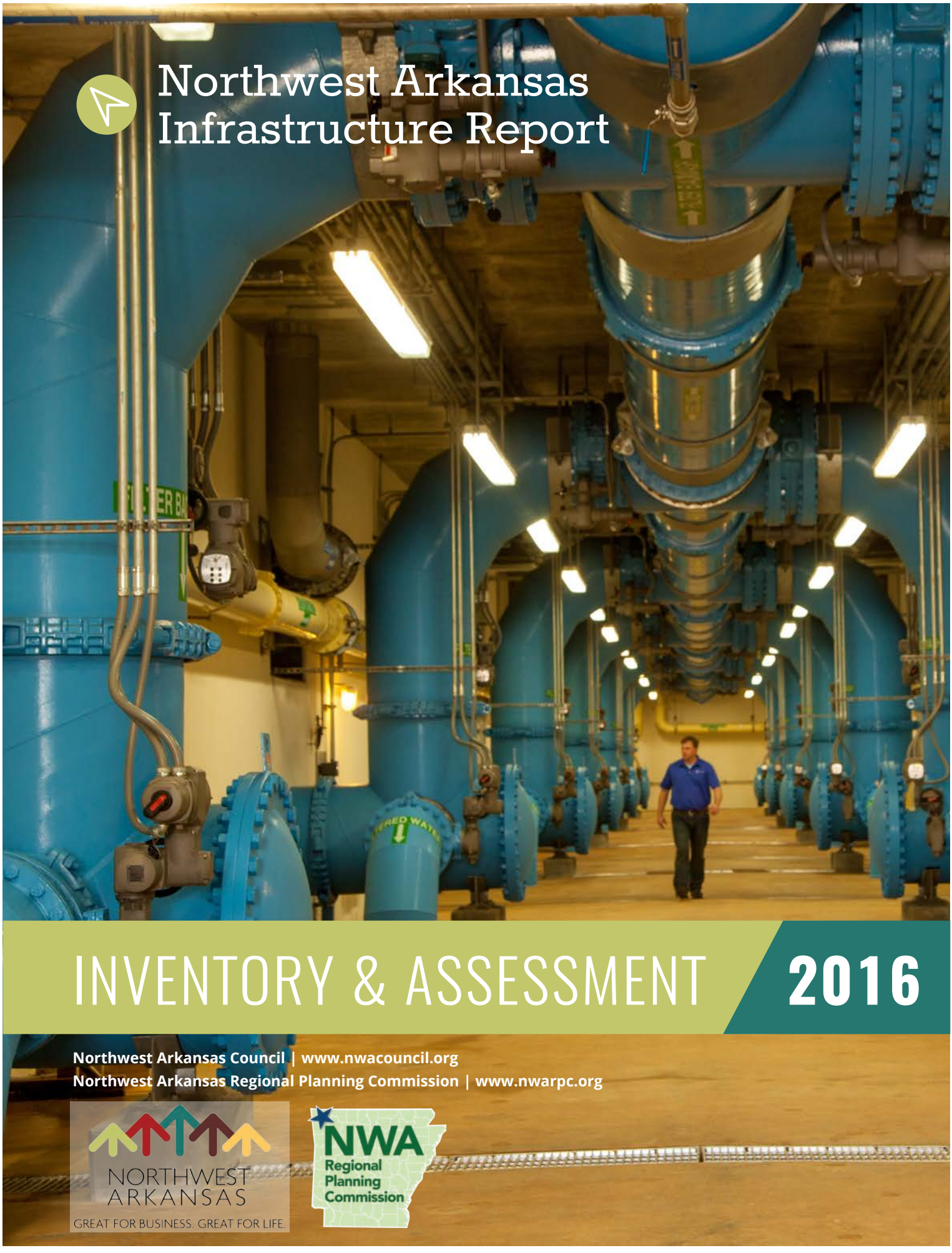


Northwest Arkansas Infrastructure Report

INVENTORY & ASSESSMENT 2016

Northwest Arkansas Council | www.nwacouncil.org
Northwest Arkansas Regional Planning Commission | www.nwarpc.org

NORTHWEST ARKANSAS
GREAT FOR BUSINESS. GREAT FOR LIFE.

NWA Regional Planning Commission

ACKNOWLEDGEMENTS

The Northwest Arkansas Council serves as a regional thought-leader that has pushed for significant infrastructure construction, including new highways, the region's primary airport and new water supply systems. While the Council often incubates ideas, it relies on a strong relationship with the businesses community, local governments and state agencies to accomplish key objectives, and this Infrastructure Inventory and Assessment is an example of why those partnerships are important.

This project would not have occurred without the help of the Northwest Arkansas Regional Planning Commission that administered the project and the Walton Family Foundation's support. The data contained herein was provided by a large number of partners which demonstrates the immense cooperation throughout the region. The Northwest Arkansas Regional Planning Commission is the region's metropolitan planning organization. It provides an excellent venue for cooperation and decision-making in the planning and prioritization of infrastructure assets. All planning is carried out through a "3C approach" — Cooperative, Continuing and Comprehensive.

Some of the planning commission's key partners on projects include the Arkansas State Highway and Transportation Department, public transportation providers, counties and cities.

Northwest Arkansas Council
Northwest Arkansas Regional Planning Commission

OUR THANKS FOR INFORMATION USED IN THE DEVELOPMENT OF THIS REPORT GOES TO:

AEP/Southwestern Electric Power Co.
Arkansas Arts Academy
Arkansas Children's Northwest
Arkansas Department of Aeronautics
Arkansas Department of Education
Arkansas Department of Environmental Quality
Arkansas Department of Health
Arkansas GIS Office
Arkansas State Highway and Transportation Department
Arkansas Oil and Gas Commission
Avoca Fire Department
Beaver Lake Fire Department
Beaver Water District
Bella Vista Village Waste Water Co.
Benton County
Benton County Solid Waste District
Benton/Washington Regional Public Water Authority
Bentonville School District
Boston Mountain Fire Department
Boston Mountain Solid Waste District
Bryan University
Carroll Electric Cooperative Corporation
Centerton Utilities
Cincinnati Fire Department
City of Bella Vista
City of Bentonville
City of Bethel Heights
City of Cave Springs
City of Centerton
City of Decatur
City of Elkins
City of Elm Springs
City of Farmington
City of Fayetteville
City of Gentry
City of Gravette
City of Greenland
City of Highfill
City of Johnson
City of Lincoln
City of Little Flock
City of Lowell
City of Pea Ridge
City of Prairie Grove
City of Rogers
City of Siloam Springs
City of Springdale
City of Sulphur Springs
City of Tonitown
City of West Fork
Decatur School District
Ecclesia College
Elkins School District
Empire District Electric Co.
Evansville Fire Department
Federal Aviation Administration
Fayetteville School District
Fayetteville VA Medical Center
Federal Communications Commission
Gallatin Fire Department
Gentry School District
Goshen Fire Department
Gravette School District
Greenland School District
Haas Hall Academy
Harding University - Northwest Arkansas Campus
Healthsouth Rehabilitation Hospital
Hickory Creek Fire Department
Highway 94 East Fire Department
John Brown University
Lincoln School District
Maysville Fire Department
Mercy Hospital Northwest Arkansas
Mitchell
Morrow Fire Department
Nob Hill Fire Department
Northeast Benton County Fire Department
Northwest Arkansas Classical Academy
NorthWest Arkansas Community College
Northwest Arkansas Regional Airport
Northwest Medical Center - Bentonville
Northwest Medical Center - Springdale
Northwest Technical Institute
Ozark Community Hospital of Gravette
Ozark Montessori Academy
Ozark Regional Transit
Ozarks Electric Cooperative
Pea Ridge School District
Physicians' Specialty Hospital
Piney Point Fire Department
Pleasure Heights Fire Department
Prairie Grove School District
Razorback Transit
Rocky Branch Fire Department
Rogers School District
Rogers Water Utilities
Round Mountain Fire Department
Siloam Springs Regional Hospital
Siloam Springs School District
Springdale School District
Springdale Water Utilities
Springwoods Behavioral Health Service
Strickler Fire Department
Sunset Fire Department
University of Arkansas
U.S. Department of Transportation
Vantage Point of Northwest Arkansas
Washington County
Washington Regional Medical Center
Wedington Fire Department
West Fork School District
Wheeler Fire Department
Whitehouse Fire Department
Willow Creek Women's Hospital

TABLE OF

CONTENTS

Roadways

32 CITIES
2 COUNTIES
6,385 ROADWAY MILES
808 BRIDGES

Public Transportation

2 SYSTEMS
639 TRANSIT STOPS

Trails

388.6 TRAIL MILES (ALL SURFACE TYPES)
871 ADDITIONAL PAVED MILES PLANNED

Aviation

1 REGIONAL AIRPORT
40 PASSENGER FLIGHTS PER DAY
14 DESTINATIONS

Railroads

2 RAILROAD COMPANIES
5 TRANSLOAD FACILITIES

Electricity

8 PROVIDERS
5.5 BILLION KILOWATT HOURS CONSUMED ANNUALLY

Natural Gas

1 PROVIDER

Drinking Water

31 PUBLIC WATER SYSTEMS
54 MILLION GALLONS PER DAY CONSUMED

Stormwater

22 MUNICIPAL SEPARATE STORM SEWER SYSTEMS

Wastewater

15 WASTEWATER TREATMENT PLANTS

Waste Disposal

1 LANDFILL
516,300 TONS PER YEAR OF TRASH RECEIVED

Recycling

22 DROP OFF CENTERS ACCEPTING MULTIPLE MATERIAL TYPES
239,911 TONS RECYCLED ANNUALLY

Mobile Access

308 CELL TOWERS
337,000 CELL PHONES

Broadband

3 FUTURE GIGABIT PROVIDERS
12 BROADBAND-CONNECTED SCHOOLS

Law Enforcement & Fire Protection

2 SHERIFF'S OFFICES
27 POLICE DEPARTMENTS
47 FIRE DEPARTMENTS

Hospitals

12 HOSPITALS
5 TRAUMA CENTERS
$354 MILLION IN EXPANSIONS

Primary & Secondary Education

15 PUBLIC SCHOOL DISTRICTS
21 PRIVATE SCHOOLS
6 CHARTER SCHOOLS

Higher Education

1 MAJOR RESEARCH UNIVERSITY
8 INSTITUTIONS OF HIGHER EDUCATION

EXECUTIVE SUMMARY

Introduction and Overview of the Northwest Arkansas Regional Infrastructure Inventory and Assessment

BACKGROUND

This is the written report on the findings and information collected as part of the Northwest Arkansas Infrastructure Inventory and Assessment.

The project came about because a 2015-2017 regional strategic plan completed by the Northwest Arkansas Council recommended that Northwest Arkansas complete a 25-year infrastructure capacity plan as a way to guide future decisions about infrastructure priorities and spending. This inventory and assessment is considered the first step toward that larger capacity plan.

The inventory and assessment was started in late 2015 with a vision that it would capture information about all types of infrastructure in Benton and Washington counties in Arkansas. It was determined that the Northwest Arkansas Regional Planning Commission would be an excellent partner in the project.

Conversations began in mid-2015 between the Northwest Arkansas Council and the Regional Planning Commission about how to pursue the project, and both the Council and Planning Commission staff have stayed involved in the project since its inception.

Two dozen stakeholders gathered in October 2015 to start the conversation about what information should be collected, and Burns & McDonnell was hired in March 2016 to gather the information. The assignment was to complete the gathering of the information and a final report by the end of 2016.

The recommendations by the stakeholders guided the decisions that tasked Burns & McDonnell with gathering information sheets, maps, lists and master plans about such things as water supply and consumption, wastewater treatment, airports, railroads, electricity transmission, natural gas lines, elementary and secondary schools, colleges and universities, alternative energy, bridges, streets, roads, highways, public transportation, landfills, recycling, communication systems, ambulance services, hospitals, police stations and fire departments.

REPORT SECTIONS:

Transportation:
- Roadways & Bridges
- Public Transportation
- Trails
- Aviation
- Railroads

Water:
- Drinking Water
- Stormwater
- Wastewater

Energy:
- Electricity
- Natural Gas

Solid Waste & Recycling:
- Waste Disposal
- Recycling

Communication:
- Mobile Access
- Broadband Access

Emergency Services:
- Law Enforcement
- Fire
- Hospitals
- Emergency Medical Services

Education:
- Primary & Secondary Education
- Higher Education

EXECUTIVE SUMMARY

The information collected for this Northwest Arkansas Infrastructure Inventory and Assessment afforded Burns & McDonnell with an opportunity to consider all areas of infrastructure, take note of where the region is preforming well, and identify areas of concern and note shortfalls.

A summary of the infrastructure metrics from the study is provided on Page 4.

Observations during the study are described below:

High-quality, regional approaches. Northwest Arkansas benefitted from large regional projects such as the Beaver Water District, the Benton/Washington Regional Public Water Authority and the Northwest Arkansas Regional Airport over the years. The high infrastructure costs make regional solutions even more important today. Regional approaches may not always work, but they will always be worthy of evaluation. As information was gathered for this report, information about excellent, more recent regional projects was provided, including a recycling project being led by Fayetteville that could be of benefit to other Northwest Arkansas communities. Other regional efforts exist in nearly every sector of this report.

Excellent master planning. Led by the Northwest Arkansas Regional Planning Commission, city and county leaders do an excellent job of considering the future. Nowhere is that more true than it is with highway planning and in the region's collaboration with the Arkansas State Highway and Transportation Department. Recent master plans have also been developed in other areas for such things as bike/pedestrian trails, open spaces and alternative transportation. Those three master planning projects could have been accomplished on a city-by-city basis, but they were more complete and widely successful because regional approaches were used.

Inconsistent record keeping. While some city water systems were able to provide Burns & McDonnell with information in Geographic Information System (GIS) maps and easily sortable electronic lists, other infrastructure information across the region is being kept on paper, in electronic PDF formats and in other less user-friendly ways. In other cases, electronic information is being housed with consultants who were not willing to share that information. That challenged Burns & McDonnell in many regards to provide all the information being pursued. Northwest Arkansas governments should work with the Northwest Arkansas Regional Planning Commission staff to ensure that records are kept in ways more in line with larger communities. Having this type of information will be important to the continuation of infrastructure planning.

Risky institutional knowledge. Some smaller communities have operating budgets that do not allow for investment in staff or systems to help them manage their infrastructure. As a result, they rely on individuals' institutional knowledge and memory about such things as the location and size of water and sewer lines. This presents a risk to future operation of their systems. These smaller cities need to take steps to ensure that the vast knowledge of those individuals is recorded in writing, on maps and in other ways so those who replace them someday are well positioned to be successful. While recording that information in writing will preserve it, the ultimate goal should be to move it into an electronic format that can be managed and updated.

Inadequate infrastructure condition documentation. Burns & McDonnell was unable to gather information about the condition of current infrastructure. The age and reliability of infrastructure should be aspects of the future 25-year infrastructure capacity plan. In many cases, asset management systems are not in place to catalog this information. System managers typically relied on institutional knowledge to understand where the most aged infrastructure lies and reported that replacing aged infrastructure was a regular component of capital improvement plans. As the infrastructure systems get larger and more complex, more sophisticated asset management systems will be needed.

Optimistic support for growth. The managers of the region's infrastructure systems all expressed confidence and optimism about the ability to meet future demands. These managers have an understanding of where needs exist in their systems and are working as proactively as funding allows to stay ahead of demand.

Widespread utilization of GIS. The Northwest Arkansas Regional Planning Commission purchased, installed and implemented a regional GIS system in 2016 for use by cities and counties for storage of data, maintenance of data and for analysis of data. There have been multiple interactive maps created and made available for better regional decision-making. This platform should be expanded to assist those communities not currently utilizing GIS with the management of infrastructure assets.

Continual updates to infrastructure capacity plan. One concern that remains at the end of this project is how quickly the Northwest Arkansas Council or the Northwest Arkansas Regional Planning Commission will take the next step and complete an infrastructure capacity plan. A long delay will mean the information collected for this report will become outdated. Future updates to the inventory and assessment could be necessary.

Unwilling to share information. Infrastructure owners were not willing to share information for the Infrastructure Inventory and Assessment in a way that is sufficient for the region to take on a 25-year infrastructure capacity plan without some significant gaps. Electricity and natural gas providers and communications companies provided some information, but it often did not have the depth or breadth needed for the capacity plan. Some companies cited security concerns and others worried about their competitors becoming too knowledgeable about their operations in describing why they were reluctant to participate more fully in this project. It may be worthwhile for the Northwest Arkansas Council to address those security and competition concerns before the next project starts.

TRANSPORTATION
BACKGROUND

Source: Northwest Arkansas Council

- roadways & bridges
- public transportation
- trails
- aviation
- railroads

Providing effective transportation infrastructure is a necessity to connect people and goods throughout the region, state and nation. This vital role makes transportation one of the most prominent types of infrastructure. It is also important that the transportation system be comprised of multiple modes to give businesses and residents transportation choices and to alleviate congestion on Northwest Arkansas roadways. The transportation infrastructure in Northwest Arkansas includes roadways, public transportation, trails, aviation and railroads.

