey results. Cherokee Nation is

[6] U.S. Department of Energy, "Energy Reliability and Resilience," https://www.energy.gov/eere/energy-reliability-and-resilience

committed to bettering conditions not only for citizens living within the reservation and at-large, but also Oklahoma as a whole. Meaningful contributions to the electric grid through modernization, hardening, or other such methods within the reservation will increase preparedness for the whole state to respond to extreme weather.

Mitigate Impacts of Climate Disasters and High Energy Burden on Cherokee Nation Citizens

Energy resiliency efforts do not stop at the grid. Inability to afford or understand energy bills, out-of-date and unreliable equipment, and lack of resources and education on how to best prepare a home for power outages or other extreme weather events are signs of lack of energy resiliency in communities. Through the survey administered by the Task Force, it was found that citizens are experiencing all the above and are requesting assistance from Cherokee Nation. Some programs already exist, for example, the Environmental Programs department has been performing weatherization audits for citizens for over 15 years and the program only continues to grow. Over 50% of participants reported electric bills that are maxing out over $200 per month and many reported extreme bills including those that were reaching $800-$900 per month. Citizens are experiencing high energy burden, which is the portion of household income spent on energy utility costs. A high energy burden puts low-income residents at risk of having to choose between paying energy bills or purchasing other essentials like food or medicine. Please see Appendix 3 for a breakdown of energy burden within the reservation.

Institutionalize Resiliency Expectations of Cherokee Nation Infrastructure and Transportation

As previously mentioned, Cherokee Nation owns significant and diverse infrastructure throughout the reservation. Funded by the American Rescue Plan Act, the Management Resources department has made significant strides in increasing the resiliency of important Cherokee Nation buildings. Back-up generators and solar panels have been added to multiple health clinics and all new construction includes a FEMA-rated room that can act as a safe space in the case of a natural disaster. While there are meaningful individual contributions to resiliency, there are no standards set for resiliency for Cherokee Nation infrastructure. Through the survey, the Task Force found that 40% of participants do not have a safe location to go in the case of a power outage and over 80% selected “Yes” or “Unsure” to utilizing a Cherokee Nation designated safe location in this scenario. Cherokee Nation’s cultural prominence in the community and owned infrastructure gives the tribe unique ability to provide safe locations and essential services in times of power outages and extreme climate events. Increasing the resilience of Cherokee Nation infrastructure and transportation will prepare the tribe for offering this support to the community and will raise the general standards of resiliency within the reservation.

Equitable: Establish Rules of Engagement

Leverage Cherokee Nation's position as a key energy stakeholder in Oklahoma to develop meaningful partnerships, enforce energy sovereignty, and improve conditions for citizens.

Through collaborative discussion, the Task Force identified a gap in the standard rules of engagement with outside entities on matters of energy. Cherokee Nation is approached regularly, by various types of external organizations, to weigh in or partner on projects. There are currently no set of internal standards or process flows for how to approach these conversations. Cherokee Nation does not have comprehensive regulatory power or ownership over energy projects on private land within the reservation, but this Task Force recommends pursuing actions that will utilize Cherokee Nation's standing as a sovereign, key stakeholder in the energy industry to further the priorities and goals laid out in this Strategic Energy Plan.

To establish this type of presence in the energy space, the rules of engagement must be established, including standardized processes for engaging with potential partners and other entities within the energy and utility industries. Internal processes and external recommendations and expectations are needed to ensure the future of energy within the reservation aligns with Cherokee Nation's vision.

In support of the Equitable Guiding Principle, several areas of recommendation for future efforts and expansion were identified:

Advance Energy Sovereignty within Cherokee Nation Reservation

Protecting sovereignty is paramount in any project or initiative of the tribe. The Task Force concluded from the survey and interviews that tribal energy sovereignty and personal energy independence are high priorities among both citizens and the tribal government, and that projects pursued should align with these ideals. Currently, energy delivery to tribal buildings and citizens within the reservation are operated by non-tribal utilities, a complete list of which can be found in Appendix 5. Cherokee Nation has existing relationships with utility providers, but there is no regulatory authority being utilized by the tribe over energy used within the reservation. Projects to change this could be pursued; however, energy sovereignty is not limited to the ownership of energy generation or distribution. Energy sovereignty can be furthered through increased energy education to empower citizens to make informed decisions, as well as through decreased reliance on the existing grid and utilities.

