



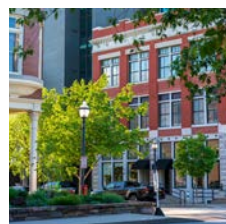
2024



Northwest Arkansas

Energy & Environment
Innovation Priority
Action Plan

May 2024



Prepared For :

Northwest Arkansas Regional Planning Commission
Springdale, Arkansas

Prepared By :



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Acronyms

ADEE	Arkansas Department of Energy and Environment
ARDOT	Arkansas Department of Transportation
ANSI	American National Standards Institute
ASHRAE	American Society of Heating, Refrigerating, and Air-Conditioning Engineers
BRIC	Building Resilient Infrastructure Communities
CEJST	Climate & Economic Justice Screening Tool
CO ₂	Carbon Dioxide
CPRG	Climate Pollution Reduction Grants
CSAP	Comprehensive Safety Action Plan
DOE	Department of Energy
DOT	Department of Transportation
EECBGP	Energy Efficiency and Conservation Block Grant Program
EEl	Energy and Environment Innovation
EIE	Environmental Insights Explorer
EPA	Environmental Protection Agency
EV	Electric Vehicle
GHG	Greenhouse Gas
HVAC	Heating, Ventilation, and Air Conditioning
IECC	International Energy Conservation Code
IEA	International Energy Agency
IES	Illuminating Engineering Society
IJA	Infrastructure Investment and Jobs Act
IRA	Inflation Reduction Act
ITS	Intelligent Transportation Systems
LIDAC	Low-Income and Disadvantaged Community
MMBtu	Metric Million British Thermal Units
MOA	Memorandum of Understanding
MPO	Metropolitan Planning Organization
MRF	Materials Recovery Facility
NAE	Neighborhood Access and Equity
NEI	National Emissions Inventory
NOFO	Notice of Funding Opportunity
NWA	Northwest Arkansas
NWARPC	Northwest Arkansas Regional Planning Commission
RNG	Renewable Natural Gas
SRTS	Safe Routes to School
tCO ₂ e	Tons of Carbon Dioxide Equivalent
TDP	Transit Development Plan
TSMO	Transportation Systems Management and Operations
VMT	Vehicle Miles Traveled
WAP	Weatherization Assistance Program
WM	Waste Management

Executive Summary



The goal of the Northwest Arkansas (NWA) Energy and Environment Innovation (EEI) - Priority Action Plan (PAP) is to promote a sustainable and resilient future for the region, support investment in measures and solutions that reduce greenhouse gas (GHG) emissions, create high-quality jobs, spur economic growth, and enable access to and enhance NWA competitiveness for federal funding opportunities.

The Northwest Arkansas Regional Planning Commission (NWARPC) strives to improve environmental quality in the region to ensure a bright future for its residents, understanding that collaboration with our stakeholders to mitigate GHG emissions and adapting to extreme weather events brought about by a changing climate is crucial.

The NWA PAP advances one or more of the investment priorities identified by Governor Sanders (shown below) and includes a regional priority assessment of five action measures to aid in GHG emission reduction efforts, a focus on low-income and disadvantaged communities (LIDACs), and meaningful engagement processes for both stakeholders and the public. The PAP identifies the top priorities of the region, as required by the EPA's Climate Pollution Reduction Grant (CPRG) planning grant, and will be incorporated into the forthcoming Comprehensive Action Plan (CAP).

Arkansas Investment Priorities



Facilitating Statewide Economic Growth and Competitiveness

Growing and expanding the economy with Arkansas by increasing access to economic opportunities for communities, advancing **transportation** and **commerce**, and maintaining a **resilient supply chain**.



Keeping Communities Safe

Improving public and **transportation safety** provisions through promoting road and highway **safety education** and training programs, strengthening **cybersecurity** infrastructure, and making safety improvements to roads and bridges.



Preparing the Infrastructure Workforce

Scaling up the workforce needed for project delivery, promoting access to **quality jobs**, and developing a **pipeline of talent** across the state.



Preservation and Promotion of The Natural State

Celebrating the State's natural resources to develop, create, and sustain **outdoor recreation**, **business**, and **employment** opportunities through ecology initiatives, environmental **resiliency** projects, and **proper water management practices**.



Creating a Portfolio of Reliable, Efficient, and Secure Energy Options

Expanding affordable and **efficient energy** options available to Arkansans through resources development while maintaining a strong **energy workforce** and **secure** electric power grid that can withstand emergencies and severe weather.

The GHG Emissions Approximation Summary serves as a comprehensive overview detailing the results derived from an in-depth analysis grounded in city-, county-, and state-level data. This GHG emissions approximation for NWA not only establishes a foundational baseline, but also lays the groundwork for assessing post-implementation outcomes and conducting future quantitative data analyses. By synthesizing information from multiple administrative levels, the summary provides a holistic perspective on GHG trends, emissions, and associated factors. Supporting information is in Section 2 and also Appendix A of this document.

The LIDAC Summary presents the outcomes of an analysis conducted on the EPA’s Climate and Economic Justice Screening Tool (CEJST) data. The primary objective of this analysis is to pinpoint and characterize communities classified as LIDAC in the NWA. This summary serves as a critical resource in illuminating the socio-economic and environmental landscape of LIDACs in the region. The CEJST data not only identifies these communities, but also delves into the specific factors that contribute to their designation as low-income and disadvantaged. Supporting information is located in **Section 3** and also **Appendix B** of this document.

The Document and Plan Review considers initiatives from previous plans and is detailed in **Section 4** of this document. This review examines regional and statewide documents and plans associated with GHG emission reduction efforts. It delves into the intricacies of existing policies, strategies, and initiatives aimed at reducing GHG emissions within specific geographic areas. The evaluation encompasses a thorough analysis of the effectiveness, alignment, and potential impact of these documents and plans on the overarching goal of reducing GHG emissions. This review aims to contribute valuable insights into the ongoing efforts to address and mitigate the impacts of GHG emissions on NWA.



Stakeholder & Public Engagement. Active stakeholder and public engagement was a crucial component in the development of the NWA PAP. As mandated by the CPRG program, prioritizing engagement with LIDACs was a key aspect of this public participation process. According to the EPA, recipients of planning grants are obligated to conduct meaningful engagement with the affected LIDACs in the development of planning grant deliverables. The NWARPC actively interacted with Madison, Washington, and Benton County residents, adopting a focused strategy for engaging with LIDACs within these counties once LIDAC identification and analysis was completed. Supporting information is located in **Section 5** and also **Appendix C** of this document.





01 Background & Introduction



Impacts from greenhouse gases (GHG) on Northwest Arkansas's air quality can adversely affect the region's residents and economic growth. GHGs and warmer temperatures increase concentrations of ground-level ozone; also, particulate matter in the form of windblown dust from droughts and smoke from wildfires is also expected to increase as the concentration of GHGs in the atmosphere increases. These outdoor pollutants can lead to higher indoor exposures by entering buildings through open doors, windows, and ventilation systems. Exposure to these pollutants can adversely affect the health of the region's residents through respiratory and heart diseases (EPA 2024b).

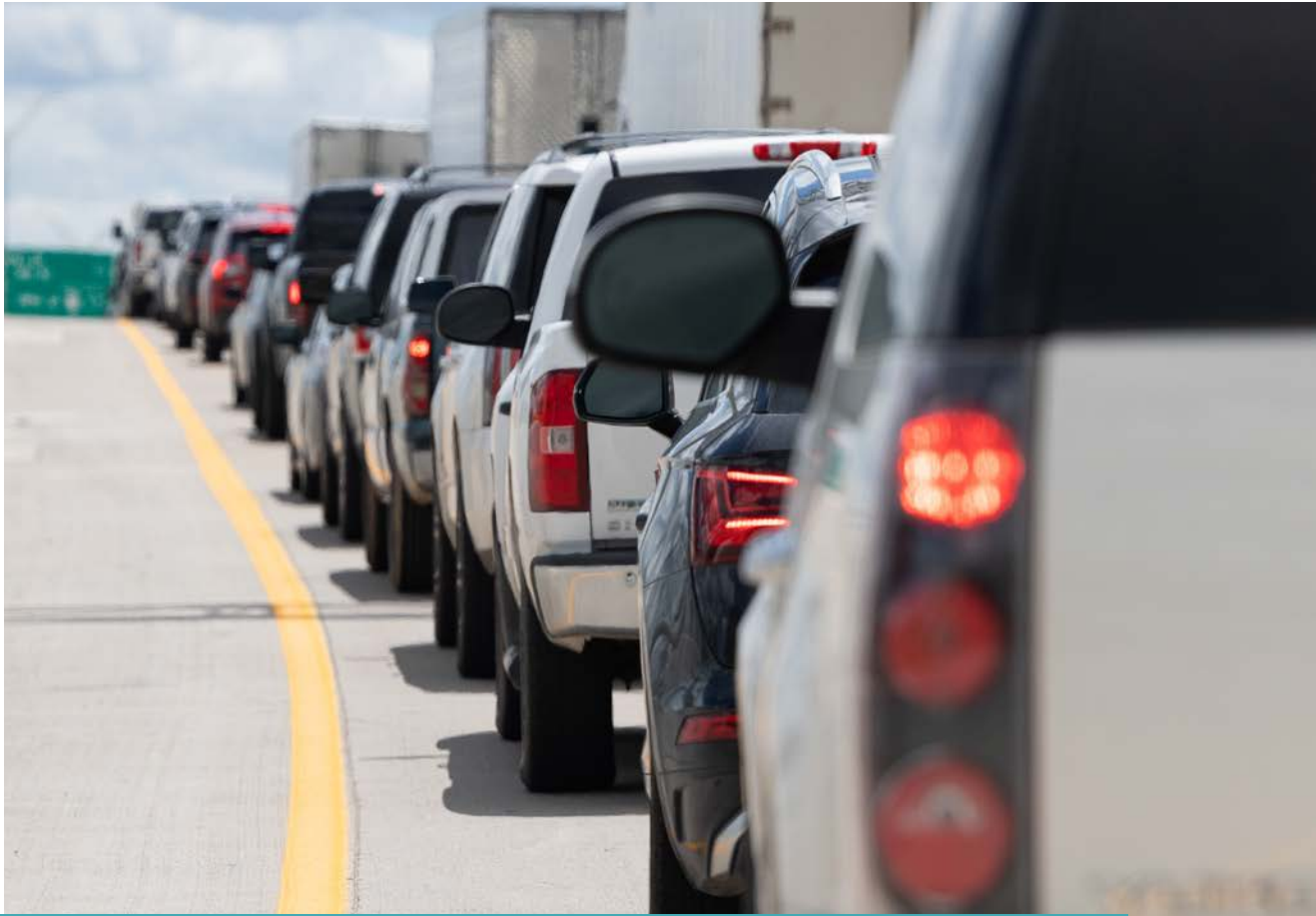
Furthermore, climate change from GHG emissions is expected to cause unusual and harsh weather conditions, altering historically predictable rainfall patterns and temperatures in Northwest Arkansas. In the coming decades, the region will become warmer and experience more severe floods and droughts (EPA 2016). Warmer temperatures will also exacerbate the effects of drought on the region's water supply (Kunkel et. al. 2013, Carter et. al. 2014). These anticipated changes to the region's climate are also expected to negatively affect the region's economy and the quality of life of many its residents. If left unaddressed, these future weather patterns are expected to have detrimental impacts on the region and its residents (Boyett & Lee 2022, Early 2021).

The 2022 Inflation Reduction Act (IRA) created the Climate Pollution Reduction Grants (CPRG) program to provide \$5 billion in grants to states, local governments, tribes, and territories to develop and implement plans for reducing GHG emissions and other harmful air pollution (EPA 2024a).