The agency responsible for regional transportation planning is the Northwest Arkansas Regional Planning Commission (NWARPC). The NWARPC, as the metropolitan planning organization for the region, manages the functions for the Transportation Management Area identified by the Federal Highway Administration (FHWA). The Metropolitan Planning Area Boundary defined for the NWARPC includes all of Benton and Washington counties and a small portion of McDonald County, Missouri. In this role, the NWARPC performs its transportation planning activities in accordance with FHWA and Federal Transit Administration (FTA) requirements. On March 23, 2016, the NWARPC Policy Committee adopted the Northwest Arkansas 2040 Metropolitan Transportation Plan (2040 MTP). The 2040 MTP identifies as its goal:

"The Northwest Arkansas region will develop and maintain a safe, reliable, and efficient transportation system for the movement of people and goods throughout the area. The system will include a safe, secure, well-integrated and connected roadway, transit, freight, pedestrian, and bicycle network. The system will enhance and sustain a high level of economic vitality, community livability, and quality of life by providing movement of goods, choice, mobility, convenience and energy efficiency."

Interconnected transportation system.

"The public transportation system in Northwest Arkansas is evolving as the region grows but faces challenges due to the relatively low population density throughout most of the region."

The roadway system is overwhelmingly the primary means of travel for most travelers in and through Northwest Arkansas. Carpooling makes up a very small portion of the trips made. In fact, approximately 80 percent of all workers in the region drive to work alone. This places a large burden on the roadway network. However, state and local officials are working diligently to alleviate traffic congestion.

The public transportation system in Northwest Arkansas is evolving as the region grows. The high population density in and near the University of Arkansas campus supports a robust bus system operated by Razorback Transit that transports 1.8 million riders to and from the University, as well as to other destinations in Fayetteville.

The rest of the region, which is served by Ozark Regional Transit, has a much lower population density and ridership suffers on this system.

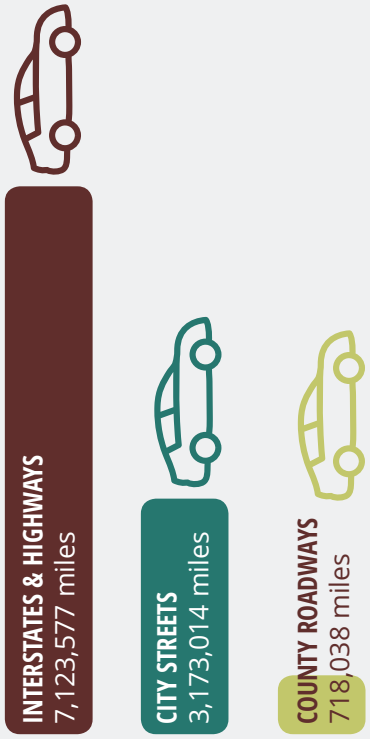
The trail system in Northwest Arkansas is one to be envied by other regions. Anchored by the 37-mile Razorback Regional Greenway Trail, a large amount of work has been completed to plan for and construct trails throughout the region. There are currently 388.6 miles of trails of various classes and surface types and over 1,400 miles of sidewalks with many more miles planned.

Air travel to and from the region for personal and business travel occurs through five general aviation airports and the Northwest Arkansas Regional Airport. Northwest Arkansas Regional Airport offers commercial passenger service with nearly 40 passenger flights a day to 14 destinations. The airport operators in the region work diligently to keep airport facilities well-maintained.

The railroad system through Northwest Arkansas was a foundational element to the original growth of the region. As the region continues to grow, the Kansas City Southern and Arkansas & Missouri railroads will play an increasingly important role in movement of people and goods to, from, and in the region.

ROADWAYS & BRIDGES

The roadway network serves as a primary mode of transportation for most users of the transportation infrastructure in Northwest Arkansas. The 2040 MTP, prepared by the NWARPC, reports that drivers traveled 11,014,629 miles on a daily basis on the roadways of Benton and Washington counties in 2014. This means that drivers in Northwest Arkansas collectively drove the distance to the moon and back 23 times each day.



MILES TRAVELED PER DAY

Roadways

Roadway usage includes personal use by local residents and tourists as well as use by businesses for purposes such as freight shipments via commercial trucks. The region's road infrastructure includes interstates, U.S. highways, state highways, county roads and city streets.

The maps on Page 12 show the major roadway network and the local roadway network in Benton and Washington counties. The majority of the traffic in the region utilizes the interstate and highway systems, which also make up the smallest segment of roadway miles in the system. The Arkansas State Highway and Transportation Department owns and maintains highways and interstates. The 32 cities own and maintain roadways in the incorporated areas while the two counties manage roadways in the unincorporated areas.

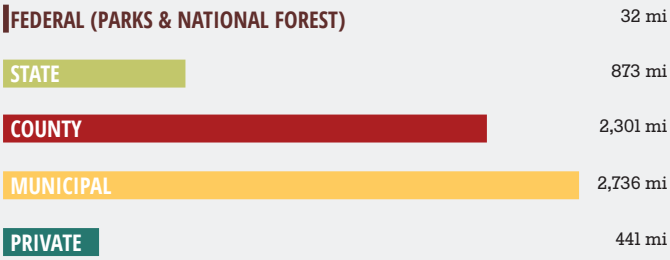
There are a multitude of "under construction" projects in Benton and Washington counties that will add to the region's roadway network. Those projects include finishing up a 6.4-mile section of the Bella Vista Bypass, building a 4.5-mile section of the U.S. 412 Bypass between Interstate 49 and Highway 112, widening a 5.1-mile section of I-49 to six lanes from Highway 264 in Lowell to New Hope Road in Rogers, and widening 3.4 miles of I-49 to six lanes from Highways 62/102 to Highway 72 in Bentonville.

Construction bids were opened in late 2016 for a portion of the Eighth Street improvement project in Bentonville. The Highway Department opened a $28.9 million bid to connect the street to I-49. The city plans to then widen Eighth Street from I-49 to the Walmart home office for what's expected to be an additional $40 million.

The investments by the state and cities into the region's road network were significant over the past several years, but most of those road-building programs are nearing their end.

ROADWAYS & BRIDGES

CENTERLINE MILES IN BENTON AND WASHINGTON COUNTIES



• Since 2011, AHTD invested approximately $400 million to add lanes to Interstate 49 and to improve interchanges and crossing roads on the Interstate 49 corridor.

• The City of Fayetteville began a $65.9 million transportation bond program in 2006 with its final projects underway.

• The City of Springdale began a $70 million transportation bond program in 2010 with its final projects underway.

• The City of Rogers began an $80 million transportation bond program in 2011 with its final projects beginning construction in 2016.

• The City of Bentonville began a $65.2 million transportation bond program in 2007 with its final projects approaching a construction start date.

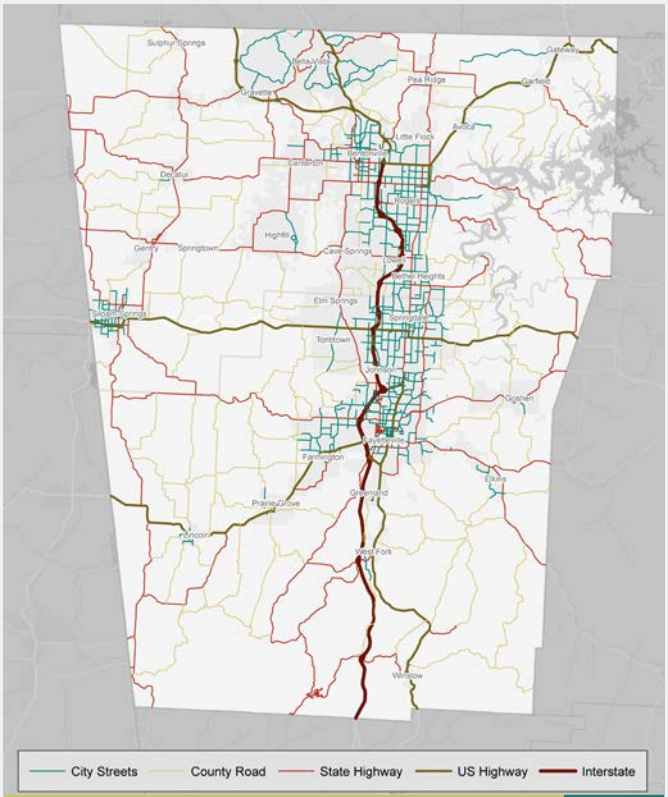
Despite the significant investments into the roadway system of Northwest Arkansas, further investment is needed. There are more than $750 million of unfunded, regionally significant highway projects identified through 2040. For example, a 2006 study by AHTD for the Interstate 49 corridor (then I-540) recommended that a few sections of interstate should be eight lanes wide. This work would add an additional $356 million to the unfunded needs total.

With a half-cent sales tax supporting current highway programs scheduled to end by 2023, the Arkansas Good Roads Foundation began an effort in 2016 to determine what the state should do next to fund highway maintenance and expansions. It is not yet known what the Good Roads Foundation will recommend to fund future highway needs. Bentonville, Fayetteville, Rogers and Springdale are also considering future bond programs to fund transportation improvements.

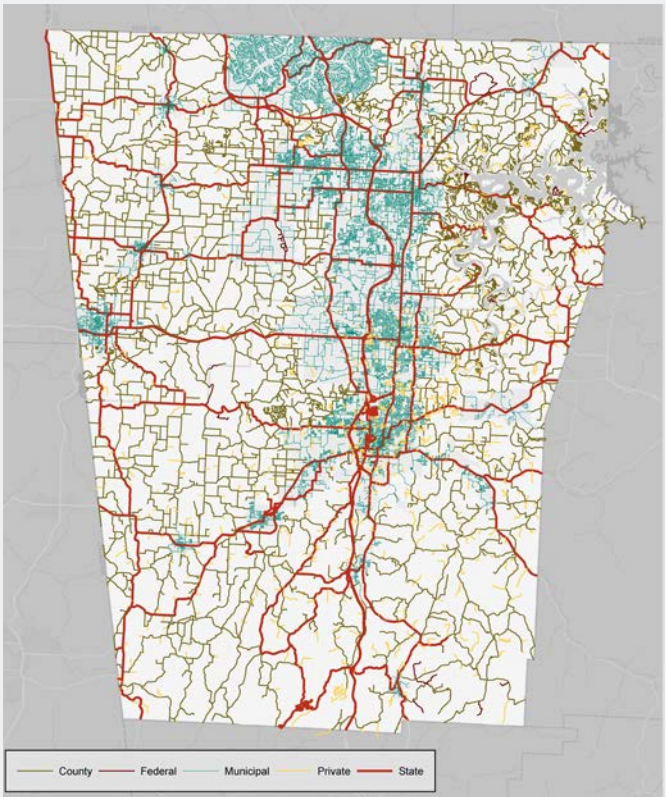
A whole group of additional projects will improve the roadway network in the two counties over the next few years, and most of them are noted in plans, studies and reports completed by the NWARPC.

The 2040 MTP, the region's guide for how transportation could be advanced over the next 25 years, lists all the components of the Transportation Improvement Program (TIP). The TIP shows dozens of projects that could occur by 2020, including six projects that will cost $15 million or more. Those biggest projects are:

- **A Bella Vista Bypass (Highway 549) connection to U.S. 71 in northern Bentonville for an estimated $43 million. A roundabout, currently under construction and scheduled to be finished in early 2017, is the temporary connection of those two highways.**
- **A Bella Vista Bypass section between County Road 34**



MAJOR ROADWAYS BY TYPE



LOCAL ROADWAYS BY TYPE

and the Missouri state line. That $26 million connection won't be made until Missouri determines how to pay for its 5-mile section of the bypass.

- **The relocation of two miles of Highway 265 in eastern Springdale between Randall Wobbe Lane and Highway 264 ($19 million).**
- **Building the other two lanes of an 11-mile section of the Bella Vista Bypass ($50 million).**
- **Widening Eighth Street in Bentonville from Southwest I Street to Moberly Lane ($15 million).**
- **The Northwest Arkansas Regional Airport access road ($30 million)**

Additionally, some of the work listed in the 2040 MTP that could occur in the next few years is also described in a special AHTD study of Highway 112 that runs from Bentonville to Fayetteville. In 2015 dollars, the study estimated the cost of widening that curvy, two-lane highway to four lanes with a center median at $108 million to $134 million.

In 2015, the NWAPRC published the Congestion Management Process (CMP) Report that identified the top 20 most congested segments of roadways in Northwest Arkansas. These 20 segments can be viewed as nine locations because several segments were adjacent to one another. These nine locations were:

ROADWAYS & BRIDGES

	STATE-OWNED	COUNTY-OWNED	CITY-OWNED
TOTAL NUMBER OF BRIDGES	338	260	210
NUMBER OF FUNCTIONALLY OBSOLETE OR STRUCTURALLY DEFICIENT	25 FO 18 SD	31 FO 27 SD	24 FO 8 SD

- **Highway 16 (Wedington Drive) from Rupple Road to Futrall Drive in Fayetteville**
- **North Street from Oakland Avenue to Highway 45 in Fayetteville**
- **I-49 from west of Highway 112 through the Fulbright Expressway interchange in Fayetteville**
- **I-49 near Porter Road in Fayetteville**
- **Highway 71B from Don Tyson Parkway in Springdale to the Northwest Arkansas Mall area in Fayetteville**
- **I-49 near Elm Springs Road in Springdale**
- **Highway 71B (Walton Boulevard) from I-49 to Rainbow Road in Bentonville**
- **I-49 near north end of Walton Boulevard in Bentonville**
- **Highway 71B from Peach Orchard Road to Riordan Road in Bella Vista**

In addition to the traditional capacity improvement of lane additions, the NWAPRC's Congestion Management Process Report contains several alternative recommendations to improve traffic flow on roadways. These recommendations include:

- **Signal timing improvements — adjusting traffic signals to improve throughput on congested corridors.**
- **Access management — consolidating access into adjacent development to reduce driveway conflicts and improve travel time along a corridor.**
- **Intersection control — ensuring the type of control (uncontrolled, stop-controlled, signalized, etc.) is appropriate for the level of traffic on the primary and intersecting roadways.**

Bridges

The 2040 MTP reports that there are 808 bridges or structures in Benton and Washington counties.

These bridges are inspected regularly as part of the National Bridge Inventory and identified as functionally obsolete (FO), not deficient (ND), or structurally deficient (SD). Functionally obsolete means that the structure has design elements (lane width, railings, etc.) that do not meet current standards. Structurally deficient means that the deck, superstructure, and/or the substructure present deterioration of structural significance. A bridge identified as structurally deficient is not necessarily at immediate risk of collapse. It simply means replacement should be considered soon.

PUBLIC TRANSPORTATION

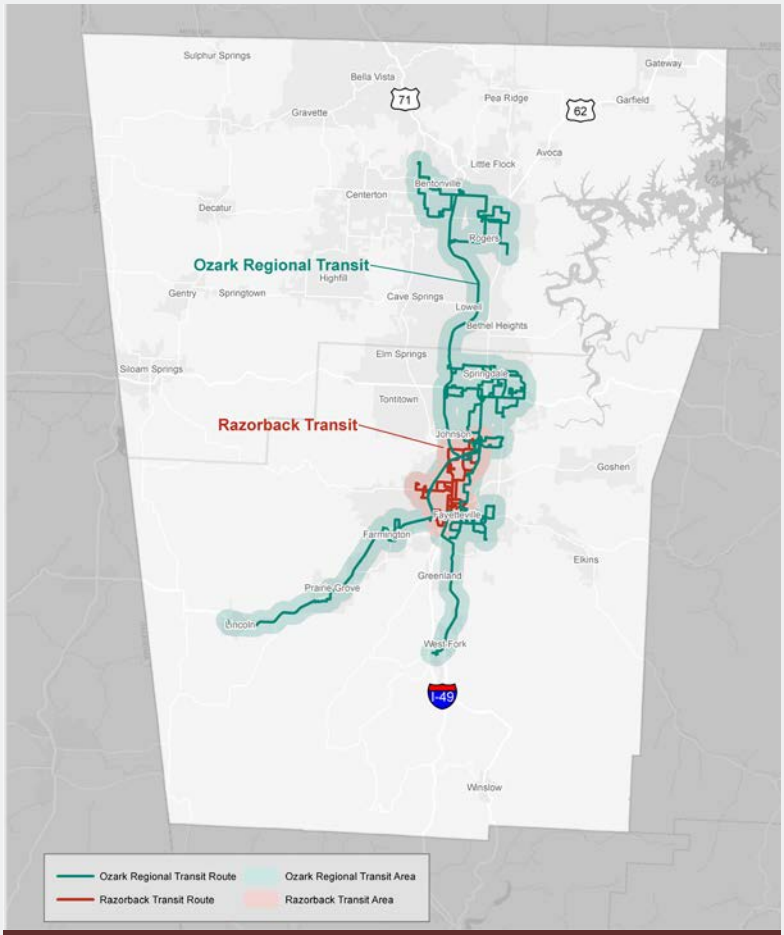
Public transportation is a necessary part of moving people in most urban areas. The two primary bus systems in Northwest Arkansas continue to provide more service and expand as needs warrant.

Bus Service

Razorback Transit and Ozark Regional Transit have service areas that focus primarily on the urban areas of Benton and Washington counties. In this central corridor, near Interstate 49, these transit providers have a service emphasis on the cities of Bentonville, Fayetteville, Rogers and Springdale. Ozark Regional Transit has routes that extend to smaller communities.