Pursue Partnerships that Enhance Cherokee Nation's Capacity and Further Energy Goals

Cherokee Nation frequently creates meaningful partnerships with external organizations to build capacity and implement projects with broad impacts to benefit Cherokee communities. In the energy space, Cherokee Nation has had a partnership with Francis Energy for over a decade, through which many solar panel and electric vehicle charger installations have been accomplished. Cherokee Nation also partnered with OG&E for the implementation of substations and aligned transmission at the Cherokee Nation W.W. Hastings Hospital and Cherokee Nation Casino in Tahlequah, OK. Cherokee Nation commonly receives communications from energy developers inquiring about partnering on future projects

or the tribe's perspective on projects already in motion within the boundaries of the reservation. As a sovereign nation, Cherokee Nation can develop standards for interaction with these entities that honor the values of the tribe and result in mutually beneficial relationships and projects. Paired with this effort, there is a need for an understanding of the complex regulatory authorities and how Cherokee Nation can best navigate working with external energy organizations to implement projects within the reservation. Partnerships that will further Cherokee Nation's energy goals will be in alignment with the priorities laid out in this Strategic Energy Plan and contribute to workforce development, as that is an identified priority of the citizens.

Picture 9. Workers install rooftop solar panels on a Cherokee community building. Courtesy of Cherokee Phoenix.

Institutionalize Improved Energy Guidelines to be Utilized within the Reservation

A primary finding of the citizen survey administered by the Task Force are the values of the citizens with respect to energy projects. Survey participants indicated that Cherokee Nation should maintain or advance protections for natural resources, farmland, and animals in the pursuit of any energy project. While Cherokee Nation cannot control the actions of all external organizations within the bounds of the reservation, Cherokee Nation's expectations and standards can be developed and released to the public, so it is clear when organizations are not meeting them. This is an opportunity for Cherokee Nation to innovatively leverage the position as a sovereign nation to improve energy standards within the reservation for projects not owned or managed by the tribe. Collaboration with relevant departments within the tribe, such as Government Relations, Communications, and Natural Resources, as well as key contacts at Cherokee Nation Businesses, can result in uniform operating procedures when engaging with private organizations developing energy related projects within the reservation boundaries. Materials outlining the tribe's expectations for best practices of private energy-related projects can support the tribe's position as a leader in the energy and sustainability sectors.

FIRST STEPS

VI. FIRST STEPS

Informed by numerous discussions and review of existing policies, the Task Force has identified necessary first steps to pursuing the goals developed within this Strategic Energy Plan.

Cherokee Nation Energy Department/Program

Momentum to pursue the energy goals of the tribe has been created through this strategic planning process, but collaborative change is difficult, and there is a need for the management of the Strategic Energy Plan and the activities that arise from it to be actively monitored and tracked to ensure consistent implementation as the tribe moves forward in the pursuit of sustainable and resilient energy projects.

It is the recommendation of this Task Force that Cherokee Nation establish an energy department or energy program. This department/program will manage the Strategic Energy Plan and track the various projects that arise from it. Department staff will act as a liaison to other departments within the tribe to consult on projects for alignment with the Strategic Energy Plan, answer general energy inquires, and be a voice at the table dedicated to furthering the energy goals of the tribe.

The energy department/program will be responsible for showing progress towards furthering the Energy Vision in the form of an Annual Energy Report and updating the Strategic Energy Plan, both of which are required by the Executive Order. In collaboration with other departments within Cherokee Nation, the energy department will facilitate ongoing Task Force meetings, develop quantitative and qualitative metrics to inform decision-makers within the tribe, create educational materials, consult on or draft policy and guidance documents, and track progress toward project goals in consideration of the Guiding Principles. The energy department will also perform quantitative analysis of data related to utilities, energy efficiency, and/or carbon reduction to inform the establishment of emissions baselines and reduction goals.

Centralized Data Management System and Related Projects

To Accurately Establish Baselines.