In 2023, following NWARPC Board authorization (Resolution #2023-15), Arkansas Department of Energy & Environment (E&E) Division of Environmental Quality (ADEQ) suballocated funding from this program and entered into a Memorandum of Agreement (MOA) with the Northwest Arkansas Regional Planning Commission (NWARPC) to provide regional-specific planning and act as additional support to ADEQ in the development of the deliverables required under the CPRG: Priority Action Plan (PAP), Comprehensive Action Plan (CAP), and a status report on PAP and CAP (collectively "the plans") at the end of the four (4) year grant project period.

Following stakeholder and public engagement summarized below, the NWARPC submitted the regional PAP Supplement to ADEQ on December 1, 2023. Along with other metropolitan planning partners (Metroplan and City of Ft. Smith), the NWA PAP Supplement was included in *Arkansas's Energy and Environment Innovation Priority Action Plan* submitted to the EPA by ADEQ on March 1, 2024. Submission of the state priority action plan is a prerequisite for any Arkansas state or local government agency submitting applications for implementation grants. The present document is based on the NWA PAP Supplement submitted to ADEQ in December 2023 and will be incorporated into the forthcoming Comprehensive Action Plan (CAP).





02

Greenhouse Gas Emissions Approximation

GHG emissions encompass carbon dioxide (CO₂), nitrous oxide, and methane. Data on GHG emissions is commonly gathered and reported at various administrative levels, including national, regional, and at times, state or local levels. The NWA region comprises Benton, Madison, and Washington counties. Establishing transparent communication is crucial for instilling trust in the precision of NWA's regional GHG emission estimates. Though the estimation process has inherent uncertainties, these approximations for NWA have been strengthened and cross-referenced with data from multiple credible sources.

The GHG Emissions Approximation Summary in **Appendix A** outlines the outcomes of an analysis based on the EPA's National Emissions Inventory (NEI) transportation data for the NWA region consisting of Benton, Madison, and Washington counties (EPA 2020b). Assumptions were then made to approximate for the remaining sectors based on state-level emissions data from the EPA's Greenhouse Gas Inventory database (EPA 2020a) and city-level emissions data from Google's Environmental Insights Explorer (EIE) (Google 2020) and the City of Fayetteville (City of Fayetteville staff 2023). Overall, approximately 9,731,972 tons of GHG emissions were estimated for the NWA region, as seen in **Figure 1**. In EIE and the City of Fayetteville, approximately 81,247,949 tons of GHG emissions were estimated for Arkansas as a whole, as seen in **Figure 2**. These approximated amounts were broken up into sectors including electric power, transportation, agriculture, industry, commercial, and residential.

Furthermore, this approximation acts as a pivotal reference point for gauging the efficacy of implemented measures and policies geared toward reducing GHG footprints. The approximation sets the stage for ongoing monitoring and evaluation, enabling stakeholders to track the trajectory of GHG emissions-related changes and adjust strategies as needed. The emphasis on city, county, and state levels assures a nuanced understanding of regional variations and allows for tailored interventions that align with specific geographical contexts. In essence, the GHG emission approximation not only captures the current state of emissions, but also lays the groundwork for a dynamic and informed approach to future GHG emission reduction initiatives.



Figure 1. Northwest Arkansas Regional GHG Emissions Approximation in Tons

(City of Fayetteville staff 2023; EPA 2020a; EPA 2020b; Google 2020).

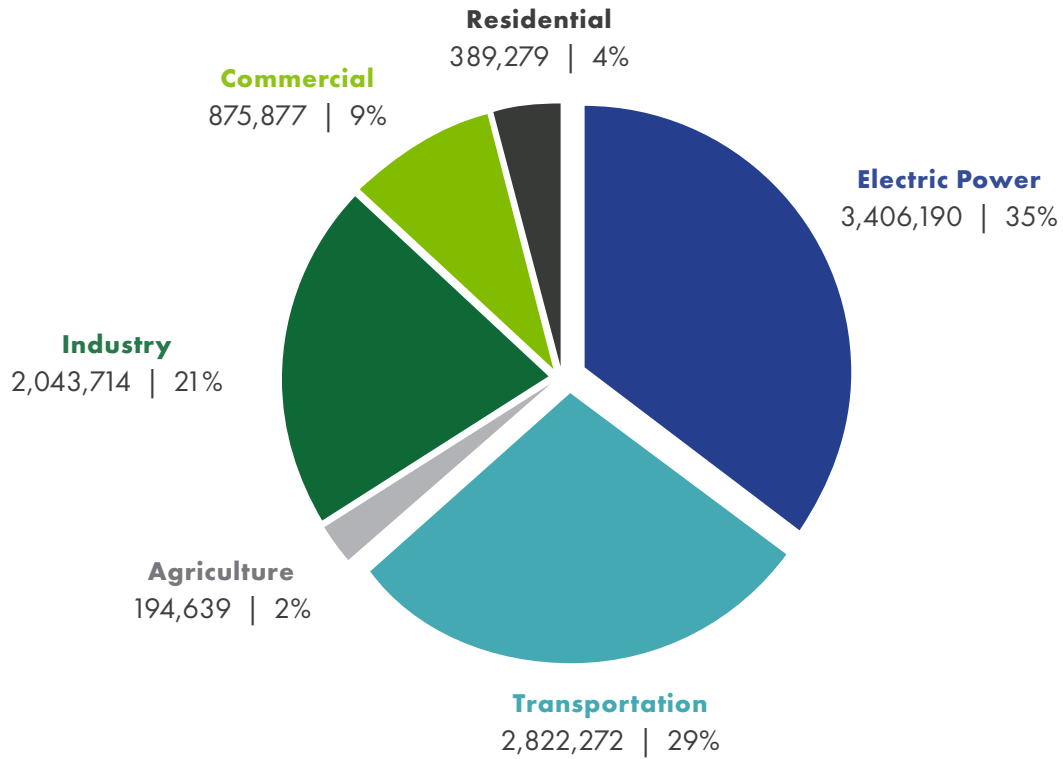
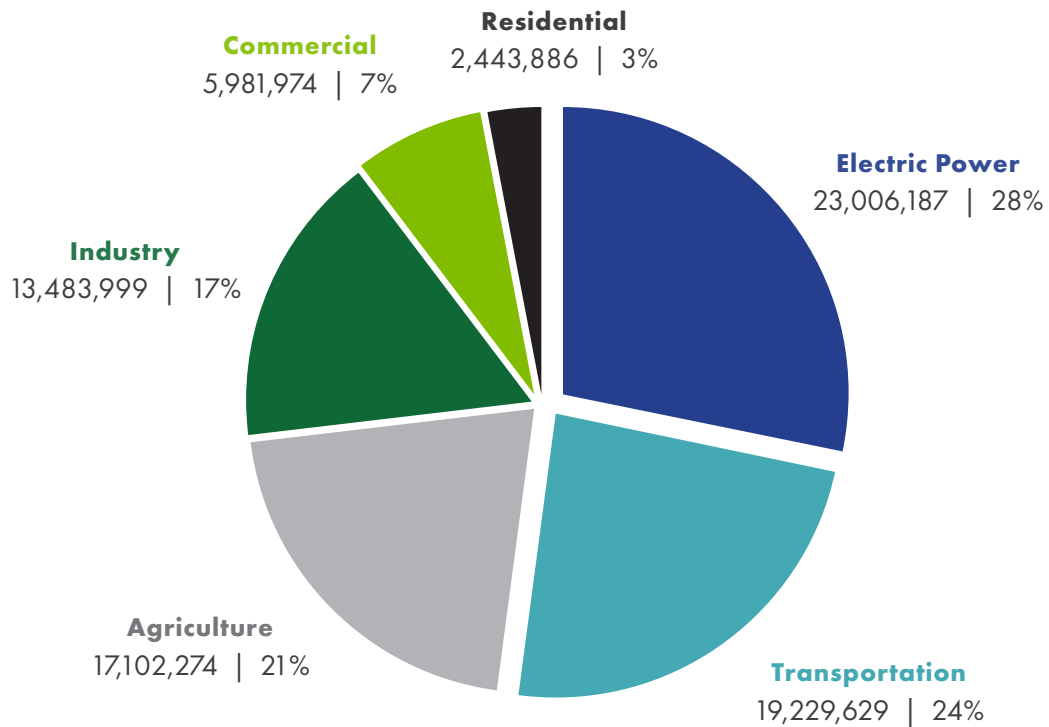
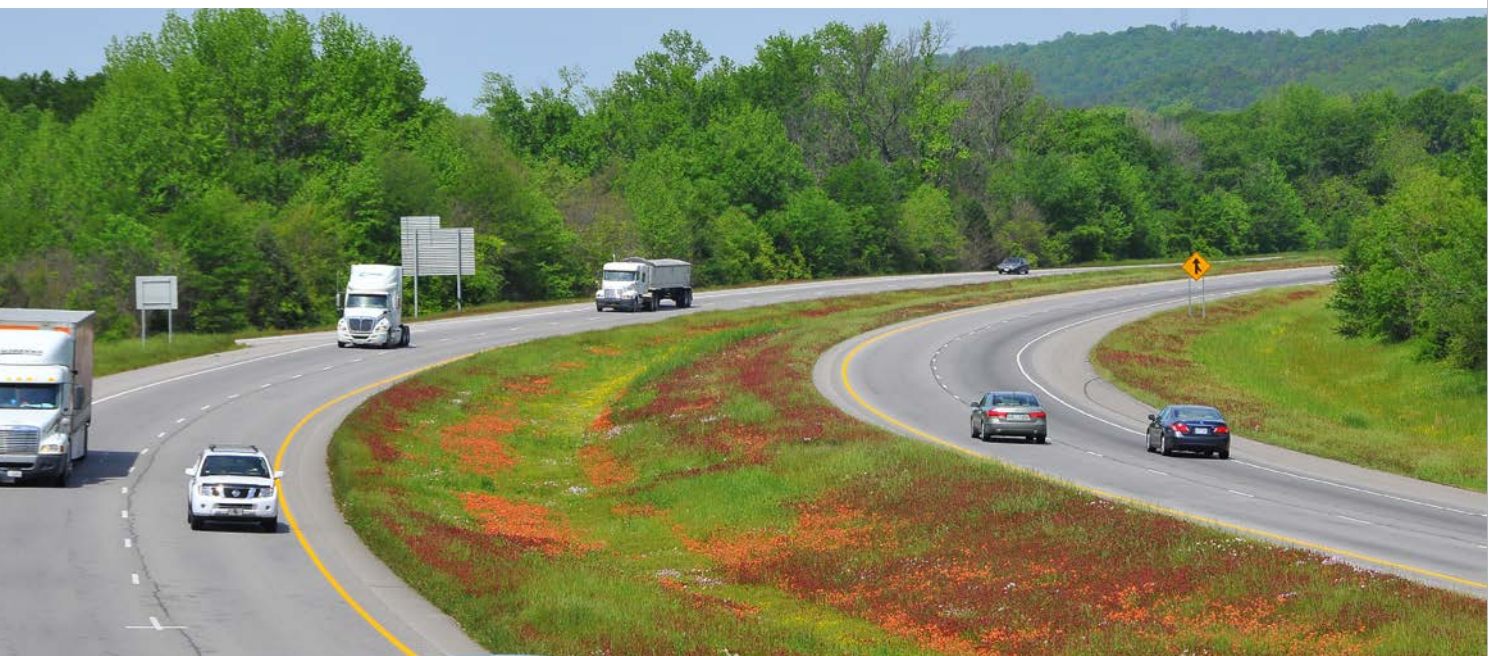


Figure 2. Arkansas GHG Emissions Approximation in Tons

(City of Fayetteville staff 2023; EPA 2020a; EPA 2020b; Google 2020).