Ozark Regional Transit offers 14 fixed routes with a total of 534 stops. Paratransit service is also provided within three-quarters of a mile of a fixed route. Ozark Regional Transit saw 332,462 riders in 2015, an increase of 3.6 percent over 2014. Ridership was on pace to grow 2.8 percent in 2016.

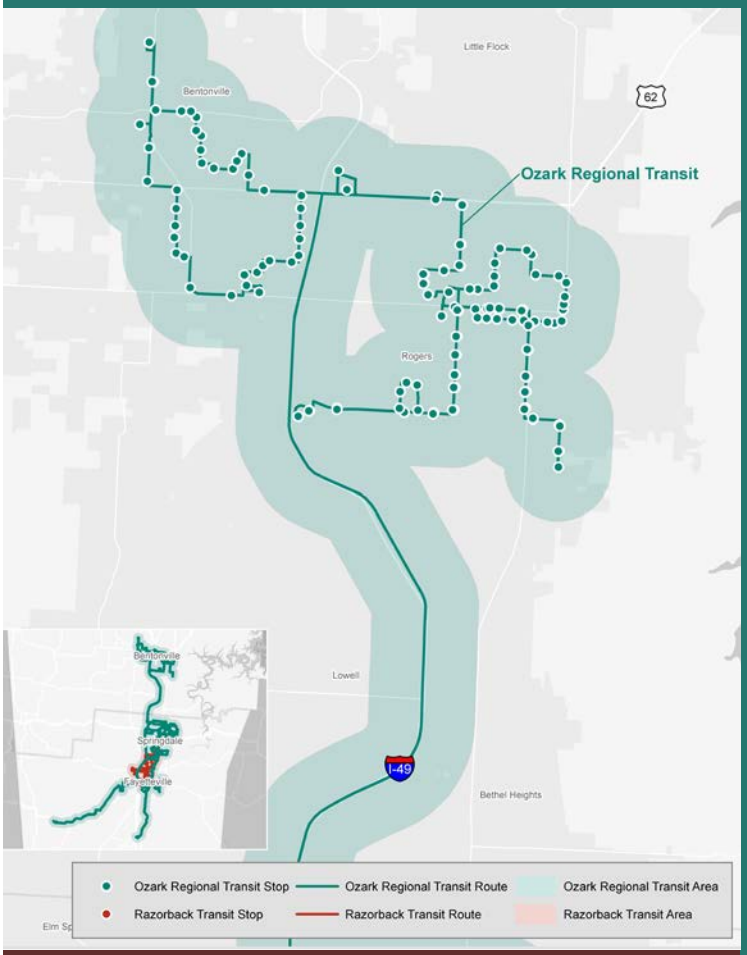
Razorback Transit primarily serves the University of Arkansas campus and surrounding student housing areas. Routes extend to common destinations off of campus such as grocery and retail shopping areas. During the 2015-2016 fiscal year, Razorback Transit had more than 1.8 million riders. The university's system offers 10 regularly scheduled bus routes, two additional bus routes during home football games, and a paratransit van service that operates within three-quarters of a mile of all fixed routes.



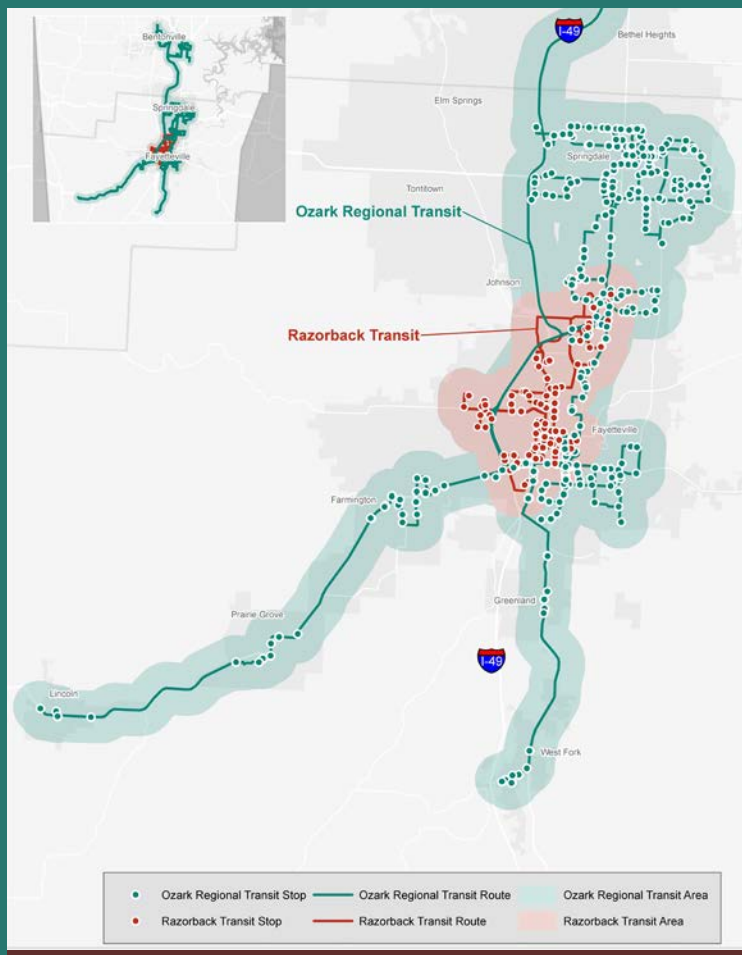
2016 Service Overview
of Ozark Regional Transit and Razorback Transit

Razorback Transit
105
current stops

Ozark Regional Transit
534
current stops



Benton County Service Map



Washington County Service Map

The maps on Pages 14 and 15 show the fixed routes of each bus system along with the distribution of stops and paratransit service boundary. Additional information is provided on each fleet in the table to the right.

# SEATS	OZARK REGIONAL TRANSIT	RAZORBACK TRANSIT
4-8	10 VEHICLES	2 VEHICLES
9-16	15 VEHICLES	6 VEHICLES
17+	11 VEHICLES	25 VEHICLES

PUBLIC TRANSPORTATION

Public Transportation Alternatives

Public transportation options other than fixed-route bus service has been a topic heavily discussed in the public realm over the past 10 years. In fact, public transportation alternatives were studied or suggested in seven different reports by various entities in the region from 2004 to 2011. The NWARPC published the Northwest Arkansas Transportation Alternatives Analysis final report in 2014 to analyze the viability of public transportation alternatives. The Transportation Alternatives Analysis examined three options:

- Light rail on a new location at a projected cost of $2.286 billion
- Commuter rail on the Arkansas & Missouri Railroad right of way at a cost of $664 million
- Bus rapid transit on Highway 71B at a cost of $97.8 million

The Northwest Arkansas Transportation Alternatives Analysis final report found none of the three alternatives were eligible for New Starts (Major Capital Investment) Funding due to low ridership projections. However, it stated that the region would not be able to solve its congestion issues without a public transportation component and, therefore, provided four recommendations:

- **The Northwest Arkansas Region should create and adopt an integrated land use and transportation plan that is based on promotion of mixed use development patterns.**
- **Communities in Northwest Arkansas can become "transit ready" ahead of a system being built.**
- **Keep development focused in a corridor that would have employment centers in Bentonville as the north anchor and the University of Arkansas in Fayetteville as the south anchor.**
- **In addition, the locally preferred alternative of commuter rail on the Arkansas & Missouri Railroad, begin a stage development of high-quality bus rapid transit on Highway 71B.**

In response to these recommendations, the Northwest Arkansas Council Infrastructure Work Group formed a Transit Subcommittee in 2015. The subcommittee included representatives from the NWARPC, Razorback Transit, Ozark Regional Transit and city planners. This subcommittee put forward four recommendations that were included in the 2040 MTP:

- **Create transit-oriented design standards that could be adopted by Northwest Arkansas cities.**
- **Commission an independent transit study.**
- **Continue to develop fixed-route bus service focused on serving employment centers.**
- **Investigate a rebranding or marketing initiative for Ozark Regional Transit.**

In 2016, the NWARPC began efforts to conduct the recommended transit development plan. The purpose of the study will be to assess current bus services and make recommendations for what expansions are needed, and can be financially justified, to meet current and future needs. The study should occur in 2017.

TRAILS

Trails and greenways are an important part of Northwest Arkansas' economic prosperity and transportation network.

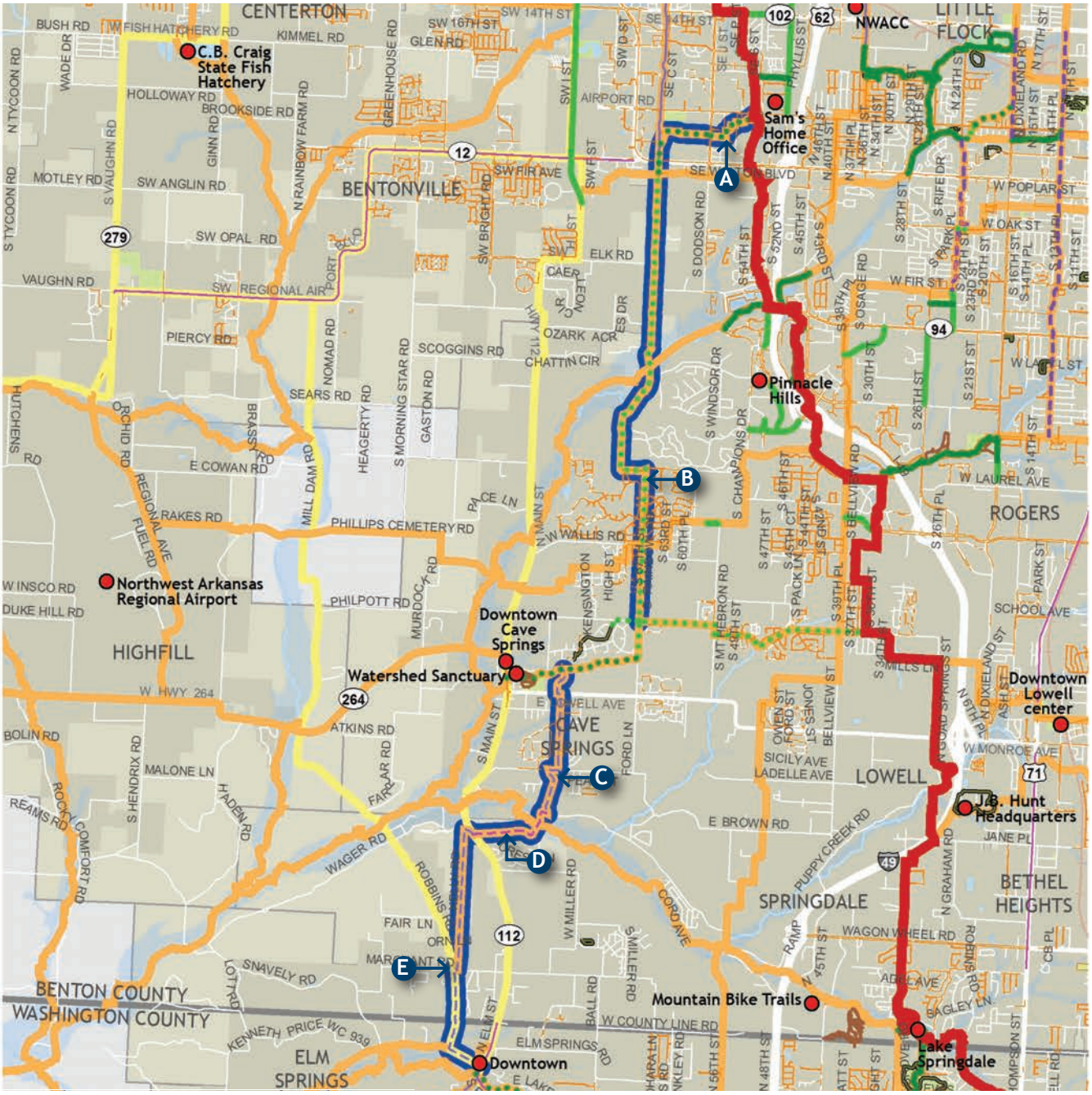
The Northwest Arkansas Regional Bicycle and Pedestrian Master Plan, published by the NWARPC in 2015, estimates that the annual economic benefit to the region from walking and bicycling is $27 million but has the potential to increase to between $40 million and $99 million, depending on how much of the network is developed and its usage by residents. The economic benefits are accomplished by lowering health-care costs through improved physical activity, making it easier to attract and retain companies and talent, and by increasing property values and business activity adjacent to trails.

Some larger communities of Northwest Arkansas recognized the importance of trails more than two decades ago and began planning for, designing and constructing trails. In 2010, the NWARPC received a $15 million federal grant from the U.S. Department of Transportation through the Transportation Investment Generating Economic Recovery funding program known as TIGER II. The $15 million grant was matched by the Walton Family Foundation with $15 million to make the Razorback Regional Greenway possible. The Greenway cost approximately $38 million, with the remaining funds coming from cities. This 37-mile trail stimulated more public interest in funding the construction of trails throughout Benton and Washington counties.

In 2013, as sections of the Razorback Regional Greenway were being completed, the NWARPC commenced work on the Northwest Arkansas Regional Bicycle and Pedestrian Master Plan. This report provided 25 cities with a detailed action plan, catalyst projects and design guidelines to begin trail planning and construction. The map on the following page shows an example of a catalyst project identified in the report that would connect Bentonville, Cave Springs and Elm Springs.

CITIES PROVIDED WITH ACTION PLANS IN NORTHWEST ARKANSAS REGIONAL BICYCLE AND PEDESTRIAN MASTER PLAN
BELLA VISTA
BENTONVILLE
BETHEL HEIGHTS
CAVE SPRINGS
CENTERTON
DECATUR
ELKINS
ELM SPRINGS
FARMINGTON
FAYETTEVILLE
GENTRY
GOSHEN
GRAVETTE
GREENLAND
JOHNSON
LINCOLN
LITTLE FLOCK
LOWELL
PEA RIDGE
PRAIRIE GROVE
ROGERS
SILOAM SPRINGS
SPRINGDALE
TONTITIOWN
WEST FORK

SAMPLE MAP OF REGIONAL TRAIL CATALYST PROJECT CONNECTING BENTONVILLE, CAVE SPRINGS AND ELM SPRINGS

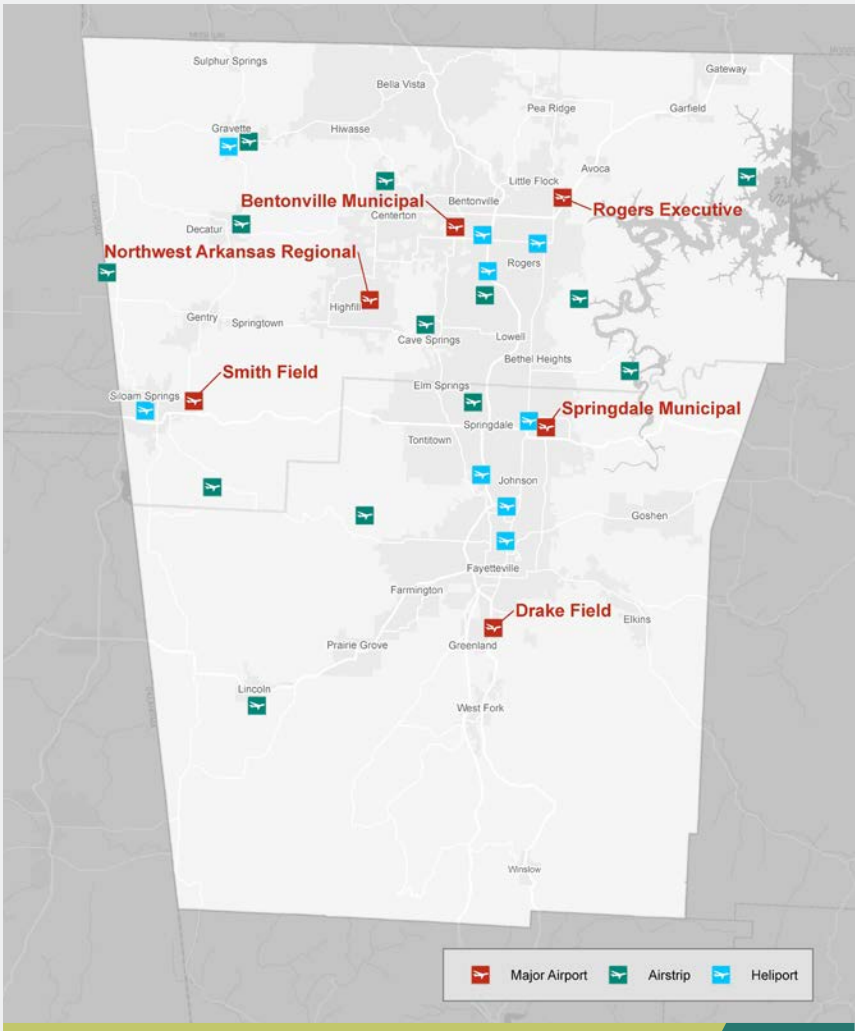


AVIATION

Northwest Arkansas airports provide the region's business and leisure travelers with their fastest, most effective way to travel long distances.

Aviation infrastructure is used to move not only people, but commercial cargo as well. The area is served by one regional airport that has commercial service and five municipal, general aviation airports. The six airports in the region are Northwest Arkansas Regional, Bentonville Municipal, Rogers Executive, Smith Field in Siloam Springs, Springdale Municipal and Drake Field in Fayetteville. Additionally, there are 13 private airstrips and nine heliports.