As previously mentioned in Section III. Data Analysis, the lack of a centralized energy data management system is a serious barrier for establishing a carbon emissions baseline and proving progress from that baseline. Not only is utility data tracked in different ways for different facilities across the tribe, even the more centralized lease pool utility data lacks detail necessary to form accurate and informative analyses.

It is the recommendation of this Task Force that a centralized data management and/or utility bill processing system be developed and implemented for all buildings for which the tribe pays utilities, not just those buildings in the lease pool. This system should provide for consistent naming of buildings and discrete data attributes to ensure that holistic data related to energy use and cost is maintained in a digital format, including accurate units of measurement for each type of utility. Not only will such a management system ensure accounts associated with abandoned meters are terminated and identify buildings with

unusual energy usage for auditing, but it will also allow for a more accurate and readily available assessment of cost per building. This will allow for an accurate energy use and carbon emissions baseline to be determined. Furthermore, centrally managed energy usage information will inherently lead to significant cost savings and emissions reduction.

The newly formed energy department can take an active role in the development of these systems and can work with the key departments and partners to determine gaps in their data systems, provide recommendations for improvements, and facilitate collaboration and discussion. This undertaking would involve multiple departments including:

- Financial Resources: Accounting, Fleet Management
- Natural Resources: GeoData Center
- Management Resources
- Utility Providers (see Appendix 5)

To Further Data Sovereignty.

Data is powerful and, as a sovereign nation, Cherokee Nation has interest in utilizing internal resources to collect and synthesize data to be used by decision-makers rather than relying on publicly available data. Public data is often not reflective of the actual statistics of the reservation and furthermore relies upon continued support from private or Federal sources, which may be lost as funding availability or priorities change. Collection and management of the tribe's own data will advance energy sovereignty, allowing Cherokee Nation to establish its own methods for collection, ownership, and application of energy data across Cherokee Nation.

Collected data can be synthesized into user-friendly tools and reports that can be disseminated throughout the tribe to inform the decision-making process. An example of such a tool can be found in Appendix 4. This hypothetical tool would act as a guide when considering climate and social vulnerabilities of counties within the reservation with respect to project implementation.

Picture 10. Cherokee Nation employees from the Office of the Secretary of Natural Resources at the 2024 Earth Day Celebration.

CONCLUSION

VII. Conclusion

The Task Force utilized the opportunity afforded through the Executive Order on Further Environmental and Climate Change Goals to conduct thorough strategic planning activities to establish a path towards substantial reduction of the tribe's carbon footprint through development of a broad set of guidelines to ensure consistent priorities are reflected in future energy policy, programming, and projects. The strategic energy planning process utilized in-depth, data-driven conversation which led to a flexible but strong framework for decision-making. The Task Force puts forward the above recommendations and priorities with the intention that this document will continuously grow and develop to benefit the next seven generations of the Cherokee people.

Looking forward, the Task Force will continue to meet quarterly or as-needed, as facilitated by the Natural Resources team. In addition to pursuing progress toward the recommendations in Section VI. First Steps, the Task Force will work to identify key qualitative metrics associated with carbon reduction to analyze and include in future reports. Such metrics may include site-by-site analysis of carbon offset associated with EV chargers and retroactive analysis of existing utility data (to the greatest extent practicable, given its limitations). This document will be reviewed no less frequently than every two years by the standing Task Force members. Any revisions will be collaboratively developed with the Task Force and advising team members and will be considered final upon review and approval by the Principal Chief. Version history shall be maintained by the Secretary of Natural Resources/Task Force Chair.

Special Thanks

The Task Force extends special thanks to the advisory members, delegates, and departmental representatives who participated in meetings and discussions and who facilitated the collection of data throughout the strategic planning process.

Advisory Members.

- Sydnee Krenek, *Chief Administrator*, Natural Resources
- Eleanor Sandifer, *DOE Energy Innovator Fellow*, Natural Resources
- Kristen DeCandia, *Manager of Grants and Compliance*, Natural Resources
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- Michael Lynn, *Executive Director*, Transportation and Infrastructure
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- (external) Kylah McNabb, *consultant and facilitator,* Vesta Strategic Solutions, LLC

Delegates.