03

Low-Income & Disadvantaged Communities



The NWA region comprises diverse communities with varying socioeconomic backgrounds in urban, suburban, and rural areas. Within this region, LIDACs have been pinpointed at the census tract and block group levels using the EPA’s Climate and Economic Justice Screening Tool (CEQ 2010) and the EJ Screen Tool. The LIDAC Summary in **Appendix B** presents the outcomes of an analysis conducted on the CEJST and EJ Screen data. The purpose of this analysis was to identify communities categorized as LIDAC as part of the planning initiative for the EPA’s CPRG program—a climate action planning process where the EPA recognizes these communities as low-income and disadvantaged.

The CEJST serves as a geospatial mapping tool specifically designed to identify marginalized and overburdened communities facing pollution and insufficient investment. The tool assists policymakers, researchers, and organizations in identifying areas where vulnerable populations endure disproportionate environmental and economic burdens. Census tracts are classified through the CEJST as disadvantaged, partially disadvantaged, or not disadvantaged. Any census tract identified as disadvantaged by the CEJST is defined as a LIDAC. The CEJST evaluates various burden categories to determine community disadvantage, using different indicators as data points or measurements for assessing environmental and social conditions. Communities within a census tract are considered disadvantaged if they rank at or above the 90th percentile for one or more burden indicators and meet the threshold for the associated socioeconomic burden in each category.

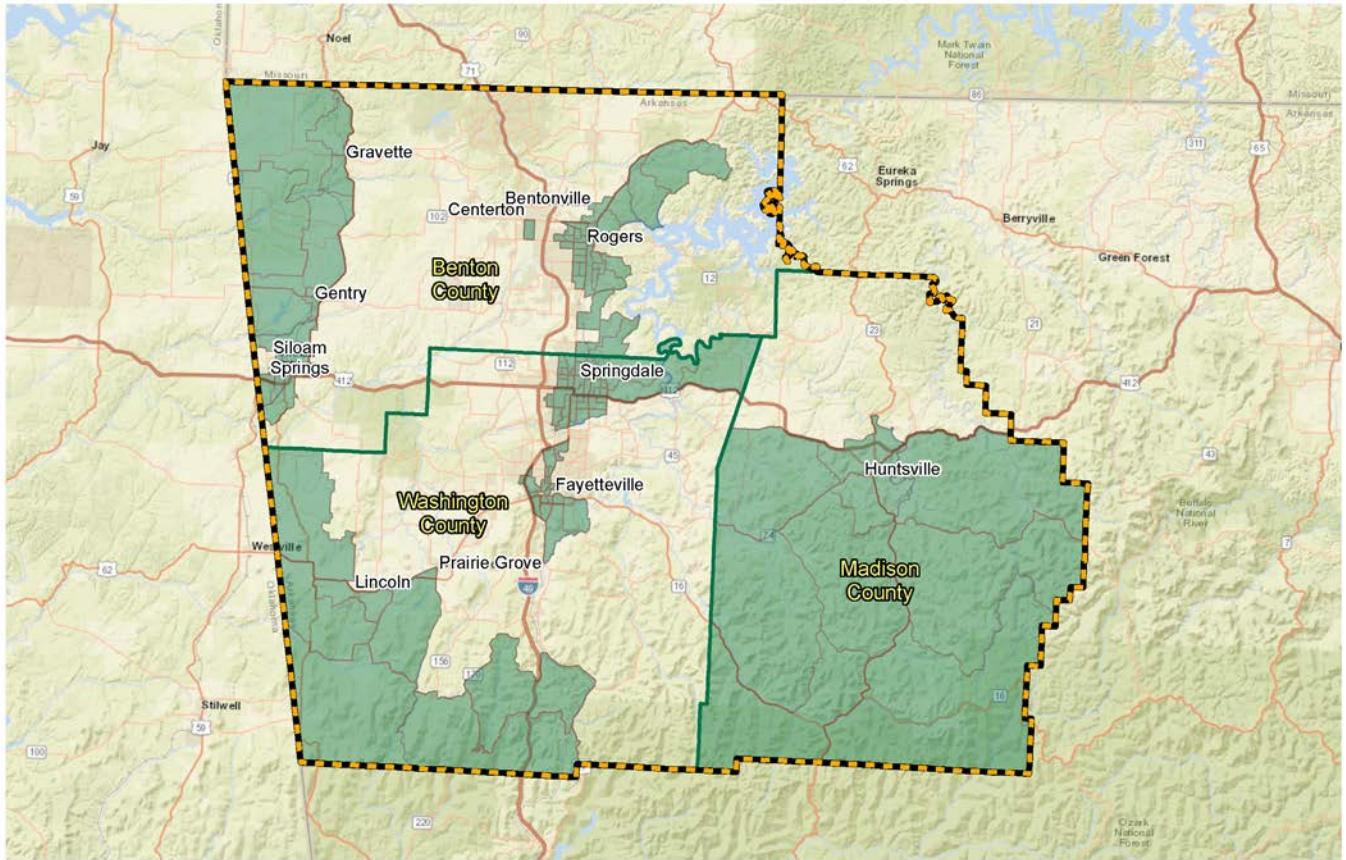
EJScreen is an online mapping and screening tool developed by the EPA to help identify areas in the United States that may be disproportionately burdened by environmental justice concerns like pollution and other stressors. This tool summarizes socioeconomic and environmental indicators of disadvantage identified at the census block group level for a selected location and can compare these indicators to the rest of the state, EPA region, or nation. Each census block group is assigned a percentile score for environmental or socioeconomic indicators of disadvantage that is based on the percent of the population in that block group that has an equal or higher value when compared to other block groups in the state, EPA region, or nation. Any census block group identified by EJScreen as at or above the 80th percentile for one or more environmental or socioeconomic indicators of disadvantage is defined as disadvantaged for the purposes of this analysis.

Overall, there are 315 census block groups in the NWA region; 122 block groups, or 39 percent, are identified as disadvantaged as defined by EJ Screen. **Figure 3** shows a map of Benton, Madison, and Washington counties; darker coloring indicates LIDAC communities. During data analysis, certain trends emerged on the county-level. In Madison County, all LIDAC tracts surpass the threshold for four or more burden indicators; in Washington County, only 13 percent of LIDAC communities meet or exceed the threshold for four or more burden indicators as defined by the CEJST. However, in Washington County, 54 percent of LIDAC communities meet or exceed the threshold for two or three burden indicators as defined by the CEJST.

See the LIDAC Summary in **Appendix B** for more information regarding burden indicators, further analysis, and comparisons within the NWA region.

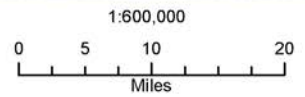


Figure 3. Low-income and Disadvantaged Communities (LIDAC) in Northwest Arkansas (CEQ 2010).



Legend

-  Project Area
-  County Boundaries
-  LIDAC



Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community







Trailblazers

04

Document and Plan Review



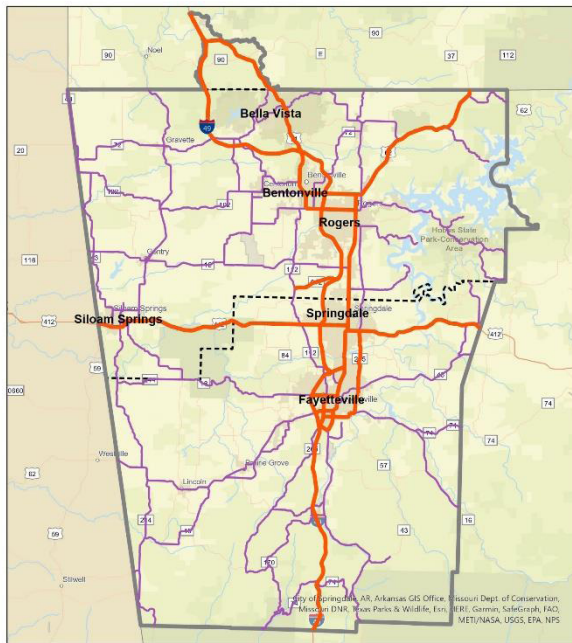
Arkansas Department of Transportation



Ozark Regional Transit

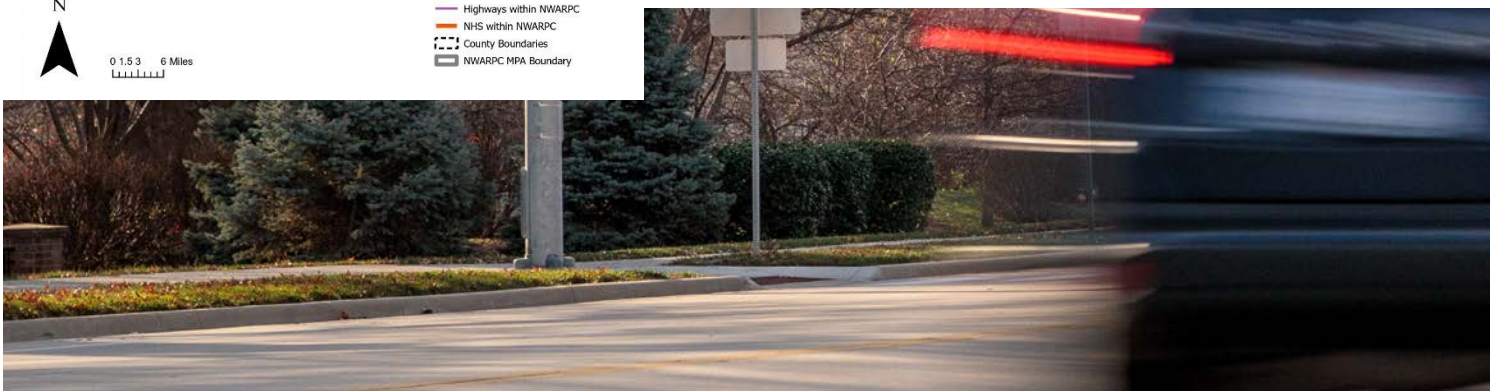
A total of nine plans developed by regional and state agencies were reviewed. Eight of these plans focus on the transportation sector, with one plan focusing on natural resources and open space:

- The NWARPC’s (2023c) **Northwest Arkansas Vision Zero Comprehensive Safety Action Plan’s** (CSAP) purpose is to eliminate all fatal and serious injury crashes that occur on the regional roadway network by 2038 by focusing on prioritizing safe, accessible, and equitable mobility for all users. The Safe Routes to School (SRTS) measure enables students to safely walk and/or bike to school, which includes implementation of projects that can improve safety and reduce traffic, fuel consumption, and air pollution around schools. The Complete Streets measure was designed to accommodate all users, including users with disabilities, with the goal of shifting to an increased transit-oriented development. The Northwest Arkansas Vision Zero Safety Plan also intends to encourage public transit to reduce vehicle trips; promote specific transportation demand management to reduce vehicle miles traveled (VMT); change street networks and land use patterns to minimize trip distances and automobile dependence; pursue a sustainable funding source for transit to reduce travel time; and identify walking zones for schools, recreation centers, and other community centers that will promote walking as a form of transportation.



- Highways within NWARPC
- NHS within NWARPC
- - - County Boundaries
- ▭ NWARPC MPA Boundary

- NWARPC’s (2023a) **Northwest Arkansas Regional Intelligent Transportation Systems (ITS) Architecture Plan** serves a purpose to anticipate for and implement ITS by embracing technological innovations in the region, provide a framework for encouraging interoperability, and allow for cohesive long-range planning among regional stakeholders. Measures within this program seek to organize a regional committee that will identify opportunities to improve the access to, and safe use of, alternative modes of transportation and promote demand-management strategies. Measures also seek to identify ITS elements and funding sources that can be employed to improve the access to and safe use of alternative modes of transportation.