The Northwest Arkansas Regional Airport completed its sustainable master plan in 2015. The master plan projected needed improvements over a 20-year period. The master plan found that the airport is well-situated to accommodate both future growth in airport operations (landings and take-offs) and the forecasted 60 percent increase in commercial passenger activity over the next 20 years. A much smaller increase in operations is planned because it is expected that commercial airlines will meet increased passenger demand with larger planes.



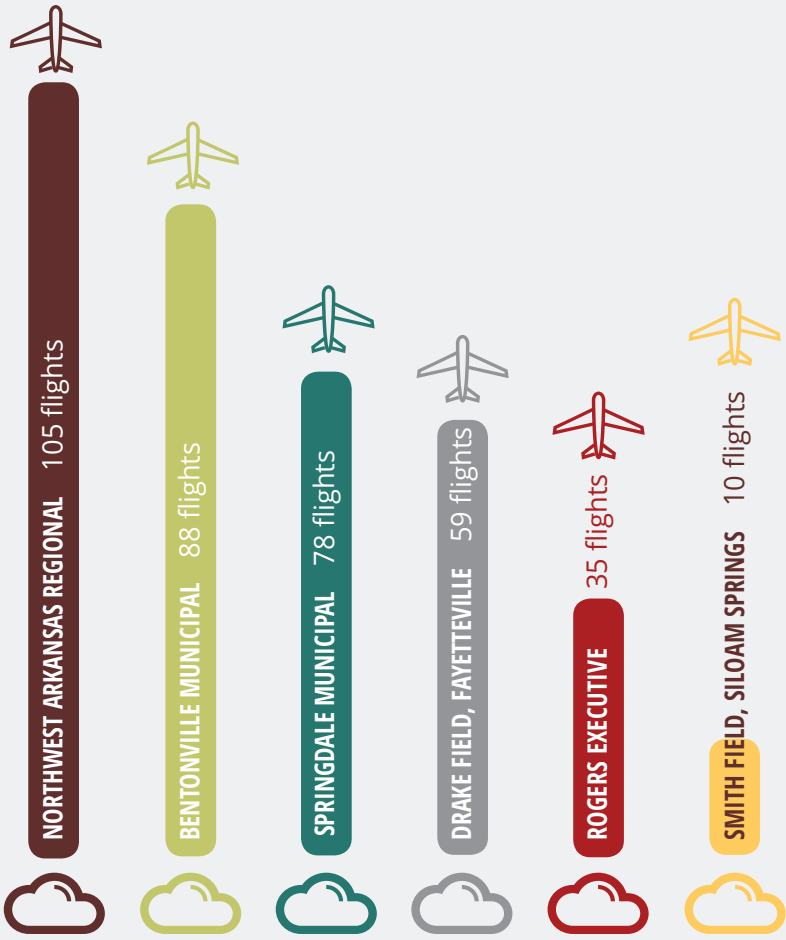
AIRPORT, AIRSTRIP & HELIPORT LOCATIONS

"The Northwest Arkansas Regional Airport completed its Sustainable Master Plan in 2015."

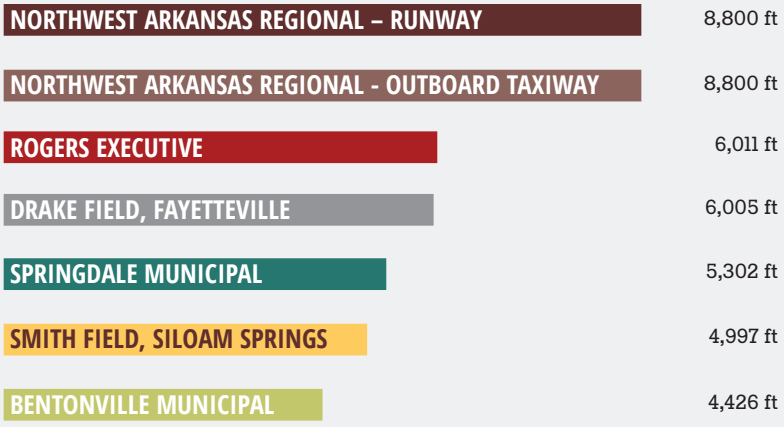
While it is expected that the current 8,800-foot runway will be sufficient, the airport is taking action to preserve its ability to lengthen the runway to 12,500 feet. This is being done to accommodate future planes that may need longer landing surfaces. The master plan also identified land acquisition east and west of the existing airport, as necessary, for the ultimate development of airport facilities. To the east of the airport, the master plan contemplates an additional runway for general aviation and industrial aviation facilities, but notes that demand for this additional runway is not projected to be met in the next 20 years. The capital improvement plan, contained in the master plan, recommends the construction of a parking structure, expansion of short-term surface parking and construction of an access road as soon as possible. Northwest Arkansas Regional Airport staff is taking steps to accomplish these recommendations.

Among the general aviation airports in the region, Bentonville and Springdale have the highest number of flights due to operation of flight schools at both locations.

With the comprehensive planning that the airports perform, Burns & McDonnell believes each one is positioned to meet aviation needs, provided that sufficient funding can be secured. Growth opportunities at and around Northwest Arkansas Regional Airport are particularly important as the region considers potential air cargo opportunities that could develop.



AVERAGE ARRIVALS AND DEPARTURES PER DAY



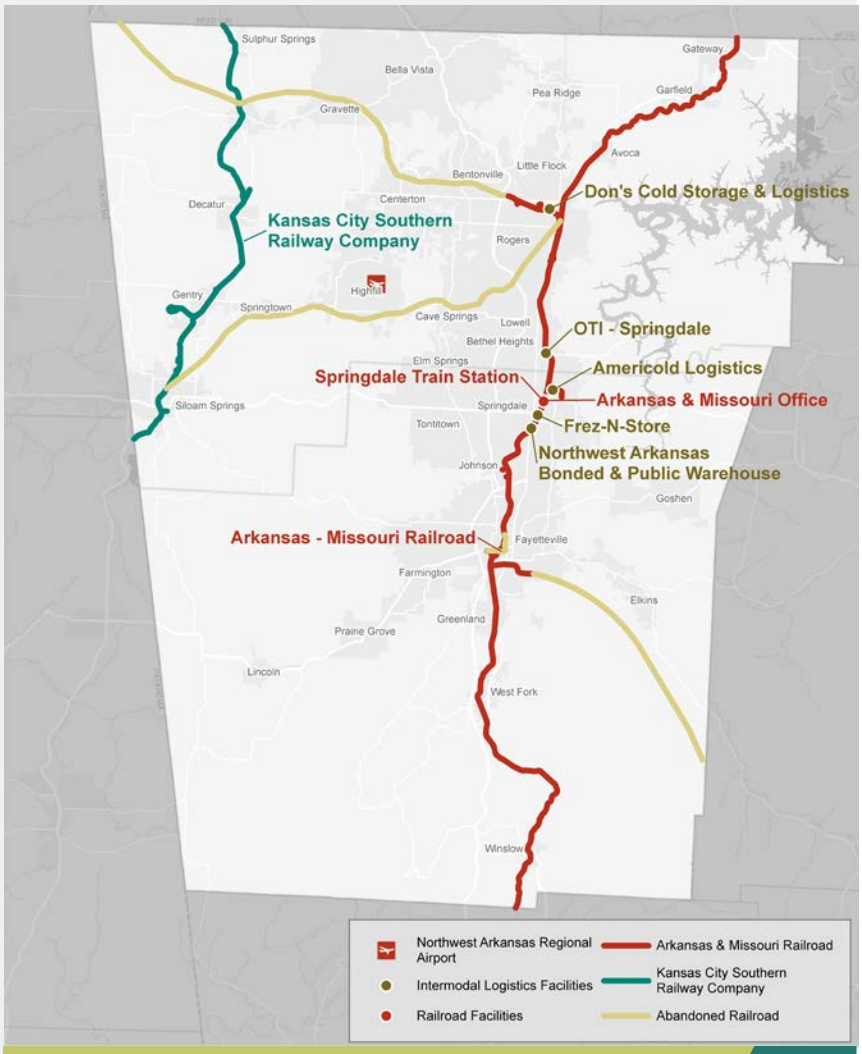
LANDING SURFACES

RAILROADS

The railroad network in Northwest Arkansas serves as an important mode of transportation for numerous goods. Combined with the strength of the region's trucking companies, rail service has an opportunity to contribute more to the economic growth of the region.

The two railroad operators in the region are Kansas City Southern Railway Company (KCS) and Arkansas & Missouri Railroad (A&M). KCS provides a vital rail route between Mexico and the central U.S., passing through Siloam Springs and western Benton County. There are rail spurs from the KCS line to the Southwestern Electric Power Company power plant near Gentry and to a Simmons Foods feed plant in Decatur.

The state Highway Department completed the Northwest Arkansas Regional Airport – Air Cargo Study and Freight Transportation Access Assessment in 2006. The study investigated the feasibility of utilizing a portion of the abandoned railroad path that extends from the KCS east through Highfill where the Northwest Arkansas Regional Airport is located. Two alternatives were considered, both approximately 10 miles in length, with cost estimates ranging from $12 million to $15.4 million at that time. This extension, along with highway construction planned near the airport, could position the area around the Northwest Arkansas Regional Airport as an important center for industry and multi-modal freight transfer facilities.



RAILROADS

The abandoned railroads shown on the map above present historic paths of rail lines. These paths are no longer owned by railroad companies nor are tracks present. A portion of the abandoned railroad bed in the southeast area of Fayetteville has been adapted as a recreational trail.

The A&M is a shortline railroad headquartered in Springdale. It operates a 150-mile route between Monett, Missouri and Fort Smith, Arkansas that goes through the heart of Northwest Arkansas, including the downtowns of Fayetteville, Springdale and Rogers. The rail corridor operated by A&M is one of the key reasons these communities developed in Northwest Arkansas. Today, A&M provides freight service to customers on its route and excursion passenger service between Springdale and Van Buren/Fort Smith. It also interchanges traffic with three Class I railroads—Burlington Northern Santa Fe Railway, KCS and Union Pacific Railroad—making freight transport possible to anywhere in the continental United States. In order to support the intermodal transport of goods, there are five transload facilities on the A&M route, one of which is operated by Ozark Transmodal, Inc., a sister company of A&M. These transload facilities have a wide array of storage options, including frozen food and climate controlled warehousing of steel, lumber and other bulk commodities.

As privately owned railroads, information about needed improvements or planned expansions of the systems was not shared with Burns & McDonnell. The operation of the railroad system in Northwest Arkansas makes the delivery of goods more efficient by allowing the transport of goods by multiple modes.

TRANSLOAD FACILITIES IN BENTON AND WASHINGTON COUNTIES	LOCATION
AMERICOLD	SPRINGDALE
DON'S COLD STORAGE	ROGERS
FREZ-N-STOR	SPRINGDALE
NWA BONDED WAREHOUSE	SPRINGDALE
OZARK TRANSMODAL	SPRINGDALE

"The existence of the railroad system in Northwest Arkansas makes the delivery of goods more efficient."

ENERGY
BACKGROUND

Source: Ozarks Electric Cooperative

electric utility

renewable energy

natural gas

Northwest Arkansas' energy infrastructure is an integral part of the region's ability to maintain a high quality of life for residents and to remain an attractive place to do business. The region's energy needs are primarily met by electric and natural gas providers.

Specific information about the systems that deliver electricity and natural gas to Benton and Washington counties was not provided to the study team by the utilities. Each utility did provide summary statistics for its system.

Benton and Washington counties are served by eight electric utilities that include three cooperatives, two municipal utilities, and three investor-owned utilities. Electricity is generated by and supplied to the region by three different suppliers. The total electric consumption in Benton and Washington counties on an annual basis is over 5.5 billion kilowatt hours. Large ice storms have periodically knocked out electrical service to thousands of homes across the region for days at a time in the past 20 years, but major power failures caused by insufficient infrastructure are exceedingly rare.

The region's electricity is generated from coal, natural gas, hydroelectric, and solar. Private wind farm developers have expressed interest in the region, but no utility-scale projects have been developed. The region's natural gas needs are met by a single provider, Black Hills Energy. Information about natural gas consumption was not shared for this report. Propane consumption is likely high among rural residents and poultry farmers, but that information was not collected as a part of this study.

These utilities have historically provided reliable, affordable energy to Northwest Arkansas.

Integral infrastructure for a high quality of life.

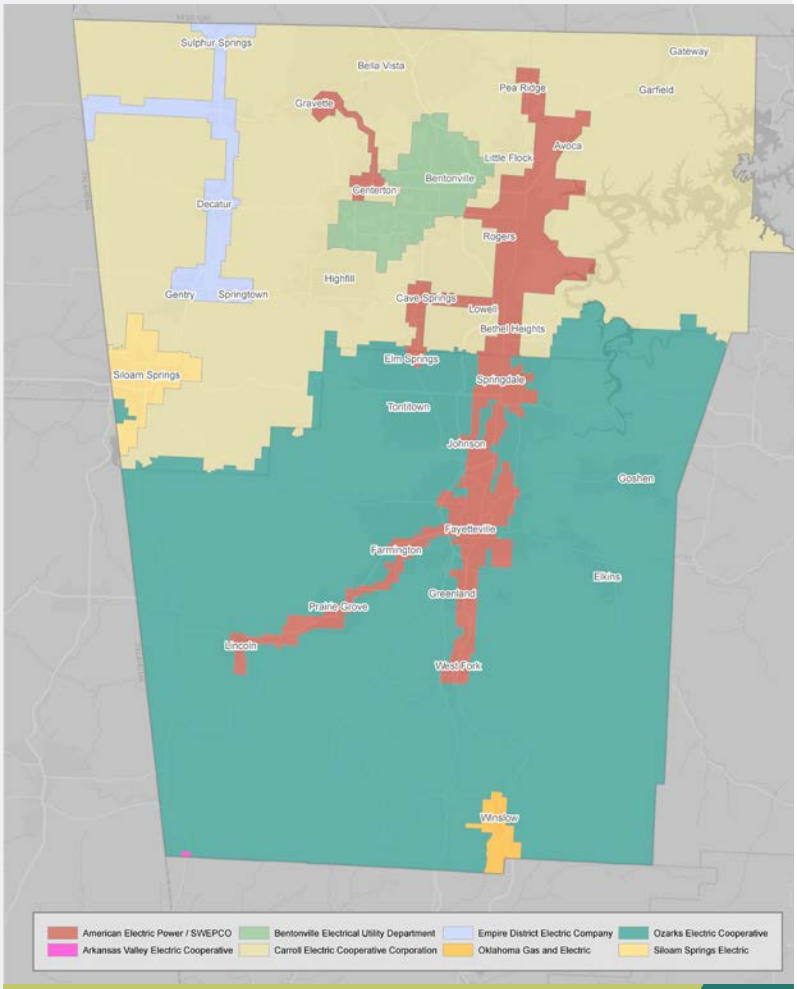
ELECTRIC AND NATURAL GAS
UTILITIES

The region's access to reliable, affordable electricity and natural gas is one of the many reasons Benton and Washington counties are attractive to businesses and residents.

Electric Utilities

The region's electricity is distributed by eight utilities: AEP Southwestern Electric Power Company (SWEPCO), Arkansas Valley Electric Cooperative, Bentonville Electric, Carroll Electric Cooperative Corporation, Empire District Electric Company, Oklahoma Gas and Electric, Ozarks Electric Cooperative, and Siloam Springs Electric. Arkansas Valley Electric and Oklahoma Gas and Electric serve only small portions of southern Washington County. The table on Pages 25–26 shows the number of customers, consumption statistics and substation capacity for the six largest providers.

The majority of power generated for the region is supplied by SWEPCO. SWEPCO, in partnership with Arkansas Electric Cooperative Corp. (AECC), operates a 528-megawatt, coal-fired, power plant in Gentry, Arkansas known as the Flint Creek Power Plant. SWEPCO also operates the natural gas-fueled Mattison Power Plant in Tontitown, which has a capacity of 300 megawatts. SWEPCO provides power for its customers, and it also sells power to five of the eight electric utilities that serve Benton and Washington counties. Siloam Springs Electric purchases its power from the Grand River Dam Authority, located in northeastern Oklahoma, while Empire District produces its own power. Combined, these utilities deliver over 5.5 billion kilowatt hours of power to the two-county area.