- Austin Patton, Office of the Chief of Staff
- Logan Lewis, Government Relations

Departmental Representatives Assisting with Data Collection.

- Leon Graves, Financial Resources
- Ramona Mays, Financial Resources
- Tamara Brassfield, Financial Resources
- Kevin Daugherty, GeoData Center, Natural Resources
- Amaiya Bearpaw, GeoData Center, Natural Resources

APPENDICES

I. Appendices

Appendix 1: Carbon Accounting

Carbon accounting methods have been standardized world-wide to allow private and public organizations from any industry or operation to consider the environmental impact of their actions and report publicly on quantifiable reductions in carbon emissions. Once a comprehensive analysis of an organization emissions has been completed using a standardized method like the GHG Protocol[1], which was developed in partnership with the World Resources Institute and World Business Council for Sustainable Development, results are reported to climate data transparency organizations like the CDP[2].

The GHG Protocol[3] provides a comprehensive standard and methodology for emissions reporting and management. The following is a direct excerpt from the text:

> Scope 1: Direct GHG Emissions
> Direct GHG emissions can occur from sources that are owned or controlled by the company, for example emissions from combustion in owned or controlled boilers, furnaces, vehicles etc.; emission from chemical production in owned or controlled process equipment.
>
> Scope 2: Electricity indirect GHG emissions
> Scope 2 accounts for GHG emissions from the generation of purchased electricity consumed by the company. Purchased electricity is defined as electricity that is purchased or otherwise brought into the organizational boundary of the company. Scope 2 emissions physically occur at the facility where the electricity is generated.

The U.S. Environmental Protection Agency models their definitions[4] in alignment with this protocol as it is an industry standard.

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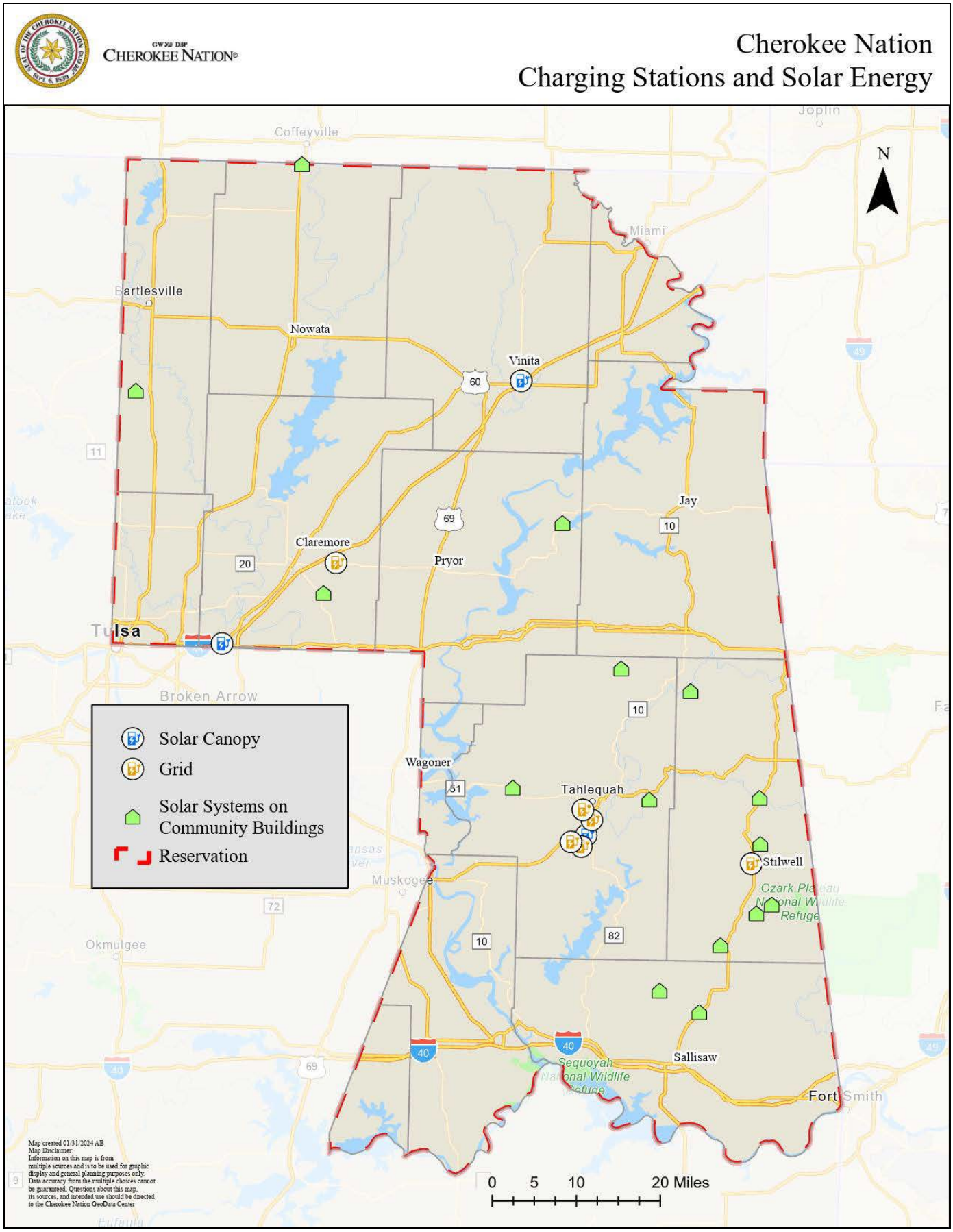
[1] Greenhouse Gas Protocol, https://ghgprotocol.org/
[2] CDP, https://www.cdp.net/en
[3] Greenhouse Gas Protocol, "A Corporate Accounting and Reporting Standard," https://ghgprotocol.org/sites/default/files/standards/ghg-protocol-revised.pdf
[4] U.S. Environmental Protection Agency, "Greenhouse Gases at EPA," https://www.epa.gov/greeningepa/greenhouse-gases-epa