- Prepared by Cambridge Systematics Inc., NWARPC's (2023b) **Transportation Systems Management and Operations (TSMO) Plan** details and develops implementation plans and strategies to optimize the performance of NWA's existing infrastructure. Measures within this plan seek to reduce vehicle travel delay; increase the use of transit, ridesharing, and nonmotorized modes of transportation; and reduce motor vehicle emissions that contribute to air quality issues and climate change. TSMO also promotes the increased access to safe, affordable, and environmentally friendly mobility options.

- Also prepared by Cambridge Systematics, Inc., NWARPC's (2022) **Congestion Management Process Plan** identifies congestion and develops monitoring processes to measure transportation system performance and reliability and then develop management strategies that move to the funding and implementation stages. This plan includes the Connect Northwest Arkansas 10-year Transit Development Plan (TDP) to encourage the shift from single-occupancy vehicle trips to transit trips. Also included are the Arkansas Statewide Transit Coordination Plan, the Razorback Transit and Ozark Regional Transit Asset Management plans, and Transit Safety plans to enable improved availability, quality, and efficiency of transportation services for groups with limited mobility options.

- Prepared by the Alliance Transportation Group, in collaboration with the Ozark Regional Transit and Razorback Transit, the **Connect Northwest Arkansas 10-year TDP** (NWARPC 2020) was created to improve and expand transit in the NWA region, connect NWA at regional and local levels, save commute time, and provide the community with greater mobility. Measures include specifically located mobility hubs within communities where several modes of travel on different networks converge to optimize connections between modes and the broader transportation network. High-capacity transit is also engaged, which incorporates higher frequencies, optimizing direct routes, and intuitive scheduling.



A CITIZEN'S GUIDE TO TRANSIT PLANNING

The transit planning process should not be out of reach for Northwest Arkansas residents. A key component to Connect Northwest Arkansas is giving you the tools to understand what makes a great transit system and the ability to take part in the planning process. The purpose of this guide is to help you understand the key principles of transit planning. We hope this knowledge inspires confidence in evaluating how transit can work best for the region and encourages you to actively engage throughout the project.

Why does transit matter?

- Save Money**
A household can save \$10k by living with one less car.
- Environment Friendly**
Public transit saves the country 4.16 billion gallons of fuel per year.
- Reduce Congestion**
Congestion costs Northwest Arkansas residents \$103M per year. Transit helps reduce the number of vehicles on roadways.
- Travel Safety**
Transit is 10x safer than traveling by automobile.

What is effective transit?

Effective transit...

- TAKES ME WHERE I WANT TO GO
- WHEN I WANT TO GO THERE
- IT IS RELIABLE
- IT SAVES ME TIME
- IT GIVES ME FREEDOM

How do you design transit?

Improving transit is often a balancing act of deciding where the bus picks you up, how often the bus comes, and when service runs. In other words, frequency, span of service, and route design are all important aspects of delivering effective transit service.

- Frequency**
How often the bus comes
- Route Design**
Where the bus goes and how it gets there
- Span of Service**
How early service starts & how late service runs

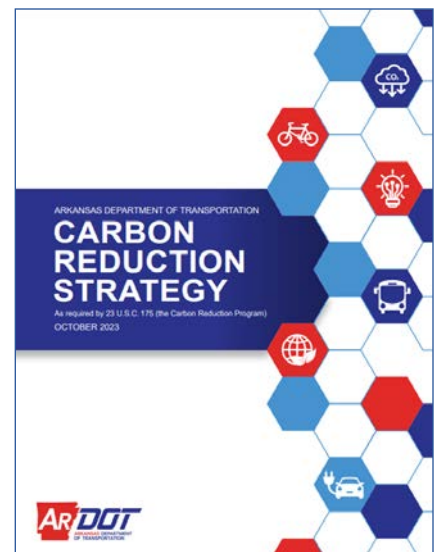
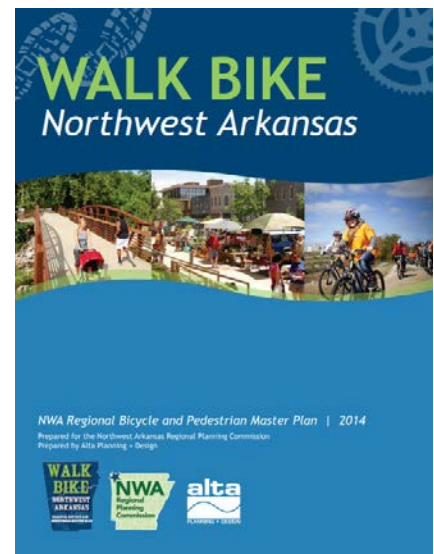
What supports transit?

- Density**
Transit works best when stops are located near a variety of destinations where people want to go such as job centers, schools, medical facilities, & housing complexes.
- Connectivity**
Transit should provide seamless transitions to other routes, park & rides, sidewalks, and bicycle routes. This ensures ease and comfort for passengers navigating the system.
- Ease of Use**
Transit should be easy to navigate and convenient to use. Great transit is integrated with technology to make taking transit an easy choice for travel.
- Community Support**
Whether you advocate for transit at city hall or simply choose to ride the bus, support from the community encourages local leaders to invest in great transit.

Source: Connect Northwest Arkansas 10-year TDP (NWARPC 2020)



- Prepared by Alta Planning + Design, NWARPC's (2015) **Regional Bicycle and Pedestrian Master Plan** was created to develop a regional network of bicycle and pedestrian on-road and off-road trail facilities and routes within the communities of the NWA region. Within this plan, the Regional Safe Routes to School Program enables students to safely walk and bike to school, which encourages physical activity for children and reduces motorized traffic. The Complete Streets Policy directs transportation planners and engineers to consistently design the right-of-way to accommodate all users, which encourages various forms of transportation. Additionally, the Non-Motorized Transportation Training for Engineers and Planners measure consists of the development of training sessions for engineers and planners covering best practices for bike and pedestrian improvements.
- Prepared by URS Corporation, NWARPC's (2014) **Northwest Arkansas Transportation Alternatives Analysis** responds to the public interest in the feasibility of a light rail project in the NWA region and plans to reduce the area's heavy reliance on single-occupancy vehicles. Light Rail Implementation in the NWA is a measure within this program's analysis geared at minimizing energy consumption on a systemwide basis by reducing congestion, lessening disturbances of the region's natural aesthetics and wildlife habitat, providing for needed highway and transit system enhancements, and minimizing air, water, noise, and visual pollution.
- Finally, the Arkansas Department of Transportation's (ARDOT 2023) **Carbon Reduction Strategy** was created from the Infrastructure Investment and Jobs Act (IIJA) to provide funding for projects that are designed to reduce transportation emissions from on-road highway sources. This strategy includes, but is not limited to, federal programs related to carbon reduction (e.g., National Electric Vehicle Infrastructure, Reduction of Truck Emissions at Port Facilities Program, etc.), intermodal investments, increased use of waterways, ARDOT seizing more opportunities to reduce emissions, ARDOT partnering with other agencies and stakeholders, fleet conversions, electric vehicle (EV) infrastructure deployment, emission reduction projects (i.e., collaboration with West Memphis Metropolitan Planning Organization [MPO]), energy efficient roadway lighting, TSMO, planning and policy development, pavement and bridge preservation, and bridge replacement.
- Prepared by Alta Planning + Design, NWARPC's (2016) **Northwest Arkansas Open Space Plan** was created to preserve NWA's natural assets and maintain a high quality of life that allows for the region to continue to grow and prosper. Within this plan, Conservation Subdivisions is a design strategy that attempts to preserve communal open space for residents. Ideally, 50-70 percent of buildable land would be set aside as open space, which can include forests, prairies, and wetlands that would provide mitigation of carbon emissions through the preservation of existing carbon stocks in NW Arkansas.





05

Stakeholder & Public Engagement

The NWA PAP recognizes that active involvement of stakeholder and public engagement is essential for public processes. In addition to the summary below, **Appendix C** details these efforts undertaken by the NWARPC. The following was considered and deployed.

Diverse marketing and outreach strategies were created and deployed during the engagement process, encompassing email communications, boosted and un-boosted social media posts, press releases, posters, flyers, and a dedicated project webpage that is regularly updated and available in English, Spanish, and Marshallese. Additionally, the project team actively participated in events to enhance the project’s visibility and reach within the community.

In coordination with the consultant team, the NWARPC identified potential members for the stakeholder committee. These members were identified, in part, because of their eligibility to participate in the CPRG implementation grant process and associated Notice of Funding Opportunity (NOFO) and/or their ability to implement the identified priority action items. The NWARPC worked to provide representation from a variety of sectors.

To assist in the adaptation of the PAP, virtual stakeholder committee meetings were held on October 12, and November 2, 2023. The meeting format included a welcome and brief introduction of the project team and a presentation of the project and proposed measures. Stakeholder poll question exercises were interspersed throughout the presentation and stakeholders were able to participate in the polls via QR codes. Additionally, two public open houses were held on October 23, and October 26, 2023, to present information to the public and gather input on preferred measures via the public survey. The public was invited to attend via email, website information, flyers, and boosted social media posts. All open house materials were posted to the project website following the open houses. Marshallese and Spanish interpreters were available in Springdale to accommodate the unique local population’s language needs. Public feedback was gathered via the state’s public survey and idea box in English, Marshallese, and Spanish. Attendees for stakeholder committee meetings and public open houses included representatives from public, nonprofit, and private sectors.

As required by the CPRG program, special emphasis was placed on engaging with LIDACs throughout the public participation process. According to the EPA, recipients of planning grants are obligated to carry out meaningful engagement with the affected LIDACs in the creation of planning grant deliverables. To assure compliance with the CRPG program’s guidance, the NWARPC actively engaged with Madison, Washington, and Benton County residents. NWARPC took a targeted approach to engagement with LIDACs within the counties after the LIDAC identification and analysis task was completed.