ELECTRIC UTILITY SERVICE AREAS

BENTON AND WASHINGTON COUNTIES

ELECTRIC UTILITY INFORMATION

	AEP SWEPCO	BENTONVILLE ELECTRIC	CARROLL ELECTRIC COOPERATIVE CORPORATION
ANNUAL POWER CONSUMED BY RETAIL CUSTOMERS *(IN KILOWATT HOURS)*	2,409,657,645	655,612,229	1,348,360,497
MINIMUM DAILY POWER CONSUMED BY RETAIL CUSTOMERS *(IN KILOWATT HOURS)*	3,658,953	532,008	2,629,054
MAXIMUM DAILY POWER CONSUMED BY RETAIL CUSTOMERS *(IN KILOWATT HOURS)*	10,040,331	1,366,261	5,810,344
NUMBER OF METERS	70,933	22,200	60,700
MILES OF TRANSMISSION LINES	344	16	134
MILES OF DISTRIBUTION LINES	1,121	837	3,463
TOTAL SUBSTATION CAPACITY AT DISTRIBUTION VOLTAGE OF 12.47 KILOVOLTS *(IN MEGAVOLT AMPERES)*	890	320	665

"In 2015, Arkansas residential customers consumed 13,431 kilowatt hours on average."
– U.S. Energy Information Administration

EMPIRE DISTRICT ELECTRIC COMPANY	OZARKS ELECTRIC COOPERATIVE	SILOAM SPRINGS ELECTRIC
167,030,436	674,254,586	267,748,000
282,714	2,291,925	627,000
694,985	5,067,460	977,000
4,476	51,859	7,257
34	120	10.5
208	4,157	177.5
67	436	140

Renewable Energy

Renewable energy is also being produced in Benton and Washington counties at the utility scale. Ozarks Electric opened the region's first utility-scale solar facility in 2016. The facility is located on the east side of Springdale and is expected to produce more than 2 million kilowatt hours of electricity annually. That's enough to power between 150 and 200 homes, according to Ozarks Electric. There has been some discussion about the construction of wind farms in Northwest Arkansas. Within the last year, discussion of a facility as large as 80 megawatts was explored. To date, however, no definitive plans have been made to construct any such facilities.

Hydroelectric power has been produced at the U.S. Army Corps of Engineers Dam on Beaver Lake since 1965. The Southwestern Power Administration, an agency of the U.S. Department of Energy, markets and delivers this power.

Waste Management's landfill-gas-to-energy plant is another innovative power-generation source in the region. This plant uses methane gas generated in the landfill that was previously burned off to power a four-megawatt plant. Waste Management estimated at the time of its construction that it could power approximately 4,000 homes. This is enough energy to power nearly 80 percent of the homes in Siloam Springs.

Source: Ozarks Electric

Natural Gas

Black Hills Energy is the sole provider of natural gas to area businesses and residents. The company owns and maintains a robust system of infrastructure that delivers natural gas throughout the urban area and some rural areas in the counties. Black Hills Energy was willing to provide basic customer, consumption, and system capacity information to be included in this report, but could not provide information exclusive to Benton and Washington counties.

The area also has one compressed natural gas (CNG) fueling station available to the public that is supplied by a Black Hills Energy line. The station is located at a Kum & Go convenience store at the intersection of Highway 265 (Old Missouri Road) and U.S. Highway 412 (Robinson Avenue) in Springdale. Discussion about additional CNG fueling stations have waned over the past year.

Other gas energy

In the rural areas of the counties, many residents rely on propane gas as a source of energy. Propane is trucked to their homes, farms or businesses to fill up on-site tanks. According to The Poultry Federation, Arkansas ranked No. 3 in the number of broilers produced in 2015 trailing only Georgia and Alabama.

The last U.S. Department of Agriculture Census, which was conducted in 2012, showed Washington County is the state's highest broiler producing county while Benton County ranked No. 2. The two counties accounted for about 18 percent of the state's total broiler production that year, and those Northwest Arkansas poultry farmers rely heavily on propane gas, demonstrating the importance of this infrastructure component.

WATER
BACKGROUND

Source: Beaver Water District

drinking water

stormwater

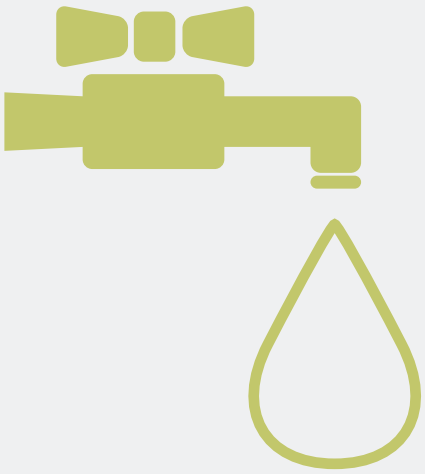
wastewater

Many Northwest Arkansas leaders believe the construction of Beaver Lake more than 50 years ago was the single most important project to set Northwest Arkansas on a path to prosperity. Without the safe, clean, affordable, long-term supply of water, Northwest Arkansas would not have developed into one of the fastest-growing regions of the U.S.

The region's drinking water is drawn from the east from Beaver Lake and largely discharged to the west into the Illinois River watershed. Because of this, drinking water, stormwater, and wastewater management must be considered holistically.

Northwest Arkansas' largest wholesale water supplier is the Beaver Water District, which provided an average of 48 million gallons of water to the region each day in 2016. The second largest of four water suppliers is the Benton/Washington Regional Public Water Authority, which provided an average of 7.6 million gallons of water each day to the smaller communities in Benton and Washington counties in 2015. This water gets delivered to residents and businesses by 31 public water systems.

One out of seven Arkansas residents get their drinking water from Beaver Lake.



"The total consumption of water in Northwest Arkansas could fill up 82 Olympic-size swimming pools each day."

Stormwater runoff is managed by 32 municipalities and Benton and Washington counties, along with large industry. There are 22 Municipal Separate Storm Sewer Systems (MS4s) that face increased regulation by the U.S. Environmental Protection Agency and Arkansas Department of Environmental Quality as a result of being in an urbanized area.

A large amount of wastewater is discharged into the Illinois River watershed. Wastewater produced by residents, businesses, and industries gets treated in one of the 15 municipal wastewater treatment plants. This infrastructure sector is facing significant regulatory change that could require millions of dollars in additional infrastructure investment related to nutrient limits in the Illinois River.

DRINKING WATER

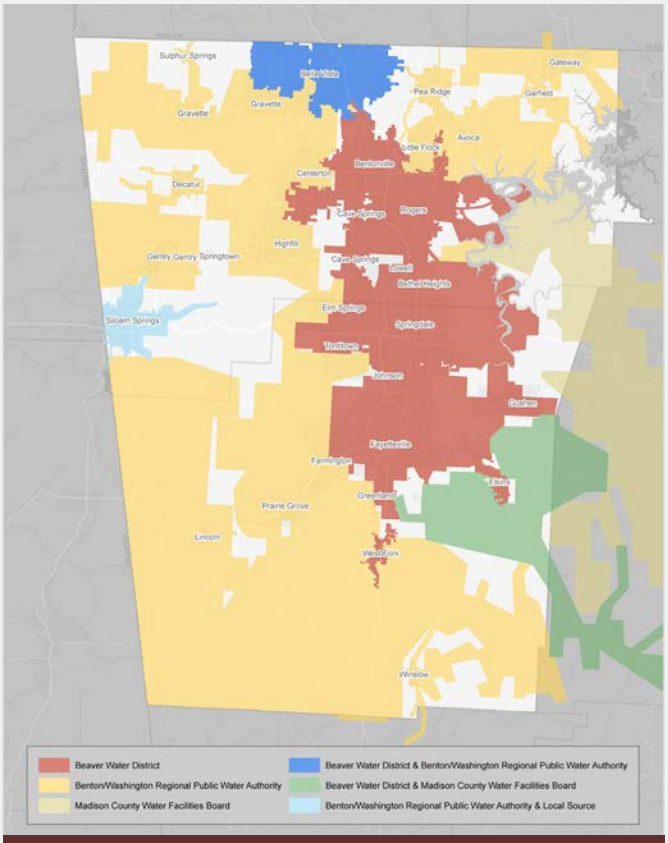
Beaver Lake is one of Arkansas' most valuable resources. It is the source of drinking water for the majority of residents in Northwest Arkansas. It also provides flood control, wildlife habitat, recreational opportunities, and hydroelectric power generation.

Water Supply

Wholesale water suppliers pull water from Beaver Lake to provide for Benton and Washington counties. There are four wholesale water suppliers that draw from Beaver Lake: Beaver Water District, Benton/Washington Regional Public Water Authority (BWRPWA), Carroll-Boone Water District (CBWD), and Madison County Regional Water District (MCRWD). CBWD does not provide water to communities in Benton or Washington counties. The wholesale water providers map shows the areas of the two counties where each entity supplies water.

Siloam Springs draws its water from the Illinois River and treats it at its own water treatment plant. In 2017, Siloam Springs intends to develop a facility master plan for the treatment plant.

The Beaver Water District supplies water to Fayetteville, Springdale, Rogers, and Bentonville. BWRPWA supplies water directly to 17 public water systems, serving smaller communities and rural areas. The smallest systems in the region then purchase water from one of these larger public water systems. MCRWD provides water to three of the public water systems serving Benton or Washington counties:

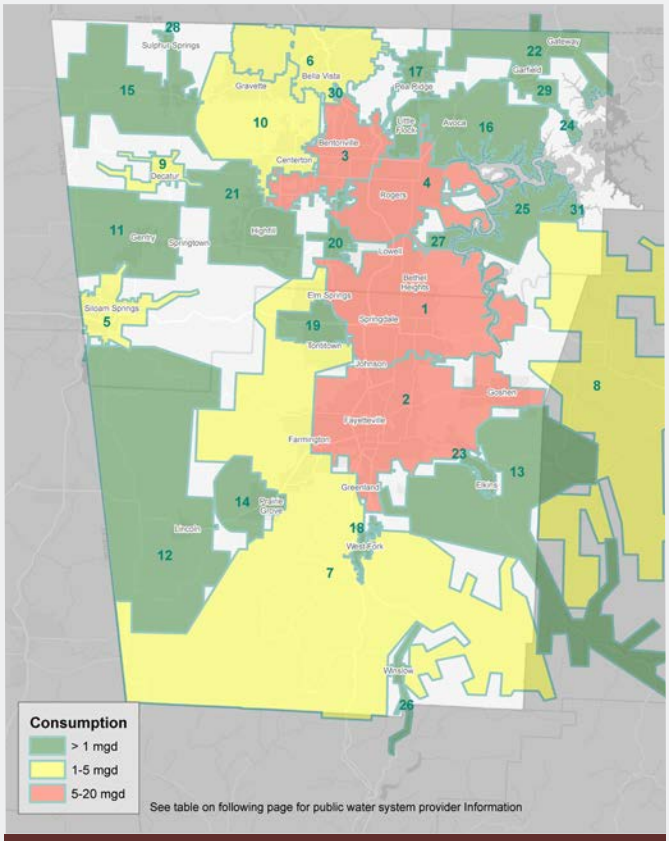


Wholesale Water Supply Service Areas

Benton County Water Authority 5, Madison County Water Facilities Board, and Mount Olive Water Association. The public water suppliers' map shows the areas of the two counties where each entity supplies water.

The Beaver Water District, the largest of the three water suppliers to the region, published its master plan in February 2016. The plan notes that the current water rights for Beaver Lake provide for 120 million gallons per day (mgd) of annual average day demand and finds that this volume is sufficient to meet regional demand through 2040. Additionally, the Beaver Water District's three water treatment plants operate with a total capacity of 140 mgd. No capacity-related plant improvements are needed within the 25-year planning horizon. In 2016, water sales averaged 48 mgd.

"The BWRPWA conducted a master plan study more than 10 years ago and has completed all recommended improvements contained in except for an elevated storage tank."



Public Water Systems

The BWRPWA conducted a master plan study more than 10 years ago and has completed all recommended improvements contained in that study except for an elevated storage tank. It is currently working on this replacement elevated water tank near Garfield. Its current water treatment plant capacity of 40 mgd is sufficient for the anticipated growth in demand, with current peak days ranging from 22-24 mgd and with an average of eight mgd.

Water Distribution

The water drawn from Beaver Lake and treated is sold to one of the 31 public water systems that deliver water to consumers. The public water systems' map on this page and table on the following page provide the service areas and consumption statistics for each of the systems. There are 15 additional water systems regulated by the Arkansas Department of Health in the region, but these are private systems not of regional significance.

While public systems deliver water to the vast majority of people who live in Benton and Washington counties, some areas remain without access. The people who live there rely on groundwater wells. Digital records obtained by Burns & McDonnell from the Arkansas Water Well Construction Commission (AWWCC) show more than 5,200 water wells have been constructed in the counties since 1989, but those records do not indicate if the water they produce was to be used for human consumption. Additionally, the AWWCC believes unpermitted wells were constructed during this time as well. Paper records about wells constructed prior to 1989 were not to be reviewed for this report. It is not known how many active wells there are in the counties.

In the urbanized area of Benton and Washington counties, Burns & McDonnell found that the water providers serving the growing area are managing the water systems well. Each community has conducted recent master plans and is working to implement the recommendations of those plans to ensure sufficient water is provided to residents.

The two areas that warrant focused attention because of future growth projections and the maturity of its systems are the areas of Centerton and Tontitown. Both of these systems are managed by staff who expressed commitment to ensure growth is not impeded on the basis of water availability. Tontitown purchases water from Springdale under an agreement that is negotiated approximately every five years and includes a cap on how much water can be purchased. The agreement that will go into effect in 2017 contains a cap of 600,000 gallons per day (gpd). The current average usage is around 260,000 gpd. In order to lessen the peak demand from Springdale, the utility is planning to construct a new 500,000 gallon elevated water tank. Tontitown applied for a United States Department of Agriculture loan in 2016 for $1.2 million for this structure. Tontitown projects, however, that its cap could still be reached within the 5-year agreement, so it is exploring other water supply options, such as purchasing from BWRPWA. BWRPWA has a transmission line located eight miles west of Tontitown.

Centerton is well-positioned for growth in the northern and eastern quadrants of its community. Recent projects have upsized water lines to meet demand, and the utility is confident in BWRPWA's ability to provide it with the water it will need. The utility did note that additional elevated storage may be needed in the mid-term, but has not yet estimated those costs or programmed them into the budget.

DRINKING WATER

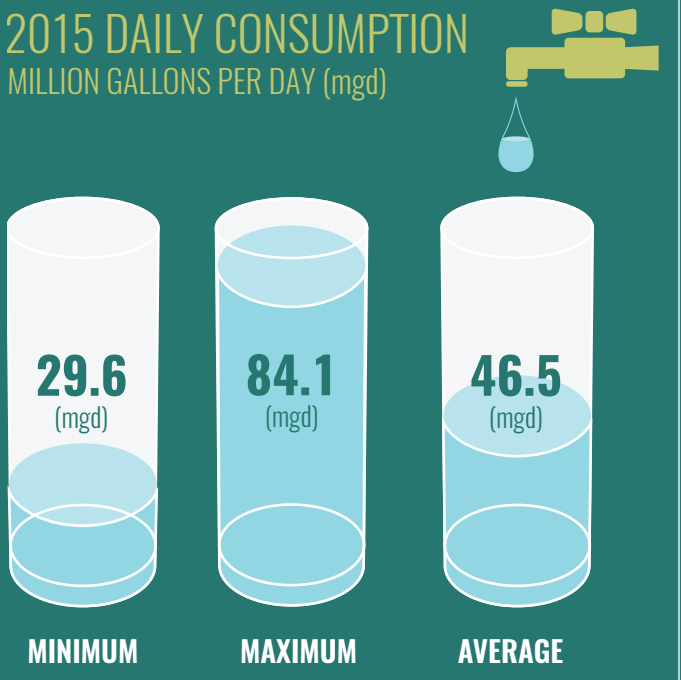
PUBLIC WATER SYSTEM PROVIDER	LABEL NUMBER	CONSUMPTION MGD
SPRINGDALE WATER UTILITIES	1	15.30
FAYETTEVILLE WATERWORKS	2	15.07
BENTONVILLE WATER UTILITIES	3	8.49
ROGERS WATER UTILITIES	4	7.14
SILOAM SPRINGS WATERWORKS	5	4.80*
BELLA VISTA POA	6	2.41
WASHINGTON WATER AUTHORITY	7	1.61
MADISON COUNTY WATER FACILITIES	8	1.54*
DECATUR WATERWORKS	9	1.46
CENTERTON WATERWORKS	10	1.10
GENTRY WATERWORKS	11	0.68
LINCOLN WATERWORKS	12	0.67
MOUNT OLIVE WATER ASSOCIATION	13	0.47*
PRAIRIE GROVE WATERWORKS	14	0.46
GRAVETTE WATERWORKS	15	0.44
BENTON COUNTY WATER DISTRICT #1	16	0.41
PEA RIDGE WATERWORKS	17	0.41
WEST FORK WATERWORKS	18	0.33
TONTITOWN WATERWORKS	19	0.26
CAVE SPRINGS WATERWORKS	20	0.21
HIGHFILL WATER DEPARTMENT	21	0.17
GATEWAY PUBLIC WATER AUTHORITY	22	0.17
ELKINS WATERWORKS	23	0.16
LOST BRIDGE VILLAGE WATER-SEWER DISTRICTS	24	0.09
BENTON COUNTY WATER AUTHORITY 5	25	0.07
WINSLOW WATERWORKS	26	0.06
BENTON COUNTY WATER AUTHORITY 4	27	0.05
SULPHUR SPRINGS WATERWORKS	28	0.04
GARFIELD WATERWORKS	29	0.04
OLD BELLA VISTA POA	30	0.01
RAMBO WATER DISTRICT #1 INC	31	0.00

Information provided in this table was derived from Burns & McDonnell research, Arkansas Department of Health, and contact with individual systems.

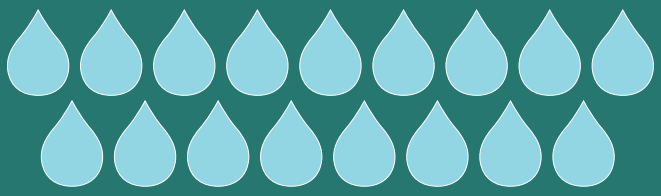
* Consumption for these systems includes customers outside of Benton and Washington counties.