Appendix 2: Cherokee Nation Clean Energy Projects Map



Appendix 3: Energy Burden

According to the U.S. Department of Energy Low-Income Energy Affordability Data (LEAD) Tool, the average cost of energy within the Cherokee Nation Reservation is $2,619 annually or $218 per month[5]. Across the United States and particularly significant on tribal land, low-income households have disproportionately high energy burdens. Energy burden is the portion of household income spent on energy utility costs including electricity and fuel.

Energy is an essential need for everyone throughout the country to power homes and condition spaces safely. As energy costs are non-negotiable, the burden of paying expensive monthly bills is felt much more heavily by low-income households. Further exacerbating this burden is that low-income households are more likely to have worse home insulation and older equipment with less access to alternative energy technologies that might reduce the bills [6].

There is not one standardized set of metrics to analyze various intensities of residential energy burden. Through research, it was found that 6% is a clear standard to differentiate between burdened and not burdened and that 10% indicates severe energy burden[7] [8] [9]. These resources were synthesized into the following three metrics: energy impoverished, energy burdened, and not burdened. The energy burden ranges specified to align with each metric was then applied to the U.S. Department of Energy LEAD Tool to yield the following results. This tool utilizes U.S. Census data and doesn't differentiate between tribal citizen and non-tribal resident when producing data results from within the reservation boundaries.

Table 1. Energy Burden metrics within Cherokee Nation.

Metric	% of Household Income Spent on Energy	% of Households within CN Reservation	# of Households within CN Reservation
Energy Impoverished	> 10%	16%	32,117
Energy Burdened	6% - 10%	14%	27,728
Not Burdened	< 6%	69%	135,512

[5] U.S. Department of Energy, "Low-Income Energy Affordability Data (LEAD) Tool," https://www.energy.gov/indianenergy/low-income-energy-affordability-data-lead-tool
[6] Brown, Marilyn *et al,* "High energy burden and low-income energy affordability: conclusions from a literature review," (2020) https://iopscience.iop.org/article/10.1088/2516-1083/abb954/meta#back-to-top-target
[7] ibid.
[8] Natural Resources Defense Council, "Energy-Burdened Communities Tool," https://www.nrdc.org/resources/energy-burdened-communities-tool
[9] Cook, Jeffrey J. & Shah, Monisha, National Renewable Energy Laboratory, "Reducing Energy Burden with Solar: Colorado's Strategy and Roadmap for States," (2018) https://www.nrel.gov/docs/fy18osti/70965.pdf

Appendix 4: Data-Driven Tool Example

Being able to focus efforts on communities that are in the most need is crucial for decision making processes and energy service planning. Energy burden is just one important factor and there are many tools available for assistance with decision making and identification of communities and areas that are at greater risk.