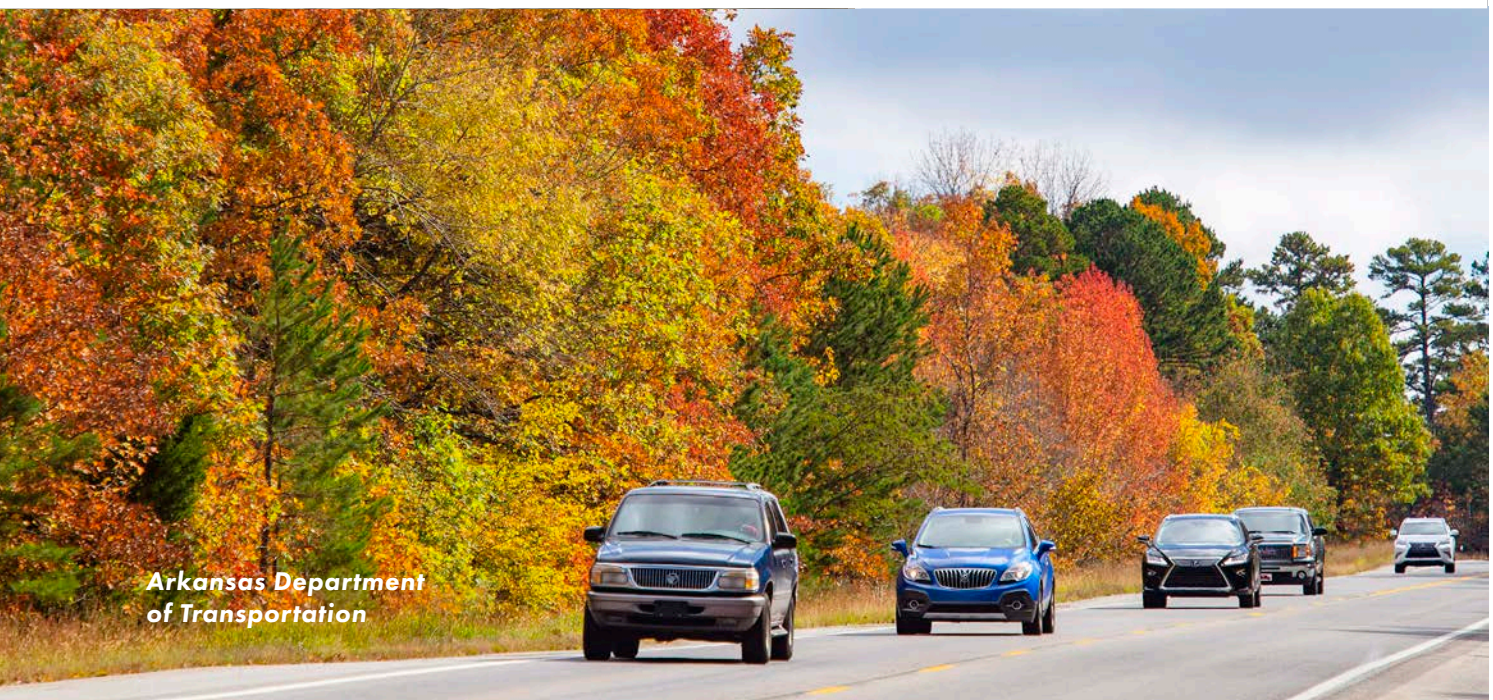
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Priority Measures





Ozark Regional Transit



Arkansas Department of Transportation

Measure No. 1

Transportation Sector



A high priority for the NWARPC is to reduce automobile trips and incentivize efficient and low/zero emission modes of transportation through the following:

- Expanding infrastructure such as bicycle facilities, transit stops, sidewalks, and other active transportation supporting infrastructure.
- Developing and implementing low/no emission ridesharing and e-bike programs, with priority given to LIDAC communities.
- Updating/adopting building and zoning codes to encourage walkable, bikeable, and transit-oriented development.
- Upgrading vehicle fleets by replacing internal combustion engine vehicles with low/no emission vehicles.
- Incentivizing eligible agencies, businesses, and individual automobile owners to purchase low/no emission vehicles and associated infrastructure, with priority given to LIDAC communities.
- Expanding supporting infrastructure for electric vehicles (EVs), including bus fleets.

Rationale for Measure

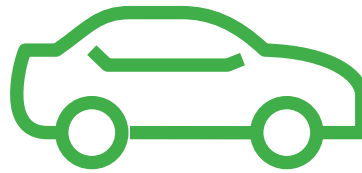
Approximately 24 percent of the GHG emissions in NWA come from the transportation sector. Expanding opportunities for alternate transportation mode choices and promoting the electrification of vehicles and bicycles provide greater options for Arkansans, many of whom will choose a cleaner mode for travel. The public engagement survey shows that transportation and energy sectors were rated the highest. Specific initiatives that community members and stakeholders mentioned through the series of engagement meetings were things like incentive programs (including high-occupancy vehicle lanes), the electrification of vehicle fleets for cities and the University of Arkansas, development codes, and infrastructure improvements such as charging stations and bus stops. Additional information from the stakeholder and public engagement activities is summarized in **Appendix C**. Though the survey touched on a significant breadth of transportation sector components that the NWA community is interested in, the identified regional need boiled down to transportation choice. By increasing access to viable alternate modes of transportation and expanding infrastructure, low/zero emissions vehicles (from light- to heavy-duty) become options for significantly more people.

24%

of GHG Emissions

come from the

TRANSPORTATION SECTOR



Investments in equitable transportation infrastructure is a key pillar of both the IIJA and the Inflation Reduction Act (IRA). Multiple grant programs through the U.S. Department of Transportation (DOT), such as the Reconnecting Communities Pilot (RCP) Program and Neighborhood Access and Equity (NAE) Grant Program, provide funding to support equitable access to community facilities, anchoring institutions and safer roads and streets that can incentivize the use of alternative modes of transportation. Further, federal grant and tax credit programs can aid in the transition of commercial, heavy-duty, and school bus fleets to low or zero emission vehicles. These programs, coupled with the Federal Highway Administration's EV charging infrastructure programs, can aid in the adoption and transition to low- or zero-emission vehicles. However, opportunities also exist for the development of ridesharing and e-bike rebate programs focused within LIDAC communities.

Anticipated Workforce Needs

Implementation of these transportation measures requires a skilled workforce that has expertise in planning, engineering, design, and development. Workers skilled in project management will be essential for successful deployment of transportation programs potentially emerging from CPRG funding opportunities. Additionally, experts in program and policy fields will play a significant role in strategies regarding incentive programs or other promotional efforts for the adoption of EVs. Field service employees will be required for construction and installation of many of these systems, including electricians who may be required to have specific certifications to meet federal requirements for components like EV charging stations. Finally, the workforce will need to include workers to fulfill any compliance or regulation protocol for implemented components. Discretionary grant programs established through the IIJA and the IRA dedicate merit review criteria to workforce development activities connected with the proposed scope of work. Local and state agencies should consider formalizing relationships with local and regional institutions of higher education, and the secondary education system, to expand youth and registered apprenticeships in the construction trades to meet the merit scoring criteria and advance regional workforce development targets.

Review of Authority to Implement

A transportation program could extend incentives to several different entities. If an implementation grant is pursued for this measure, it is anticipated the eligible entities would be a state agency or a coalition of local governments and/or regional organizations. The program would be structured in a manner to assure that the eligible entity or coalition would have the authority to implement one or more components of the measure directly and/or deliver incentives to individuals and entities that could implement components of this measure. Public-private partnerships could also be a mechanism to implement this measure. The state of Arkansas has appointed the Arkansas Council on Future Mobility to identify barriers to the implementation of EVs (and automated vehicles), including existing laws, policy review and recommendations, education and workforce development, and economic development (DOE 2023). Strategic alignment with this council's recommendations and initiatives will assure, as appropriate, state regulations and priorities do not hinder or prohibit implementation.

Greenhouse Gas and Co-pollutant Emissions Reduction or Sequestration

There is substantial room to reduce overall emissions because approximately 24 percent of NWA's regional GHG emissions come from the transportation sector. According to Google's EIE Tool, the City of Fayetteville (the region's most populous city) experienced approximately 758,000,000 VMT annually (Google 2020) in a city with a population of 99,285 (U.S. Census Bureau 2022) in 2022, or an average of 7,635 miles per person per year. If only 1,000 of Fayetteville's residents, or about 1 percent of the total population, stopped driving gas-powered vehicles, it could affect approximately 7,635,000 VMT annually. If extrapolated over the entire populations of Benton, Washington, and Madison counties (combined population of 576,403 in 2022), at 1 percent conversion, this could translate to a reduction of 44,008,140 VMT or approximately 17,600 metric tons of CO₂ annually.



Specific to e-bike incentive programs, following the example of the City of Denver's successful e-bike program (Alvarez 2023), the NWA region could experience similar reductions. At \$4.7 million per year, such a program could result in over 4,700 e-bike rebates and a reduction of 2,040 metric tons of CO₂ per year. If such a program were implemented over a five-year period prior to 2030, NWA could see a reduction of over 30,000 metric tons of CO₂ by 2030. Additionally, 67 percent of the City of Denver's e-bike program funding was allocated to income-qualified residents, or people making less than 80 percent of the city's median income. Results from this program showed that income-qualified residents rode their e-bikes 50 percent more than other rebate recipients. Prioritized communities such as LIDACs are also expected to take advantage of the e-bike rebate program. Furthermore, reduced VMT can be shown in results from the program; 71 percent of participants said they used their cars less after purchasing an e-bike, 90 percent were riding weekly, and 65 percent were on their bikes daily.

Bike sharing programs have also been shown to reduce personal vehicle use. Based on the Ride 4 Smilies bike share program in Fort Smith, 1,302 users took advantage of riding bikes (some of which were e-bikes) for 8,152 total miles since inception in May 2022, or a period of 20 months (Tableau Public 2023). This program, which costs approximately \$140,000 per year, is focused on low-income residents and underserved communities. Based on the program survey, 36 percent of users indicated that bike trips replaced a personal vehicle trip (Tableau Public 2023). It may therefore be expected that approximately 1,760 miles of personal vehicle trips are eliminated in this program per year. Because the NWA region has more mature bicycle infrastructure than Fort Smith, if it is assumed that 50 percent of bike share users replace a personal vehicle trip, and assuming a tenfold increase in number of bikes available at an annual cost of \$1.4 million, it could be assumed that approximately 24,500 VMT would be eliminated annually, resulting in annual savings of approximately 9 metric tons of CO₂ per year. If such a program were implemented over a five-year period to 2030, NWA could see a reduction of more than 45 metric tons of CO₂ by 2030.

The adoption rate of EVs in the NWA area is currently at approximately 4 percent of all new vehicles purchased. As EV adoption increases, annual VMT with zero emission transportation will increase, which will reduce the total miles traveled by combustion engine vehicles. Because the EV consumer personal vehicle market is constantly changing, it is difficult to say how much incentive beyond the existing federal incentive is sufficient to bring new EV adopters. However, if we assume 10 percent EV adoption in new car sales by 2025, approximately 52,810,043 VMT annually would involve zero emission vehicles, resulting in approximately 19,000 metric tons of CO₂ reductions by 2025. If EV adoption grew to 35 percent in 2030, approximately 382,872,811 VMT would involve zero emission vehicles annually, resulting in approximately 138,000 metric tons of CO₂ reductions by 2030. The regional approximation of GHG emissions is included in **Appendix A**.

Low-income and Disadvantaged Community Benefits

A transportation innovation program would be structured in a manner that prioritizes incentives for LIDAC and rural populations. For instance, cash incentive programs can be tailored to allow greater rebates for qualified individuals based on income. As noted through the stakeholder and public engagement process as part of CPRG planning activities, not all populations value GHG emission reduction efforts the same way. For example, some individuals may want to own and drive a personal EV, while others would benefit more from increased public transportation, biking, and walking access. A LIDAC analysis was conducted in accordance with EPA guidance and is included in **Appendix B**.

Measure No. 2

Waste, Recycling, and Sustainable Materials Sector



A high priority for the NWARPC is to develop and implement a waste minimization and management program that reduces carbon emissions through the following:

- Providing incentives for community composting programs.
- Supporting development of a biochar pyrolysis facility and/or gasification facility.
- Providing incentives for anaerobic digester facilities to be implemented/constructed to divert organic waste that is currently being landfilled and/or land applied into compost and other agricultural and environmentally beneficial products.
- Providing incentives or a voucher system to improve waste management for rural populations.
- Developing a regional Materials Recovery Facility (MRF) with end-market transparency.

Rationale for Measure

Since 1979, the Waste Management Eco Vista landfill located in Tontitown has been the only landfill serving the waste disposal needs of NWA. However, there has been significant growth in this region over the years, with NWA now ranking as the 15th-fastest growing region in the U.S. (Sparkman 2023). And as the 100th-largest metropolitan area in the country (Northwest Arkansas Council 2023), the waste management needs of NWA have increased considerably, and the existing landfill is approaching its capacity. In addition to household and commercial waste, waste from construction and demolition in the region will continue to increase as the region grows. Public and private entities are currently pursuing, or have expressed interest in pursuing, the development of waste minimization and management facilities that can simultaneously reduce carbon emissions in the region. This specific GHG reduction area is ripe for program development with regional and/or state implementation and leadership. Additional information from the public and stakeholder engagement is summarized in **Appendix C**.