BEAVER WATER DISTRICT **WATER CONSUMPTION**

2015 DAILY CONSUMPTION
MILLION GALLONS PER DAY (mgd)

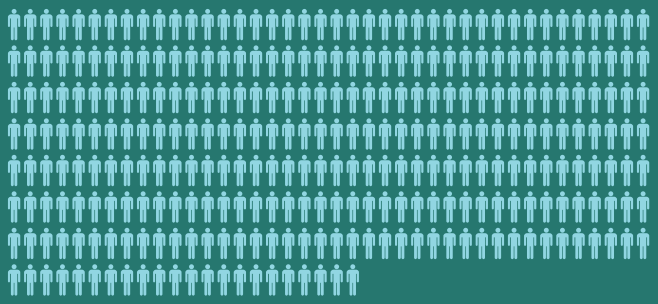


ANNUAL CONSUMPTION



17 BILLION GALLONS

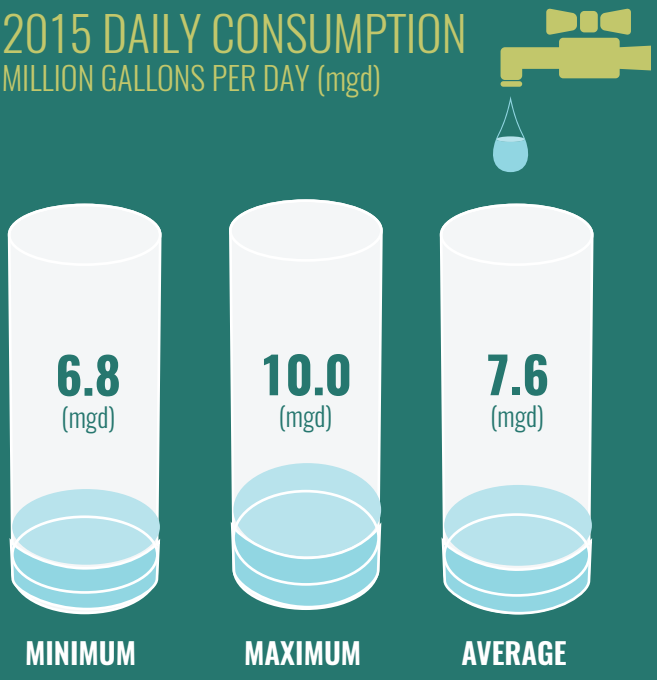
POPULATION SERVED



> 300,000

BENTON/WASHINGTON REGIONAL PUBLIC WATER AUTHORITY **WATER CONSUMPTION**

2015 DAILY CONSUMPTION
MILLION GALLONS PER DAY (mgd)



ANNUAL CONSUMPTION

2.8 BILLION GALLONS

POPULATION SERVED

> 100,000

STORMWATER

As one of the fastest-growing regions in the U.S., Northwest Arkansas has an increasing need to manage stormwater.

Stormwater management historically focused almost exclusively on flood prevention. Stormwater systems were designed with detention ponds to limit peak discharges and ditches and pipes designed based on high-flow storm events. This, too, had been the case in Northwest Arkansas and Burns & McDonnell found that the region has done an excellent job preventing localized and large scale flooding through good design standards and targeted capital investment into problem areas.

More recently, stormwater management has evolved to include managing the quality of stormwater runoff to protect receiving waters. The Arkansas Department of Environmental Quality (ADEQ) issues stormwater permits to manage construction site runoff, industrial stormwater runoff, and municipal stormwater systems. A municipal system is referred to as Municipal Separate Storm Sewer Systems (MS4). The 22 systems in Benton and Washington counties are charged with meeting stormwater management objectives. The Northwest Arkansas Regional Planning Commission facilitates regional information exchange and cooperation among MS4s through the MS4 Stormwater Compliance Group. Two other important organizations are the Illinois River Watershed Partnership and Beaver Watershed Alliance, both watershed protection groups.

Northwest Arkansas generally draws water from Beaver Lake and discharges it into the Illinois River watershed that flows into Oklahoma. Water quality is important in the Beaver Lake watershed because it directly affects the cost of drinking water. Poor quality water in the lake will lead to higher costs of drinking water. The quality of water in the Illinois River has become a contentious topic since this

MUNICIPAL SEPARATE STORM SEWER SYSTEMS (MS4S)
BELLA VISTA
BENTON COUNTY
BENTONVILLE
BETHEL HEIGHTS
CAVE SPRINGS
CENTERTON
ELKINS
ELM SPRINGS
FARMINGTON
FAYETTEVILLE
GREENLAND
JOHNSON
LITTLE FLOCK
LOWELL
PEA RIDGE
PRAIRIE GROVE
ROGERS
SILOAM SPRINGS
SPRINGDALE
TONTITIOWN
UNIVERSITY OF ARKANSAS
WASHINGTON COUNTY

river has higher water quality requirements in Oklahoma. Protecting the quality of the Illinois River is also important because it is one source of drinking water for Siloam Springs.

As the region is adopting stormwater quality best management practices (BMPs), stormwater infrastructure is expanding to include a diverse mix of elements aimed at retaining, infiltrating, and treating stormwater before it enters stormwater systems or streams. These include rain gardens, bioswales, extended detention basins, riparian buffers, constructed wetlands, and many other green infrastructure solutions.

Illinois River

Water quality of the Illinois River has a definitive economic impact to the region. In addition to providing recreation and high quality of life, the U.S. Environmental Protection Agency and State of Oklahoma are considering regulating pollutant levels in the Illinois River that have significant economic implications. Representatives from the State of Arkansas and Northwest Arkansas have worked with the State of Oklahoma for years to establish reasonable and acceptable targets for Northwest Arkansas to achieve in the stream. These targets impact wastewater treatment requirements that are discussed later in this report.

In 2005, Northwest Arkansas leaders formed the Illinois River Watershed Partnership with a focus on preserving the water quality of the Illinois River. The Illinois River Watershed Partnership is currently working under its 2012 Watershed Management Plan. The plan addresses four categories:

- **Forest management**
- **Pasture management**
- **Unpaved roads**
- **Urban management**

One challenge this group faces is developing a sustainable, long-term funding structure that allows implementation of the plan.

Beaver Lake

The water quality of Beaver Lake has a direct impact to the cost of drinking water. Northwest Arkansas is fortunate that the quality of water in the lake is good as that lessens the cost of treating this source water. The Beaver Watershed Alliance was formed in 2011 to initiate programs that maintain quality water in Beaver Lake as the region continues to grow. The alliance is operating based on its Beaver Lake Watershed Protection Strategy, most recently revised in 2012. The strategy includes four components the alliance is pursuing:

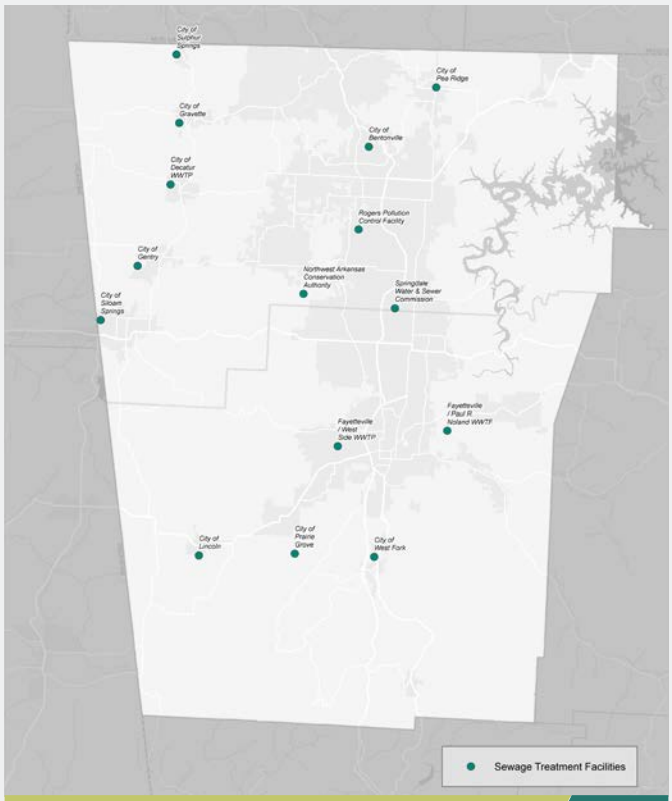
- **Core Best Management Practices**
- **Developer and Contractor Lake Protection Certification Program (not yet initiated)**
- **Education and Stewardship Program**
- **Monitoring and Adaptive Management of programs and strategies**

WASTEWATER

Much like stormwater infrastructure, wastewater infrastructure protects the water supply and the environment.

Wastewater includes sewage from homes, businesses and industry that is collected and conveyed through piping and pumping systems to a treatment facility. It is treated before it is discharged to area streams or rivers.

There are 15 wastewater treatment plants in Northwest Arkansas that serve the municipality in which it is located and, in some cases, nearby communities. The City of West Fork is exploring the possibility of decommissioning its plant by connecting to the City of Fayetteville's sewer system. These plants and current capacities are provided in the table below.



MUNICIPAL WASTEWATER TREATMENT PLANTS

WASTEWATER TREATMENT FACILITY	PLANT CAPACITY (MGD)	AVERAGE DAILY FLOW (MGD)
BENTONVILLE	4.0	3.0
DECATUR	2.2	1.9
FAYETTEVILLE/PAUL R. NOLAND	11.2	5.0
FAYETTEVILLE/WEST SIDE	10.0	6.3
GENTRY	0.5	0.3
GRAVETTE	0.6	0.12
LINCOLN	2.3	0.5
NW ARKANSAS CONSERVATION AUTHORITY	3.6	2.0
PEA RIDGE	0.3	0.3
PRAIRIE GROVE	0.9	0.4
ROGERS POLLUTION CONTROL FACILITY	14.0	8.1
SILOAM SPRINGS	5.3	2.6
SPRINGDALE WATER UTILITIES	24.5	12
SULPHUR SPRINGS	0.1	0.03
WEST FORK	0.39	0.12

Information provided in this table was derived from Burns & McDonnell research, Arkansas Department of Health, Arkansas Department of Environmental Quality, and contact with individual facilities.

The larger cities that produce the majority of the region's wastewater operate with guidance from robust master planning efforts that look 10 or more years into the future to ensure projects are proactively identified. Each one updates its master plan approximately every five years. Fayetteville is operating based on its 2014 master plan. Springdale's master plan was updated in 2015, and Rogers was updated in 2016. Bentonville is currently working on its master plan update as a part of a comprehensive land-use plan for the city. Siloam Springs conducted a number of wastewater upgrades in 2010 to position the community for future growth. Each of these communities are confident that the plans address current needs and that the cities are well-positioned for future demands.

There continue to be other investments by individual Northwest Arkansas cities treating wastewater. For example, Pea Ridge, which constructed its original wastewater treatment plant about 34 years ago, expects to spend $5.5 million on a wastewater treatment plant project. The construction will expand the plant's capacity from 300,000 gallons a day to 1 million gallons per day, and the new plant will more easily remove ammonia before the treated effluent is discharged into Otter Creek. The expansion should be started and completed in 2017.

As the region was experiencing rapid residential development in the early and mid-2000s, various options were explored that would allow smaller communities with no wastewater infrastructure and larger communities with expansion needs to meet growing demand. One solution was the construction of the Northwest Arkansas Conservation Authority (NACA) Treatment Facility. Initially the facility was designed to accept flows from Bentonville and Tontitown. Several other members joined NACA and there are currently 10 member cities: Bentonville, Bethel Heights, Cave Springs, Centerton, Elm Springs, Highfill, Lowell, Springdale, Rogers and Tontitown. At this time, none of these cities are directing wastewater to NACA other than Bentonville and Tontitown. Both of these cities have infrastructure in place to support growth in the areas that will direct increased flow to NACA.

Several small cities chose to install Septic Tank Effluent Pumping (STEP) systems because of lower capital investment requirements compared to traditional sewer collection and treatment infrastructure. These systems are comprised of septic tanks at each business or residence that pump waste to a pressurized collection line. The collection line transports waste to a treatment site. These facilities are located in Bethel Heights, Cave Springs and Elm Springs, along with multiple private systems that serve subdivisions in unincorporated areas of Benton and Washington counties. The City of Lowell owns and maintains three STEP systems that serve individual subdivisions. Burns & McDonnell's opinion is that these are not viable long-term solutions, and traditional wastewater collection and treatment should be explored for these communities.

One major concern expressed by wastewater operators is potential reductions of the allowable phosphorus limit in the Illinois River and other streams that flow to Oklahoma. This has been a topic of discussion between regional leaders, the state of Arkansas, the state of Oklahoma and Region 6 of the Environmental Protection Agency. While most of the operators felt the discussion was progressing, none were certain enough of the outcome to take definitive action in its capital improvement plans. Rogers Water Utilities estimated that at least $20 million of improvements to its plant could be needed. Similarly, Springdale Water Utilities reported it is estimating $35 million of improvements might be needed at its facility. This outcome would likewise affect the smaller plants in the region, making the total cost to the region significant.

SOLID WASTE & RECYCLING

BACKGROUND

Source: Boston Mountain Solid Waste District

waste disposal

recycling

Solid waste handling is an important part of the region's infrastructure that the general public sometimes overlooks. Keeping waste collection costs down without compromising proper disposal is a focus of regional leaders.

Solid waste is managed in the region by the Benton County Solid Waste District and the Boston Mountain Solid Waste District. In Benton and Washington counties, there are 52 trash haulers that transport approximately 516,300 tons of waste to the Waste Management Eco-Vista Landfill annually. This is nearly the equivalent weight of five U.S. Navy aircraft carriers. Notably, this is not all of the waste generated in the region because a significant volume of waste is transported out of the region to the Cherokee Nation Landfill south of Stilwell, Oklahoma or it is recycled.

The region's focus on sustainability continues to promote growth in recycling opportunities. There are 40 recycling and reuse drop-off centers, and 20 communities provide curbside recycling pickup. Based on data reported to the Arkansas Department of Environmental Quality, the region recycles 239,910 tons of material each year. There are ongoing regional discussions taking place that could stimulate a significant increase in recyclables.

Having affordable waste collection, transport and disposal options is important to the economy of the region. However, affordability cannot trump responsible management of solid waste. Solid waste management consists of waste collection, disposal and recycling facilities. When combined, these facilities allow the region to protect natural resources, remain an affordable place to live, do business, and continue to grow.

Proper management; increased sustainability.

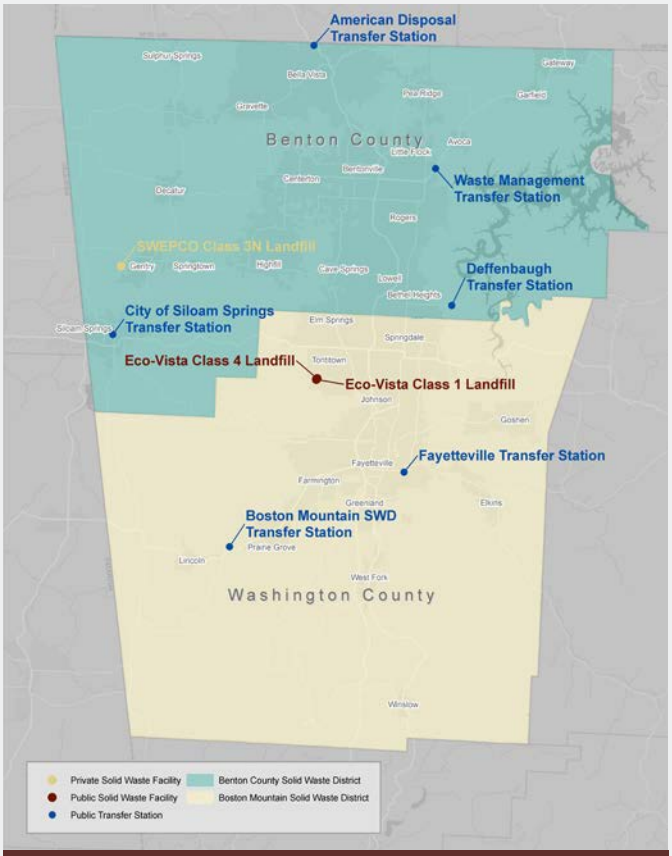
WASTE
DISPOSAL

The handling of solid waste in the region is managed by two solid waste districts, the Benton County Solid Waste District and the Boston Mountain Solid Waste District, which covers Washington County.

Waste Management, Inc. manages Eco-Vista, a municipal waste (Class 1) landfill and a separate, adjacent construction debris (Class 4) landfill near Tontitown. The area owned by Waste Management is 554.5 acres. The region is currently adding 516,300 tons of solid waste to these landfills each year. This waste is transported to the landfill by 28 hauling companies in the Boston Mountain Solid Waste District and 24 hauling companies in the Benton County Solid Waste District.

The Class 1 landfill comprises the largest portion of the active landfill, occupying 132 acres. The Class 1 landfill can accept all types of solid, non-hazardous waste. This landfill receives approximately 440,900 tons of waste per year. The remaining life at the Class 1 landfill at this level is 7.5 years.