State and Local Planning for Energy.

The State and Local Planning for Energy tool[10], created by the National Renewable Energy Laboratory, utilizes varying data sets to assist in energy planning. The Social Vulnerability Index was created from U.S. Census data by the Centers for Disease Control and Prevention and synthesizes information on socio-economic status, minority-status and language, household compensation and disability, and housing type and transportation into one overall score.

The U.S. Climate Vulnerability Index.

The U.S. Climate Vulnerability Index[11] utilizes community baseline data and climate impact data to identify areas most at risk to the effects of climate change.

Example Tool for Cherokee Nation Communities.

This hypothetical tool combines the percentage of energy burdened population, social vulnerability index rating and climate vulnerability index rating equally to assess county's vulnerability on a scale from one to ten, ten being the most vulnerable. The results clearly identify the most vulnerable counties within the reservation to be Owatta and Adair.

Table 2. Example of a potential, data-driven tool to be used internally for decision-making.

County	Energy Impoverished	Energy Burdened	Not Burdened	Social Vulnerability Index Percentile Ranking	Climate Vulnerability Index Percentile Ranking	Internal Energy Programming Support Tool
Washington County	14%	16%	70%	44	69	4.5
Nowata County	20%	19%	62%	59	76	6.6
Tulsa County (partial)	11%	9%	80%	62	54	4.4
Rogers County (partial)	8%	10%	82%	28	44	2.6
Mayes County (partial)	17%	17%	66%	75	86	6.9
Craig County	19%	20%	61%	85	84	8.2
Ottawa County (partial)	24%	23%	53%	96	85	9.1
Delaware County (partial)	18%	16%	66%	77	75	6.8
Adair County	30%	16%	53%	90	92	9.4
Cherokee County	18%	15%	67%	93	73	6.8
Muskogee County (partial)	18%	15%	68%	93	87	7.0
Sequoyah County	22%	17%	61%	92	88	8.3
McIntosh County (partial)	25%	15%	60%	78	82	8.1
Wagoner County (partial)	9%	11%	80%	42	49	3.3

[10] National Renewable Energy Laboratory, "State and Local Planning for Energy," https://maps.nrel.gov/slope
[11] U.S. Climate Vulnerability Index, https://climatevulnerabilityindex.org/

Appendix 5: Utilities Providers within the Reservation

American Electric Power
Arkansas Oklahoma Gas Corp
City of Claremore
City of Collinsville
City of Miami
City of Sallisaw
City of Siloam Springs
City of Skiatook
City of Stilwell
Cookson Hills Electric Co-op
Copan Public Works Authority
East Central Oklahoma Electric Co-op
Fort Cobb Fuel Authority
Grand River Dam Authority
Hulbert Public Works Authority
Jay Utilities Authority
Kay Electric Co-op
Lake Region Electric Co-op
Leann Gas
Northeast Oklahoma Electric Co-op
Oklahoma Gas & Electric
Ozarks Electric Co-op
Public Service Company of Oklahoma
Tahlequah Public Works Authority
Verdigris Valley Electric Co-op

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Eleanor Sandifer

Additional special thanks is given to Eleanor Sandifer for her role in the creation of this Strategic Energy Plan.

Eleanor Sandifer is an Energy Innovator Fellow placed with Cherokee Nation Natural Resources by the U.S. Department of Energy. In her role as Fellow, she has played a significant role in the strategic planning process. She has gathered and analyzed data, compiled reports, presented at and facilitated meetings, and drafted revisions of this Strategic Energy Plan. The value of her contributions cannot be overstated.

Allison Lee

Additional special thanks to Allison Lee for the formatting and design of this Strategic Energy Plan.