Few federal funding programs exist to support the identified implementation measures. However, the EPA's Solid Waste Infrastructure for Recycling Infrastructure Grant program is a prospective funding opportunity to support the development or update of plans to advance post-consumer materials management development; strengthen and/or implement comprehensive data collection efforts; and support the state-led implementation of plans that advance post-consumer materials management.

Anticipated Workforce Needs

The waste, recycling, and sustainable materials industry requires a diverse range of skills and expertise to design, develop, and operate these facilities. Professionals who have backgrounds in engineering, project management, environmental science, and other technical expertise will be in high demand. Organizations that oversee program implementation will also have procurement and oversight responsibilities. In addition, field services will be needed to construct and install these systems. Overall, implementation of this measure is anticipated to result in an increase in demand for workers and an associated need for workforce development, which should have a positive impact on the economy in NWA.



Review of Authority to Implement

A waste minimization and management innovation program could extend incentives to several different entities. If an implementation grant is pursued for this measure, it is anticipated the eligible entities would be a state agency or a coalition of local governments and/or regional organizations. This program would be structured in a manner to assure that the eligible entity or coalition would have the authority to implement one or more components of this measure directly and/or deliver incentives to individuals and entities that could implement components of this measure. Voluntary use and public perception of innovative waste management programs could be a barrier to implementing this measure in certain instances and for certain projects.

Greenhouse Gas and Co-pollutant Emissions Reduction or Sequestration

There is the potential for significant impact in reducing GHG emissions in the region through the implementation of a waste minimization and management program, the removal and sequestration of GHGs into compost, and/or carbon-negative processes such as biochar pyrolysis. Because significant amounts of waste are produced from construction and demolition in this rapidly growing region, there will be an ample source of materials to convert into biochar for the foreseeable future. A significant reduction of methane emissions from the local landfill could be accomplished by diverting food waste and other organic material to composting programs and anaerobic digester facilities. Improving the capture of recyclable materials through an MRF would also have an indirect impact on carbon emissions in the industrial sector by reducing the GHG footprint associated with the extraction, distribution, and manufacture of raw materials by replacing a portion of these with recycled materials.

Solid waste originating in Fayetteville alone generated more than 93,000 metric tons of CO₂ in 2022 (City of Fayetteville staff 2023). In May 2023, Waste Management (WM) opened a renewable natural gas (RNG) facility at the Eco Vista Landfill in Tontitown. This landfill gas-to-energy facility uses the carbon emissions generated from the decomposition of organic material in the landfill, recovering and distributing approximately 750,000 metric million British thermal units (MMBtu) per year at this RNG. This figure is the equivalent of more than 5.1 million gallons of diesel, which is enough to serve the equivalent of 25,000 households annually or 650 heavy-duty vehicles (Gatling 2023). Because of the need for regional alternatives to the Eco Vista Landfill, additional RNG facilities associated with landfills and wastewater treatment facilities in the region may provide an opportunity to reduce carbon emissions while simultaneously providing an alternative fuel source that can partially replace the use of fossil fuels. The regional approximation of GHG emissions is included in **Appendix A**.

Low-income and Disadvantaged Community Benefits

A waste minimization and management innovation program would be structured in a manner that prioritizes incentives for LIDAC and rural populations. Improving access to waste collection services for rural communities and job creation in low-income communities are examples of how this program could benefit LIDAC. This program would be structured in a manner that meets the desires and needs of the population served and would focus on providing equitable outcomes through its incentive programs. A LIDAC analysis was conducted in accordance with EPA guidance and is included in **Appendix B**.



Measure No. 3

Carbon Removal Sector



A high priority for the NWARPC is to develop and implement a program(s) to improve or increase carbon sequestration on the landscape through nature-based solutions and natural infrastructure through the following:

- Planting native tree and plant species that provide optimal carbon sequestration benefits in publicly owned parks, trails, and rights-of-way and on privately owned lands.
- Restoring degraded prairies, forests, riparian buffers, streams, and wetlands in parks, trails, rights-of-ways and private lands.
- Identifying lands with high carbon sequestration value and create programs for the protection and restoration of these lands through fee-simple acquisition, conservation easements, or other means. Consider co-benefits.
- Developing conservation plans for new parks and recreation areas that include measures to improve or preserve areas with high carbon sequestration value.
- Incentivizing agricultural practices to reduce carbon emissions and create carbon capture.

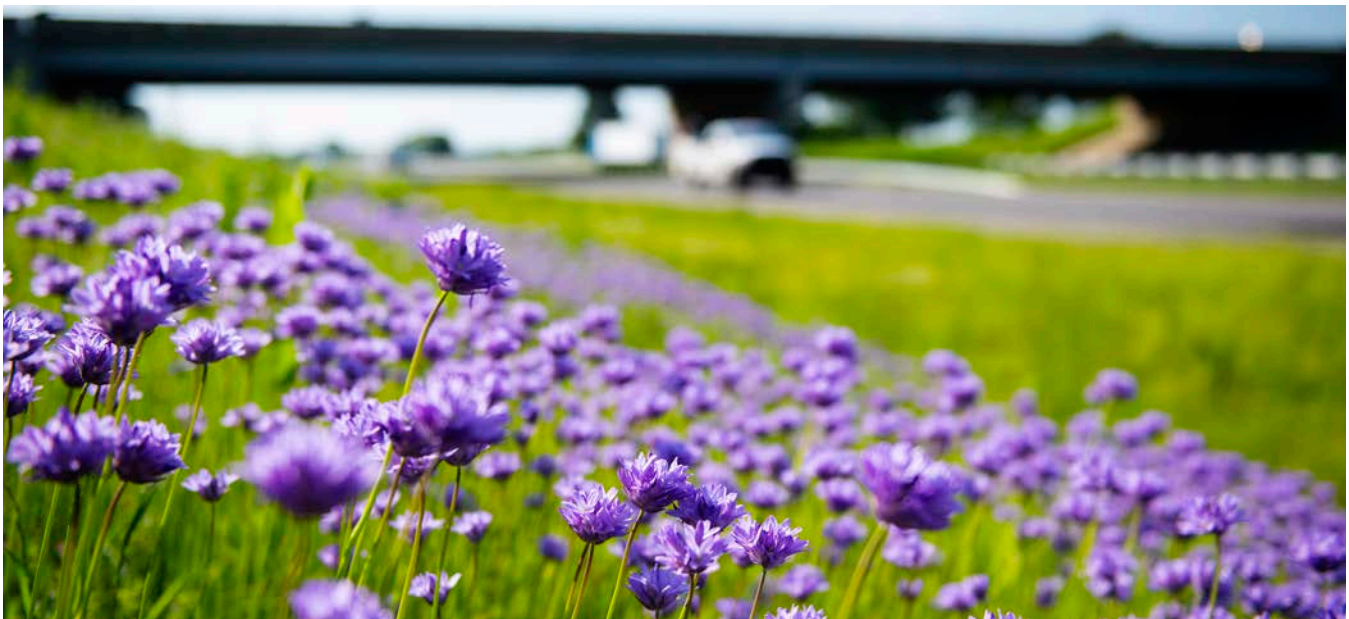
Rationale for Measure

Because it is the 15th-fastest growing region in the U.S. (Sparkman 2023), development in NWA is happening at an astonishing pace. Historically, the region was dominated by native prairies and forests. However, much of the original forest has been logged or cleared, and the native prairies have either been developed or converted to pastures. A program to improve or increase carbon sequestration through land conservation and acquisition could mitigate much of the loss of carbon storage in the region because of this rapidly occurring development. Support is present in NWA for this type of program, which is made evident by the results of the public survey and stakeholder engagement. Additional information from the public and stakeholder engagement is summarized in **Appendix C**.

Plants with large amounts of woody biomass, such as trees, are ideal for aboveground carbon sequestration and storage (Nowak 1993; Nowak and Crane 2000, 2002; McPherson et al. 2005). However, there is a limit to how much carbon upland forests can store because of the limits to both the life span and sizes to which trees are able to grow (Zhu et al. 2018; Forrester 2020). Furthermore, because of the space constraints in urban settings, urban trees are better suited for climate adaptation measures that help city residents cope with climate change, such as urban heat islands and flooding, than for climate and pollution mitigation measures that aim to reduce carbon emissions. As a nature-based climate mitigation measure, carbon sequestration and storage by forests is more effective when implemented on large spatial areas where the trees can be maintained for a long period of time (Pataki et al. 2021), rather than in space-constrained urban settings. Therefore, the protection of existing forests and other high carbon storing ecosystems is a more effective alternative for a nature-based solutions approach to climate mitigation (Forrester 2020).

The soils beneath upland prairies can sequester more carbon than what is found in both the aboveground biomass and belowground soils of upland forests, combined. Soil carbon in prairie ecosystems appears to be related to plant biodiversity and the species richness of these landscapes (Chen et al. 2018; Yang et al. 2019; Pastore et al. 2021). Restoring prairie ecosystems offers an effective nature-based solution for addressing climate change.

Land conservation and acquisition could also provide additional benefits such as improving access to parks and open space for LIDAC communities where such amenities are currently lacking. Additionally, preserved and restored lands could enhance connectivity within the active transportation network in NWA, improving mobility choice for those who lack vehicular transportation. Where these efforts are implemented along riparian areas, additional benefits could also include improvements to stormwater management such as flood control and a reduction in contaminants entering the Illinois River, Beaver Lake, and their tributaries.



Anticipated Workforce Needs

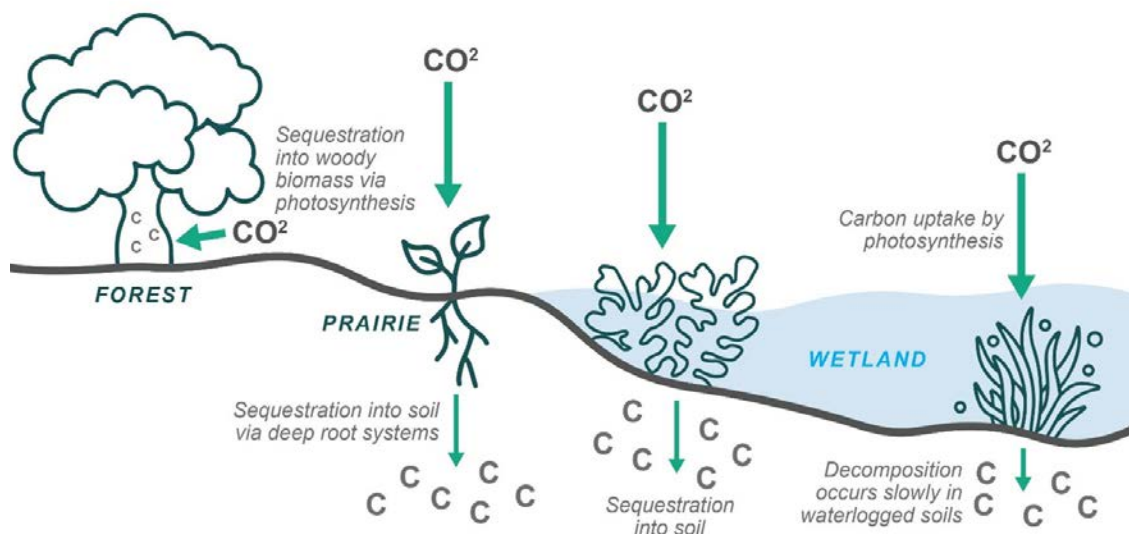
A carbon removal program would require a diverse range of skills and expertise to design, develop, and operate this program. Professionals who have backgrounds in natural resources, land management, project management, environmental science, and other technical expertise would be in high demand. Organizations that oversee program implementation will also have procurement and oversight responsibilities. In addition, field services will be needed to implement this program. Overall, implementation of this measure is anticipated to result in an increase in demand for workers and an associated need for workforce development, which should have a positive impact on the economy in NWA.