The Class 4 landfill accepts limited types of wastes and covers 28.5 acres. The types of material that can be accepted at the Class 4 landfill include inert wood, metal, brick, plaster, gypsum, concrete, roofing, glass, rubber, vinyl and other materials that are typical of construction and bulk waste products. The Class 4 landfill receives 75,400 tons of waste per year and has a remaining life of nine years if waste continues to be disposed of at current rates.



Solid Waste Facility Locations

The typical practice for landfills is to not request additional permitted capacity until the lifespan is under five years. Since the constructed landfills only comprise 160.5 of the 554.5 acres, the landfill has room to expand with permitted approval from the state.

The need for expansion of the landfill is lessened due to the volume of waste that gets transported out of the region and materials that are recycled. Waste that is transported out of the region is primarily delivered to the Cherokee Nation Landfill located near Stilwell, Oklahoma. The Boston Mountain Solid Waste District estimates 220,000 tons of waste are transported outside of the region from its district. The Benton County Solid Waste District estimates 71,978 tons are transported out of its district.

"The Waste Management Eco-Vista Class 1 Landfill was predicted to be at maximum capacity in 7.5 years as of 2015. The region is currently adding approximately 440,900 tons of solid waste to the landfill per year."

RECYCLING

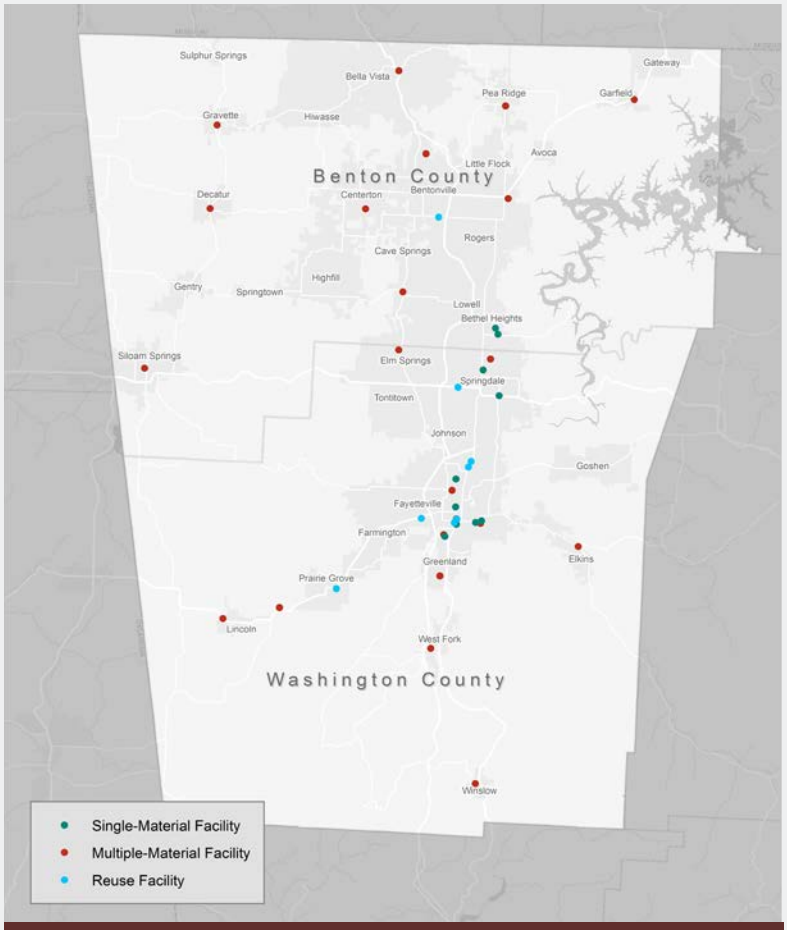
Driven by a heavy focus on sustainable communities, the development of recycling opportunities in the region is a priority.

There are 40 recycling drop-off facilities throughout the region, 22 of which accept most standard items. Some centers also accept donations of reusable items. The table of recycling drop-off locations on the following page shows which types of material can be recycled by location, while the map displays the distribution of these facilities in the counties.

In addition to drop-off facilities, 20 communities in the region provide curbside recycling pick up: Avoca, Bella Vista, Bentonville, Bethel Heights, Cave Springs, Centerton, Decatur, Elkins, Elm Springs, Farmington, Fayetteville, Garfield, Johnson, Little Flock, Lowell, Prairie Grove, Rogers, Siloam Springs, Springdale and Tontitown.

The Arkansas Department of Environmental Quality (ADEQ) reports that 117,478 tons of material were recycled in the Boston Mountain Solid Waste District in 2015. In the Benton County Solid Waste District, ADEQ reports 122,433 tons were recycled.

The City of Fayetteville recently conducted a single-stream pilot program that showed promising results. In the program, recycling participation by households increased nearly 53 percent. Additionally, there was an increase in average quantity of materials collected of approximately 96 percent. The consultant that performed the pilot study reported that these increases were consistent with other communities that had converted to single-stream recycling. Therefore, it would be expected that similar results may be seen throughout the region.



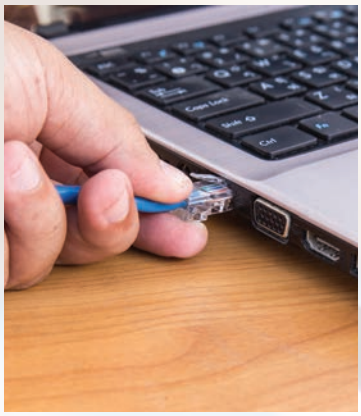
Recycling Center Locations

The economics of a single-stream materials recovery facility require that it be built to a size and processing scale that exceeds the volume of materials generated by any one community. Therefore, regional collaboration is needed to direct the adequate recyclable material volume to the materials recovery facility for it to be economically feasible.

RECYCLING
DROP-OFF LOCATIONS

	Aluminum	Batteries	Building Materials	Cardboard	Chipboard	Electronics	Glass	Household	Large Appliances	Medical Waste	Mixed Paper	Plastic Bottles	Plastic Sheets	Reusable Items / Donations	Scrap Metal	Textiles	Tires	White Paper	Yard Waste
Multiple-Material Facilities																			
AARP Chapter 109 Recycling Center (Bella Vista)	X	X		X			X				X	X						X	
Benton County Solid Waste District (Bentonville)	X	X	X	X		X	X	X		X	X	X			X		X	X	
Bentonville Composting and Recycling Facility	X			X		X	X				X	X						X	X
Boston Mountain Solid Waste (Prairie Grove)	X	X		X	X	X	X	X			X	X		X	X	X	X	X	
Cave Springs Recycle Drop-Off	X			X			X				X	X						X	
Decatur Recycling Drop-Off	X			X			X				X	X						X	
Elkins Recycling Drop-Off	X	X		X	X		X				X	X						X	
Elm Springs Recycling Drop-Off	X			X	X		X				X	X						X	
Fayetteville Drop-Off Center (Happy Hollow)	X			X	X		X				X	X						X	X
Fayetteville Drop-Off Center (Marion Orton)	X			X	X		X			X	X	X				X		X	
Garfield Area Recycling Drop-Off	X			X			X				X	X						X	
Gravette Recycle Drop-Off	X			X			X				X	X						X	
Greenland Recycling Drop-Off	X			X	X		X				X	X						X	
Lincoln Recycling Drop-Off	X	X		X	X		X				X	X						X	
Pea Ridge Recycle Drop-Off	X			X			X				X	X						X	
Rogers Recycling	X			X		X	X	X		X		X			X		X	X	
Siloam Springs Sanitation	X		X	X		X	X	X	X	X	X	X			X		X	X	
Springdale Recycling Drop-Off	X	X		X	X	X	X	X			X	X					X	X	
Vaughn Recycling (Fayetteville)									X						X				
Washington County HHW Drop-Off (Fayetteville)						X		X	X	X					X		X		
West Fork Recycling Drop-Off	X			X	X		X				X	X	X		X	X		X	
Winslow Recycling Drop-Off	X			X	X						X	X						X	
Reuse Facilities																			
Goodwill (Bentonville)														X					
Goodwill (Fayetteville 1)														X					
Goodwill (Fayetteville 2)														X					
Goodwill (Rogers)														X					
Goodwill (Springdale)														X					
Life Ministries (Prairie Grove)														X					
Potter's House (Fayetteville)														X					
Salvation Army (Fayetteville)														X					
The Attic (Fayetteville)														X					
Single-Material Facilities																			
Deffenbaugh (Bethel Heights)			X																
Fayetteville Public Library										X									
Free Geek Arkansas (Fayetteville)						X													
Habitat for Humanity ReStore (Bentonville)			X																
Hutchens Construction Co. (Bethel Heights)			X																
Ozark Steel Co. (Fayetteville)															X				
Regional Carpet Pad (Springdale)			X																
Tenenbaum Recycling Group (Fayetteville)															X				
USA Metal Recycling (Lowell)															X				
Washington Co. Sheriff's Department (Fayetteville)										X									

COMMUNICATION
BACKGROUND



Source: Shutterstock

mobile access

broadband access

Communication infrastructure is a critical component of a region's infrastructure because it supports public safety, education, health-care, government, commerce, economic development and quality of life.

The region's communication infrastructure consists of cellular, satellite, fixed wireless and wired services. Together, these services give Northwest Arkansas access to internet and telecommunication services.

Communication providers would not share information about their infrastructure or Northwest Arkansas coverage areas. Therefore, the following sections discuss information that was available in the public realm. The sections include information specific to Benton and Washington counties as well as state or national statistics that can be applied to this area.

While American preferences for how to access the internet and share information are shifting toward the use of smartphones and mobile devices, there is a segment of the population that can only rely on mobile access for high-speed data service. This is true of areas in Benton and Washington counties that do not currently have access to wired broadband service. Ongoing work by the state, however, is expanding wired broadband service to ensure health-care and education systems are connected throughout the state.

Extension of wired broadband service for health-care and education is expanding throughout the state.

MOBILE ACCESS

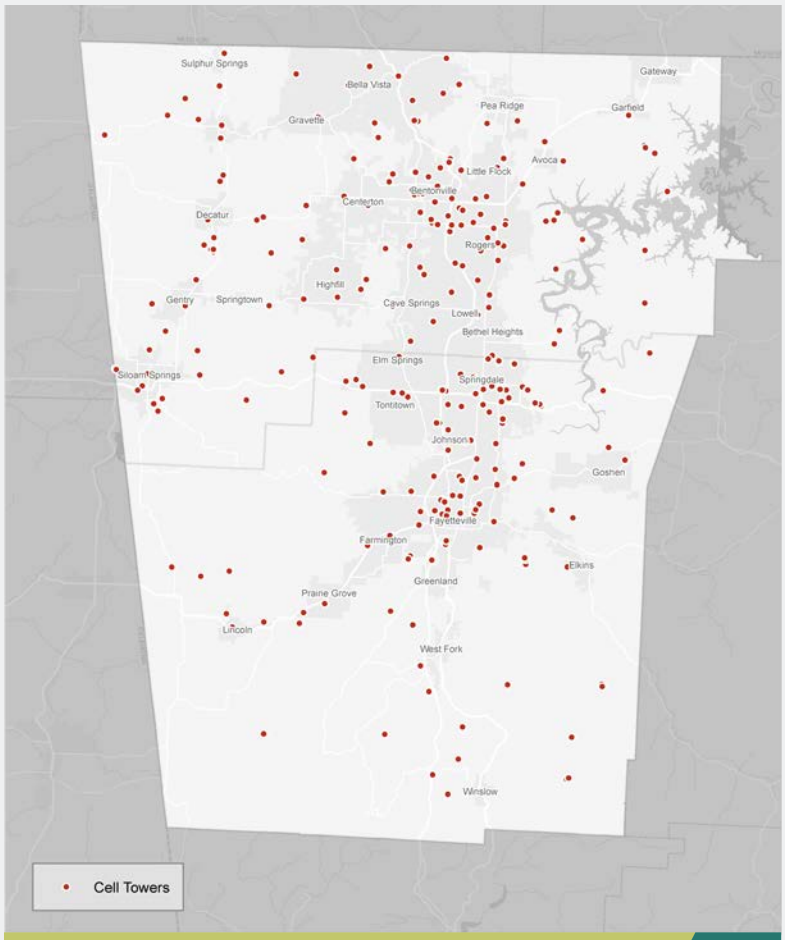
Cellular access and reliability has become increasingly important for personal communication, business and safety.

The purpose of this study was not to determine gaps in cellular service throughout the region. That research could be considered as part of the 25-year capacity plan. One of the challenges of such research is likely to be the providers' willingness to acknowledge where their systems have gaps, knowing that they'd be sharing that information with consumers and competitors.

As a major population center in Arkansas, Northwest Arkansas is a key consumer of mobile communication access in the state. Some of the largest mobile access providers in the region include AT&T, Cricket Wireless, Sprint, T-Mobile and Verizon Wireless. Mobile access infrastructure for these companies includes 308 cell towers in Benton and Washington counties. As would be expected, these towers are concentrated in the urbanized area and rural population centers.

In 2015, Pew Research Center reports that 92 percent of American adults own a mobile phone. Based on this research, an estimated 337,000 adults in Northwest Arkansas own cell phones. Additionally, The Centers for Disease Control and Prevention reported in 2015 that nearly half of American homes did not own a landline phone.

Another Pew Research Center report in 2015 indicated that 7 percent of Americans are "smartphone-dependent" for online access due to limited availability of broadband service. The region's broadband access is discussed further in the next section, but residents of Benton and Washington counties are even more reliant on smartphone data plans with 10 percent of the region not having wired broadband access, according to BroadbandNow, a public online research provider.



CELL TOWERS

BROADBAND ACCESS

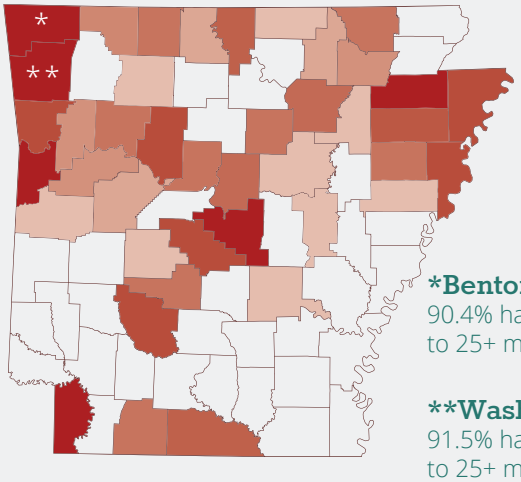
Developments in technology along with a society that is becoming more technology dependent make access to high-speed internet critically important.

Technology affects education quality, commerce, safety and quality of life. Broadband service is provided through digital subscriber lines, fiber, satellite, cable and wireless infrastructure.

In 2015, the Federal Communications Commission changed the definition of broadband from download speeds of four megabits per second (mbps) to 25 mbps. Upload speeds changed from one mbps to three mbps. Today, 90.4 percent of Benton County residents and 91.4 percent of Washington County residents have access to 100 mbps download speeds or higher.

For reference, it would take 32 minutes to download a 2-hour, high-definition movie with an average download speed of 20 mbps. It would take approximately 4.5 minutes with an average download speed of 100 mbps and 25 seconds with an average download speed of one gigabit.

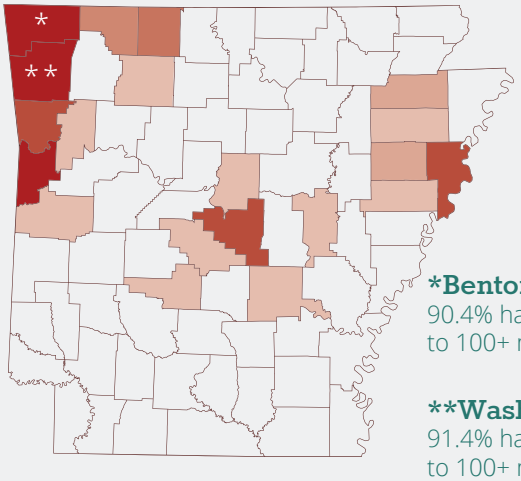
Act 1168 of 2013 designated the Arkansas Department of Information Systems director as the state broadband manager to promote, develop, and coordinate broadband expansion for all areas of the state. Emphasis was placed on connecting health-care providers, higher education institutions and school districts. Work began in 2015 to upgrade the Arkansas Public School Computer Network (APSCN) to a statewide aggregated network.