Review of Authority to Implement

A land conservation and acquisition program could extend incentives to several different entities. If an implementation grant is pursued for this measure, it is anticipated the eligible entities would be a state agency or a coalition of local governments and/or regional organizations. This program would be structured in a manner to assure that the eligible entity or coalition would have the authority to implement one or more components of this measure directly and/or deliver incentives to individuals and entities that could implement components of this measure. The availability of land for purchase or acquisition could be a barrier to implementing this measure in certain instances and for certain projects.

Greenhouse Gas and Co-pollutant Emissions Reduction or Sequestration

A study published in 2017 in the Proceedings of the National Academy of Sciences estimated that nature-based solutions can account for up to 37 percent of the carbon sequestration needed to keep average global temperatures from increasing 2 degrees Celsius by 2030 (IPBES 2019) and up to 20 percent of the carbon sequestration needed to keep average global temperatures from increasing 2 degrees Celsius by 2050 (Griscom et al. 2017). If we assume that 20 percent of the carbon emissions of the region could be offset by carbon removal through conservation and restoration efforts, a land acquisition and conservation program could be combined with other carbon emission reduction strategies to result in an overall reduction of regional GHG emissions. Land acquisition and conservation programs can also be combined with mobility strategies to decrease VMT by incorporating lands used for carbon removal into regional active transportation networks. The regional approximation of GHG emissions is included in Appendix A.



Source: City of Fayetteville, Arkansas Climate Action Plan

During restoration activities, priority would be given to using plant material that provides optimal carbon sequestration and storage. For trees, this includes native species with more than one of the following characteristics: (1) species that are naturally long-lived so that carbon will be stored for a longer period of time; (2) species that produce large quantities of woody biomass so that more carbon will be stored than would be in a species that produces less woody biomass; (3) species with a fast growth rate so that more carbon can be sequestered in a shorter amount of time than would be in slower-growing species; and (4) species with large crowns and/or large leaf sizes so that photosynthetic activity and removal of carbon from the atmosphere would be optimized. For herbaceous species used during restoration activities, priority would be given to species with the following characteristics: (1) perennial species that are naturally long-lived so that carbon will be stored for a longer period of time than in short-lived species, (2) species with fibrous root systems that can sequester a greater amount of carbon into the soil than species with tap root systems, and (3) species with deep root system that sequester carbon deeper into the soil than species with shorter root systems.

Low-income and Disadvantaged Community Benefits

A land conservation and acquisition program would be structured in a manner that prioritizes incentives for LIDAC and rural populations. Because the majority of LIDAC census tracts are located in rural parts of NWA where opportunities for carbon removal from conservation efforts are more abundant, additional benefits with a land conservation and acquisition program could include improving access for LIDAC to parks and open space where such amenities are currently lacking. Lands acquired for conservation or restoration could improve connectivity for the regional active transportation network and provide access to this network for residents of LIDAC and access to parks or open spaces for those who lack vehicular transportation. Additional benefits of implementing land conservation and acquisitions along riparian areas could include improvements to stormwater management and flood reduction for LIDAC and rural populations living downstream of these improvements. This program would be structured in a manner that meets the desires and needs of the population served and would focus on providing equitable outcomes with its incentive programs. A LIDAC analysis was conducted in accordance with EPA guidance and is included in **Appendix B**.



Measure No. 4

Buildings Sector



A high priority for the NWARPC is to develop a residential/commercial energy efficiency and innovation program through the following:

- Establishing an incentive program for implementation of end-use energy efficiency measures and certified energy-efficient appliances, heating and cooling equipment, and lighting.
- Providing incentives for adoption and implementation of up-to-date building energy codes.
- Developing voluntary programs and policies that promote low and zero-emission options and vehicle charging, with a focus on buildings in rural and LIDAC areas; multi-family residential buildings; and commercial buildings.

Rationale for Measure

Approximately 13 percent of the GHG emissions in NWA come from the commercial and residential building sector, which excludes emissions from electricity generation. These emissions are primarily generated from natural gas heating. Energy efficiency measures could include replacing old appliances with newer, higher efficiency appliances; installing higher-efficiency lighting; replacing windows and sealing them to reduce or eliminate leaks; and improving insulation. There are existing energy efficiency programs, for example those provided by Black Hills Energy, which could be expanded on or extended further with CPRG implementation grant funding. Such programs reduce energy use, thereby reducing emissions and cost. Public survey data for NWA indicated an interest in and support for energy efficiency. Additional information from the public and stakeholder engagement activities is summarized in **Appendix C**. Updating building energy codes could help to drive the effectiveness of an energy efficiency program.

At times, electrification of heating may be desired and cost-effective for residential and commercial buildings, especially if paired with an incentive program. Further, developing programs and policies that promote EV charging infrastructure in residential and commercial buildings will help support a faster transition to EVs for those who desire access to such infrastructure.

The IJA established multiple programs, including the Cost-effective Codes Implementation for Efficiency and Resilience grant program, the Energy Efficiency and Conservation Block Grant Program (EECBGP), and the Building Resilient Infrastructure Communities (BRIC) grant program, to advance building code updates and other building efficiency policies within a particular region, state, or local jurisdiction. Through the IRA, the \$1 billion Assistance for Latest and Zero Building Energy Code Adoption program was created to adopt codes for residential buildings that meet or exceed the 2021 International Energy Conservation Code (IECC) and/or adopt a building energy code for commercial buildings that meets or exceeds American National Standards Institute (ANSI)/ American Society of Heating, Refrigerating, and Air-Conditioning (ASHRAE)/ Illuminating Engineering Society (IES) standards. To support the LIDAC households, the Department of Energy (DOE) administers the Weatherization Assistance Program (WAP) and various home energy rebate programs to assist with energy efficient home retrofits. To advance energy efficiency building code updates, the region should look to develop a robust partnership with the state- and community-based organizations to apply for future funding rounds.



Anticipated Workforce Needs

The building energy efficiency industry requires a diverse range of skills and expertise to assess, design, develop, construct, and operate energy efficient buildings. Professionals who have backgrounds in engineering; building design and construction; project management; heating, ventilation, and air conditioning (HVAC); and technical expertise are in high demand. Organizations that oversee program implementation will also have procurement and oversight responsibilities. In addition, qualified construction/renovation professionals and technicians will be needed to make these changes. Overall, implementation of this measure is anticipated to result in an increased demand for workers and an associated need for workforce development and training, which should have a positive impact on the economy in NWA. The state should evaluate existing career and technical college building trade programs (e.g., HVAC, plumbing, electrical, construction technology) for coursework and training on energy-efficient construction methods and materials. These institutions should be encouraged to adopt industry-recognized certificates or credentials in energy-efficient technologies and methods.



Review of Authority to Implement

A building energy efficiency innovation program could extend incentives to several different entities. If an implementation grant is pursued for this measure, it is anticipated the eligible entities would be a state agency or a coalition of local governments and/or regional organizations. This program would be structured in a manner to assure that the eligible entity or coalition would have the authority to implement one or more components of this measure directly and/or deliver incentives to individuals and entities that could implement components of this measure. Public-private partnerships could also be a mechanism to implement this measure, including with Black Hills Energy, that already has an established energy efficiency program (Black Hills Energy 2023).

Greenhouse Gas and Co-pollutant Emissions Reduction or Sequestration

As noted previously, approximately 13 percent of the GHG emissions in NWA come from the commercial and residential building sector. These emissions are primarily generated from natural gas heating. If 20 percent of current building emissions could be reduced by energy efficiency measures and another 20 percent could be reduced by electrification, the impact could be an overall reduction of regional GHG emissions of 5 percent (International Energy Agency 2023). This GHG emissions reduction largely depends on the amount of funding that is available for implementation of the components contained within this measure.

In addition to GHG emissions reductions, other co-pollutant emission reductions would be realized for criteria and hazardous air pollutants, including a resultant positive impact from reduced ozone and particulate matter less than or equal to 2.5 microns in diameter (PM_{2.5}) emissions, and the associated health impacts of those emissions. The regional approximation of GHG emissions is included in **Appendix A**.

Low-income and Disadvantaged Community Benefits

A building energy efficiency innovation program would be structured in a manner that prioritizes incentives for LIDAC and rural populations. Public survey data for NWA indicated an interest in and support for building energy efficiency measures. Energy efficiency measures not only reduce GHG emissions, but also have a positive impact on LIDAC communities on a fixed and/or limited income. Further, such measures can help people feel safer and more comfortable in their housing and may result in positive health impacts. This program would be structured in a manner that meets the desires and needs of the population served and would focus on providing equitable outcomes through its incentive programs. A LIDAC analysis was conducted in accordance with EPA guidance and is included in **Appendix B**.



Measure No. 5

Energy Sector



A high priority for the NWARPC is to develop and implement a regional/statewide renewable energy innovation program through the following:

- Installing renewable energy and energy storage systems on municipal/government facilities.
- Developing distributed and community-scale renewable energy generation and storage, including in LIDAC and rural communities.
- Developing and implementing programs that support smart-grid and/or behind-the-meter technologies.

Rationale for Measure

Approximately 35 percent of the GHG emissions in NWA come from the energy sector. Though GHG emission reductions at all local utilities may not be feasible through the CRPG implementation grant program, there are public and private entities pursuing, or that are interested in pursuing, the installation of renewable energy and energy storage systems. This includes interest from the public, including in rural and LIDAC communities. During stakeholder engagement for the CPRG planning process, several local governments, regional organizations, and the University of Arkansas described ongoing, planned, or potential activities that could gain a critical path forward with grant funding, such as CPRG. Additional information from the public and stakeholder engagement activities is summarized in **Appendix C**. Utility portfolios in NWA consist primarily of fossil fuels, so there is an opportunity for government entities and public-private partnerships to drive GHG emission reduction efforts in the energy sector.

Both the IJA and the IRA provide substantial funding for green energy project deployment. Programs such as the EPA's Solar for All and the DOE's Grid Resilience and Innovation Partnerships (GRIP) programs provide grant support for developing and advancing clean energy generation and storage projects on public facilities and homes in LIDAC communities. Further, the IRA's direct-pay provisions provide government entities with the ability to benefit from clean energy tax credits. Government entities that elect to use the direct-pay provision can treat the credit as a payment of tax with any overpayment resulting in a refund. Grant programs, coupled with the IRA's direct-pay provisions, allow green and renewable energy projects more feasibility without pursuing traditional debt financing mechanisms.

Anticipated Workforce Needs

The renewable energy industry requires a diverse range of skills and expertise to design, develop, and operate these clean energy systems. Professionals who have backgrounds in engineering, project management, environmental science, and technical expertise are in high demand. Organizations that oversee program implementation will also have procurement and oversight responsibilities. In addition, field services will be needed to construct and install, operate, and maintain these systems.

Overall, implementation of this measure is anticipated to result in an increased demand for workers and an associated need for workforce development and training, which should have a positive impact on the economy in NWA. There are 54 programs across the IJA and IRA that provide for green workforce development that includes recruiting, training, and hiring workers. Further, the IRA includes tax credits and other rebate programs to support energy-related workforce development activities. Through the IRA's direct-pay provision, the Department of the Treasury can provide tiered tax credits to public entities that include workforce development activities in their renewable energy projects, such as registered apprenticeships and meeting prevailing wage requirements. Additional federal funding proposals should consider partnering with local and regional institutions of higher education to advance on-the-job-training activities, such as registered apprenticeships, to take advantage of these tiered tax credits and advance both clean energy goals and workforce training targets.



Review of Authority to Implement

An energy innovation program could extend incentives to several different entities. If an implementation grant is pursued for this measure, it is anticipated the eligible entities would be a state agency or a coalition of local governments and/or regional organizations. This program would be structured in a manner to assure that the eligible entity or coalition would have the authority to implement one or more components of this measure directly and/or deliver incentives to individuals and entities that could implement components of this measure. Public-private partnerships could also be a mechanism to implement this measure. The state of Arkansas has regulations that affect generation, distribution, and net metering that would need to be evaluated and that could be a barrier to implementing this measure in certain instances and for certain projects.

Greenhouse Gas and Co-pollutant Emissions Reduction or Sequestration

As noted previously, utility portfolios in NWA consist largely of fossil fuels. Considering that approximately 35 percent of the regional inventory is from the energy sector, there is the potential for implementation of a regional energy innovation program that will have a significant impact in reducing GHG emissions. Distributed power generation, though somewhat limited by state regulation, could significantly reduce the region's GHG emissions. As an example, Google's Environmental Insights tool estimates that the City of Fayetteville's buildings consume 943,000 tons of carbon dioxide equivalent (tCO₂e) per year, and the City of Fayetteville's rooftop solar potential is 490,000 tCO₂e per year (Google 2020). Though it may not be feasible or cost-effective to cover all rooftops with solar, such an analysis demonstrates the large potential upside with the comprehensive implementation of a program such as the one envisioned by this measure.

If 33 percent of current energy use could be replaced by zero carbon energy sources, the impact would be an overall reduction of regional GHG emissions of 10 percent. The GHG emissions reduction largely depends on the amount of funding that is available for implementation of the components contained within this measure. As an example of the potential, the City of Fayetteville increased clean energy usage from 16 percent to 72 percent by installing solar power arrays near its two wastewater treatment facilities. In addition to GHG emissions reductions, other co-pollutant emission reductions would be realized for criteria and hazardous air pollutants, including a resultant positive impact from reduced ozone and PM_{2.5} emissions and the associated health impacts of those emissions. The regional approximation of GHG emissions is included in **Appendix A**.



Low-income and Disadvantaged Community Benefits

An energy innovation program would be structured in a manner that prioritizes incentives for LIDAC and rural populations. As noted through the stakeholder and public engagement process as part of CPRG planning activities, not all populations value GHG emission reduction efforts alike. For example, people in multifamily housing may evaluate the pros and cons of renewable installation differently for their building than someone in a rural community. But both population subgroups would likely appreciate such a project if lower cost, low- or no-carbon energy can be provided in a reliable manner. This program would be structured in a manner that meets the desires and needs of the population served and would focus on providing equitable outcomes with its incentive programs. Generally, a reduction in GHG emissions from the energy sector can result in a reduction in local co-pollutant emissions, thereby having a positive (or reduced negative) impact on health outcomes with a particular benefit to LIDAC communities that typically suffer the most in the localized area. If localized renewable power generation can result in lower costs for customers, this typically has a positive impact in LIDAC populations on fixed incomes. A LIDAC analysis was conducted in accordance with EPA guidance and is included in **Appendix B**.





07

Co-Benefits for Northwest Arkansas



The above measures provide other co-benefits in addition to reducing GHGs and mitigating climate change. These co-benefits are discussed below.

Ground Level Ozone

Ground level ozone (O_3) is a potential emerging issue in northwest Arkansas. Ground level ozone can harm human health and affect sensitive vegetation and ecosystems. The EPA sets the National Ambient Air Quality Standards (NAAQS) for ground-level ozone, which specifies a maximum allowed measurement for ozone to be present in outdoor air. In 2015, the EPA set the NAAQS for ground level ozone at 0.070 parts per million (ppm), measured as the fourth-highest daily maximum 8-hour concentration averaged across three consecutive years. The Arkansas Department of Energy and Environment (ADEE) Division of Environmental Quality's maintains an Ambient Air Monitoring Station in Springdale, which indicated that in 2023 the ground level ozone levels in our region exceeded the limits set by the EPA that year.

Ground level ozone is created when nitrogen oxides (NO_x) react with other volatile organic compounds (VOCs) in the atmosphere as they are exposed to sunlight. Nitrogen oxides are highly reactive gases that form when fossil fuels are burned at high temperatures. NO_x pollution is emitted from a variety of sources, including automobiles, trucks, construction equipment, power plants, and industrial boilers. Thus, reducing emissions from fossil fuels through the measures outlined above is likely to provide a co-benefit of reducing the levels of nitrogen oxides and ground level ozone in the region.

The EPA and ADEE's Division of Environmental Quality have been working to reduce ozone concentrations in Arkansas. High temperatures accelerate the production of ozone, complicating efforts to improve air quality in the region (EPA 2016). High temperatures are also accompanied by weak winds, causing the atmosphere to stagnate and ozone levels to accumulate (Burrows, 2016).



Economic and Health Benefits

Many of the measures described above have economic and health co-benefits. For example, Measure No. #1 above has both economic and health benefits for the residents of Northwest Arkansas that are associated with active transportation. In 2018, a study commissioned by the Walton Family Foundation was conducted to analyze the economic benefits of bicycling in Northwest Arkansas. The study found that the bicycling industry generates \$137 million in benefits annually (BBC Research & Consulting 2018). A similar study conducted in 2022 by the Center for Business and Economic Research at the Sam M. Walton College of Business found that the bicycling industry generated \$159 million in total economic impacts from cycling-related jobs, tourism revenue and taxes in Northwest Arkansas that year (Jebaraj, M. 2023).

A 2019 study concluded that switching from short car trips to walking or bicycling can achieve substantial health gains and healthcare cost savings, and that implementing infrastructural improvements to encourage active transportation is likely to be a cost-effective way to improve the overall health of the population (Mizdrak et. al. 2019).

A reduction in GHGs and ground-level ozone will provide additional health co-benefits by reducing diseases related to poor air quality in the region. Ground-level ozone aggravates lung diseases such as asthma and increases the risk of premature death from heart or lung disease. Certain people such as children, the elderly, the sick, and the poor are especially vulnerable (EPA, 2016).

Stormwater and Flooding

Excessive amounts of stormwater runoff from heavy precipitation events can exceed the capacity of gray infrastructure, resulting in flash flooding and negative impacts to the residents of Northwest Arkansas (Boyett and Lee 2022; Early 2021). Measure No. #3 will help the region adapt to these heavier precipitation events through the restoration of riparian buffers along streams. Riparian buffers help slow stormwater runoff and improve the absorption of flood waters, which reduces peak flows and lessens downstream flooding.







08 Conclusion

In conclusion, this NWA PAP provides a priority assessment of five key action measures to facilitate GHG emissions reduction, address the needs of LIDACs, and outline meaningful engagement processes for both stakeholders and the public within Northwest Arkansas. The PAP serves as the foundational framework for the forthcoming Comprehensive Action Plan (CAP).

As we move forward, the execution of the PAP will require concerted efforts from various stakeholders, including government agencies, businesses, communities, and individuals. The integration of community engagement and collaboration assures a holistic approach, fostering partnerships that are essential for successful plan implementation. Regular monitoring and adaptive management will be crucial to address evolving dynamics and assure the plan's continued relevance and effectiveness.

Ultimately, the PAP illustrates a strategic and forward-looking framework designed to address critical aspects of energy and environmental stewardship. Through a comprehensive analysis and prioritization process, this plan aims to guide actions and initiatives that align with the overarching goal of promoting a sustainable and resilient future.

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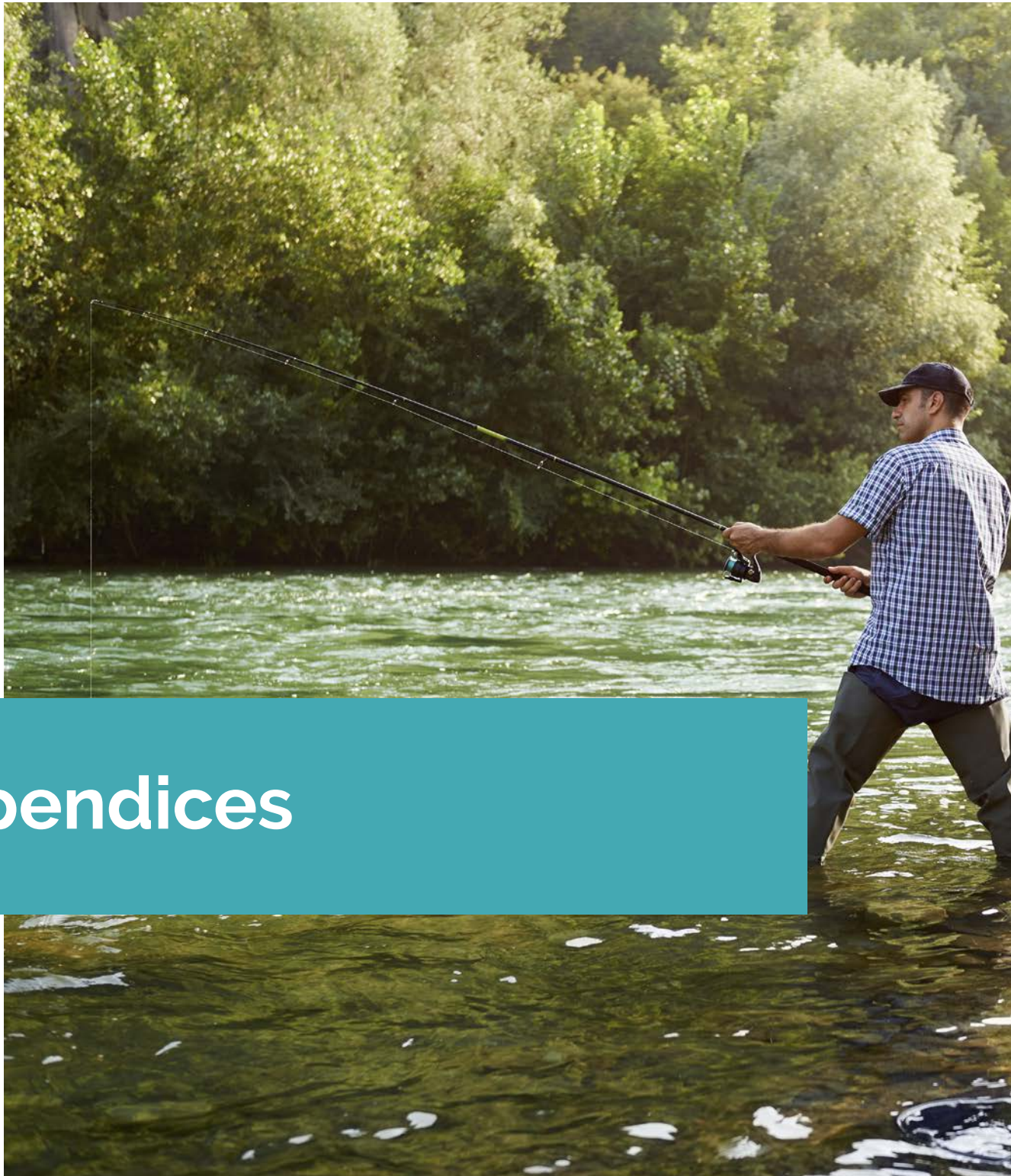
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Appendices

Appendix A Greenhouse Gas Approximation Summary

Appendix B Low-Income and Disadvantaged Community Summary

Appendix C Stakeholder and Public Engagement Summary

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Appendix A
**Greenhouse Gas
Approximation Summary**



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Appendix B
**Low-Income and
Disadvantaged Community
Summary**

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Appendix C Stakeholder and Public Engagement Summary



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