***Benton County**
90.4% have access
to 25+ mbps

****Washington County**
91.5% have access
to 25+ mbps

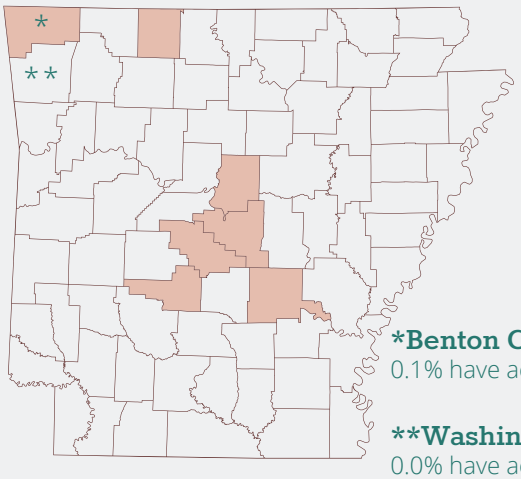
25+ MBPS SPEED



***Benton County**
90.4% have access
to 100+ mbps

****Washington County**
91.4% have access
to 100+ mbps

100+ MBPS SPEED



***Benton County**
0.1% have access to 1 gigabit

****Washington County**
0.0% have access to 1 gigabit

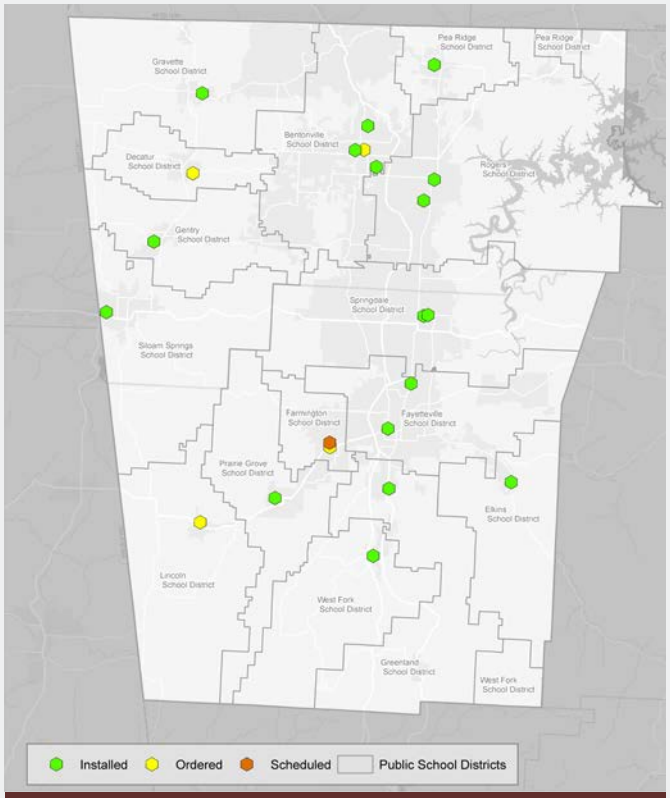
1 GIGABIT SPEED

BROADBAND COVERAGE SPEEDS

**Note: Communication data sourced from http://broadbandnow.com/Arkansas*

As of June 2016, 12 of the 15 school districts and five charter schools in the two counties had completed APSCN broadband upgrades:

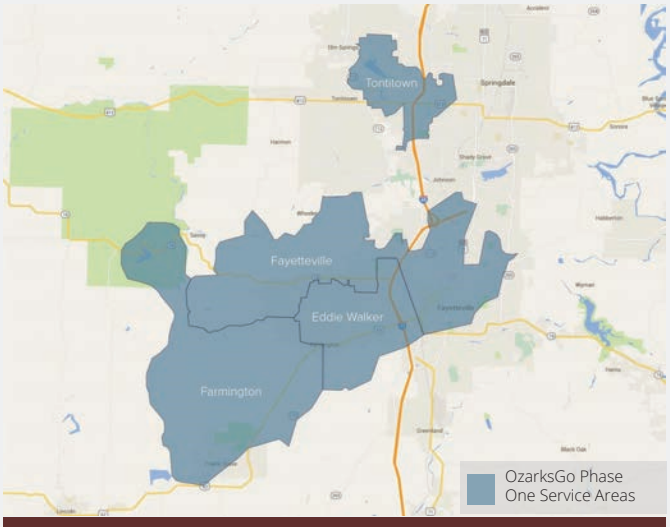
- **Arkansas Arts Academy**
- **Bentonville School District**
- **Elkins School District**
- **Fayetteville School District**
- **Gentry School District**
- **Gravette School District**
- **Greenland School District**
- **Haas Hall Academy (Bentonville)**
- **Haas Hall Academy (Fayetteville)**
- **Northwest Arkansas Classical Academy**
- **Ozark Montessori Charter School**
- **Pea Ridge School District**
- **Prairie Grove School District**
- **Rogers School District**
- **Siloam Springs School District**
- **Springdale School District**
- **West Fork School District**



Arkansas Public School Computer Network Access

The map of the APSCN broadband upgrades provides a status of school districts and charter schools reported by the Arkansas State broadband manager.

Gigabit internet service is the newest high-speed service entering regions across the United States. This speed is 10 times faster than what most of Northwest Arkansas has access to. In Northwest Arkansas, recent announcements by AT&T, Cox Communications and Ozarks Electric Cooperative stated that gigabit service will be coming to the region. When asked for specific information about how many customers will be reached within an established timeframe, Ozarks Electric was the only organization to provide information. While it would not provide specific figures, it provided the map to the right, showing the areas it plans to first deploy OzarksGo service.



Potential Gigabit Service Area for OzarksGo

EMERGENCY SERVICES
BACKGROUND

Source: Shutterstock

law enforcement & fire

hospitals & emergency medical services

Ensuring the health and safety of Northwest Arkansas' citizens is the primary role attributed to the emergency services infrastructure.

The emergency services infrastructure in the region includes law enforcement, fire protection, and emergency medical care. Combined, these services work together to protect the well-being of Northwest Arkansas citizens.

The two-county area is served by 29 city and county law enforcement agencies and 47 fire departments. The larger fire departments routinely respond to calls in neighboring districts to support one another. Likewise, the larger police departments and two sheriffs departments support other law enforcement agencies in the region with specialized response needs.

The region's hospital facilities are growing rapidly with two of the three major health-care systems amidst large facility expansions. Additionally, a new children's hospital is being constructed. These three high-profile projects total $354 million of construction.

The region is divided into 11 EMS districts for emergency response and transport to area hospitals. Ten of these 11 districts serve parts of Benton County. Central EMS covers all of Washington County except for the Springdale city limits, which is served by its fire department.

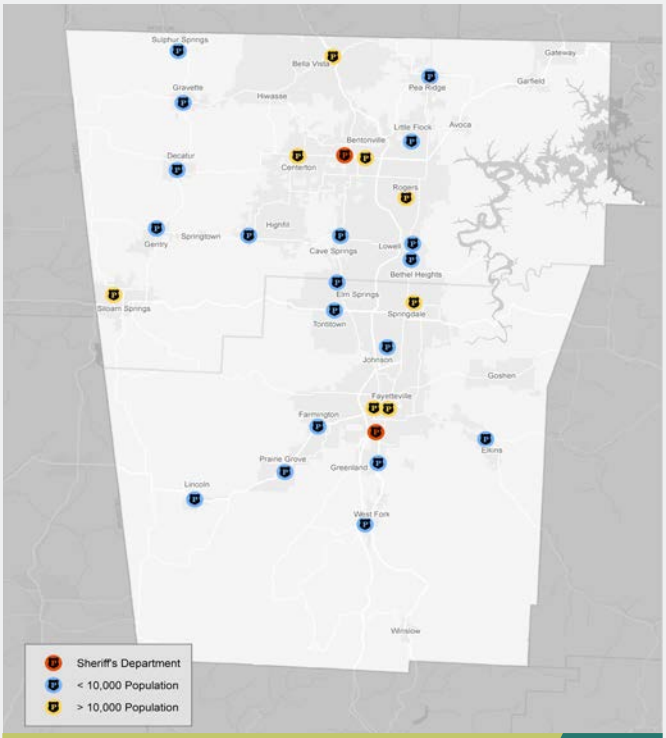
Protecting the safety and well-being of citizens.

LAW ENFORCEMENT & FIRE PROTECTION

Cities and Benton and Washington counties continue to invest in updated equipment and buildings for their law enforcement agencies and fire departments. There are consistent discussions in Northwest Arkansas cities and counties about additional personnel to serve the region's growing population.

Law Enforcement

In Benton and Washington counties, there are 29 city and county law enforcement agencies. Combined, there are 823 full-time and 68 part-time officers serving in the two counties.



LAW ENFORCEMENT AGENCIES

AREA LAW ENFORCEMENT AGENCIES
BELLA VISTA POLICE DEPARTMENT
BENTON COUNTY SHERIFF'S OFFICE
BENTONVILLE POLICE DEPARTMENT
BETHEL HEIGHTS POLICE DEPARTMENT
CAVE SPRINGS POLICE DEPARTMENT
CENTERTON POLICE DEPARTMENT
DECATUR POLICE DEPARTMENT
ELKINS POLICE DEPARTMENT
ELM SPRINGS POLICE DEPARTMENT
FARMINGTON POLICE DEPARTMENT
FAYETTEVILLE POLICE DEPARTMENT
GENTRY POLICE DEPARTMENT
GRAVETTE POLICE DEPARTMENT
GREENLAND POLICE DEPARTMENT
HIGHFILL POLICE DEPARTMENT
JOHNSON POLICE DEPARTMENT
LINCOLN POLICE DEPARTMENT
LITTLE FLOCK POLICE DEPARTMENT
LOWELL POLICE DEPARTMENT
PEA RIDGE POLICE DEPARTMENT
PRAIRIE GROVE POLICE DEPARTMENT
ROGERS POLICE DEPARTMENT
SILOAM SPRINGS POLICE DEPARTMENT
SPRINGDALE POLICE DEPARTMENT
SULPHUR SPRINGS POLICE DEPARTMENT
TONTITOWN POLICE DEPARTMENT
UNIVERSITY OF ARKANSAS POLICE
WASHINGTON COUNTY SHERIFF'S OFFICE
WEST FORK POLICE DEPARTMENT

LAW ENFORCEMENT & FIRE PROTECTION

An analysis by *Governing* magazine of data collected by the Federal Bureau of Investigation (FBI) showed communities with populations of 50,000 to 100,000 residents averaged 15.9 police officers per 10,000 residents in 2015.

A similar police-to-population comparison can be made using information collected by Burns & McDonnell. The three cities in the two counties with at least 50,000 residents are Springdale (19.4 police officers per 10,000 residents), Rogers (17.6), and Fayetteville (15.1).

Additionally, a 2015 FBI report indicated the number of law enforcement officers, regardless of a community's size, averages 21 officers per 10,000 residents. With 475,149 people living in the two counties, the number of full-time officers across the region is 17.3 officers per 10,000 residents.

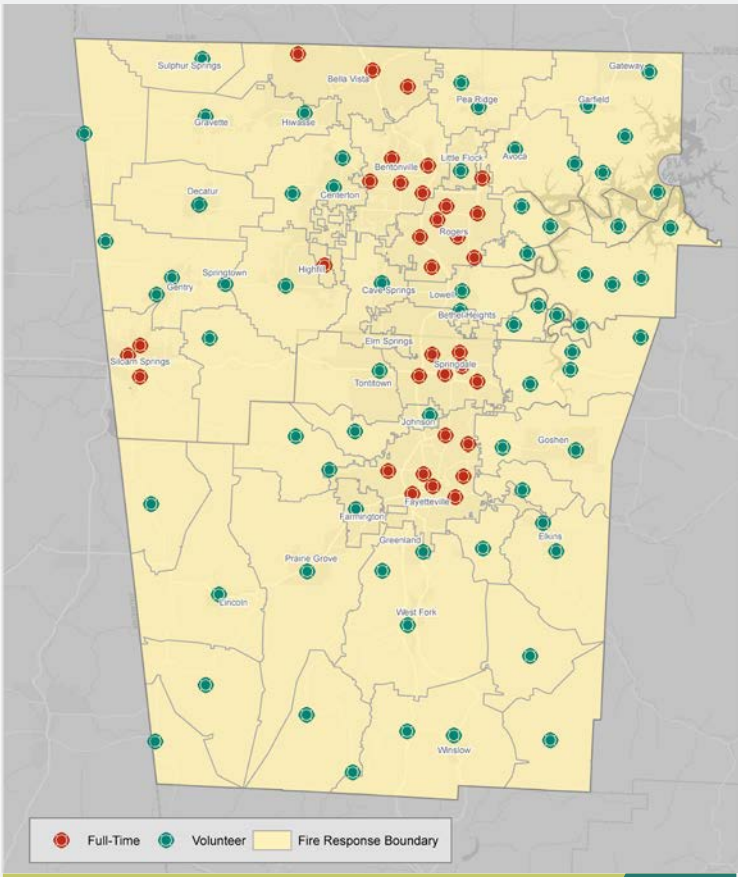
There were 22 additional positions that these agencies were actively trying to fill when the departments were interviewed for this study. No departments indicated plans to construct new stations.

Fire Departments

There are 105 fire stations operated by 47 fire departments in Benton and Washington counties. The map displays the response boundaries of each district as well as the distribution of the 105 stations. Many times; however, departments respond to assist neighboring departments.

Seven of these fire departments are comprised almost entirely of full-time professional firefighters: Bella Vista, Bentonville, Fayetteville, Northwest Arkansas Regional Airport, Rogers, Siloam Springs and Springdale. The remaining departments have a mixture of full-time, part-time and volunteer firefighters.

The departments reported 571 full-time firefighters, 542 of which work in the seven largest departments. An additional 816 part-time or volunteer firefighters serve these departments. The departments reported that 345 firefighters are trained hazmat technicians.



FIRE STATIONS

Twelve of the departments indicated needs for new stations. The departments who expressed needs for additional stations or major expansions to existing stations were: Boston Mountain, Elkins, Fayetteville, Gallatin, Gentry, Lowell, Maysville, Prairie Grove, Rogers, Springdale, Sulphur Springs, and West Fork. Those indicating definitive plans are in place to build new stations were: Elkins, Gentry, Lowell, and Rogers. A few more departments indicated needs for additional engines or other vehicles.

HOSPITALS & EMERGENCY
MEDICAL SERVICES

The Northwest Arkansas Council's Greater Northwest Arkansas Development Strategy identifies the health-care sector as an important component of the region's economic development strategy.

Hospitals

There are 12 health-care facilities classified as hospitals that serve the region. These facilities are listed in the table on Page 51, along with bed counts and level-of-service overview. As robust as the existing hospital network is, there is currently significant investment in the region for hospital expansions, many focused on providing improved health-care to women and children.

Washington Regional Medical Center recently completed a $60 million expansion at its campus in Fayetteville. The five-story tower includes 132,800 square feet for additional operating room space, 34-bed Level 3A neonatal intensive care unit, private patient rooms, including mother-baby rooms, additional clinic space, and the hospital's second helipad. There is also a separate 350-space parking garage. Washington Regional also plans to open a four-story 66,000-square-foot medical office building with a $19 million construction budget in 2017.

In 2015, the Arkansas Children's Hospital in Little Rock announced plans to construct Arkansas Children's Northwest in Springdale. The facility is under construction and scheduled to open in January 2018. The cost for construction, technology and equipment for the hospital is estimated at $167 million. The facility will be 233,613 square feet and provide 24 inpatient beds, a 24-hour pediatric emergency department, a 30-room outpatient clinic, five pediatric surgery operating rooms, imaging capabilities, diagnostic services, and a helipad and refueling station supporting the Angel One Transport Program. The five-year investment for construction and operation of the hospital is projected to be $427.7 million.

In April 2016, Mercy Hospital Northwest Arkansas announced a $247 million plan that includes a hospital tower and medical clinics at locations throughout Benton and Washington counties. This will create an expected 1,000 health-care jobs over five years. The signature element of the plan is the $127 million addition of a seven-story, 249,000-square-foot inpatient tower in Rogers. The tower will increase the bed count to more than 300 beds with future plans to expand to 360 beds. Construction is expected to be complete in late 2019.

With these expansions, the region still lacks a Level I Trauma Center, the highest level of designation for a trauma center. Little Rock has two Level I trauma centers, and the nearest to Northwest Arkansas are the two in Springfield, Missouri. Washington Regional Medical Center houses a Level II trauma center, the highest designation in Benton and Washington counties.

HOSPITALS & EMERGENCY MEDICAL SERVICES

HOSPITAL	TYPE OF HOSPITAL	BED COUNT
ARKANSAS CHILDREN'S NORTHWEST – SPRINGDALE (FUTURE)	GENERAL MEDICAL - SURGICAL (PEDIATRIC)	24
HEALTHSOUTH REHABILITATION HOSPITAL – FAYETTEVILLE	REHABILITATION	60
MERCY HOSPITAL NORTHWEST ARKANSAS – ROGERS	GENERAL MEDICAL - SURGICAL WITH CARDIAC UNIT & LEVEL III TRAUMA CENTER	220
NORTHWEST MEDICAL CENTER – BENTONVILLE	GENERAL MEDICAL - SURGICAL WITH CARDIAC UNIT & LEVEL III TRAUMA CENTER	128
NORTHWEST MEDICAL CENTER – SPRINGDALE	GENERAL MEDICAL - SURGICAL WITH CARDIAC UNIT & LEVEL III TRAUMA CENTER	222
WILLOW CREEK WOMEN'S HOSPITAL – JOHNSON	SPECIALTY FOCUS ON GYNECOLOGICAL SERVICES, OBSTETRIC SERVICES AND MATERNAL-FETAL MEDICINE SERVICES	64
OZARK COMMUNITY HOSPITAL OF GRAVETTE	GENERAL MEDICAL - SURGICAL WITH EMERGENCY SERVICES	25
PHYSICIANS' SPECIALTY HOSPITAL – FAYETTEVILLE	ORTHOPEDIC AND COSMETIC OUTPATIENT SURGERY	20
SILOAM SPRINGS REGIONAL HOSPITAL	GENERAL MEDICAL - SURGICAL WITH LEVEL IV TRAUMA CENTER	73
SPRINGWOODS BEHAVIORAL HEALTH SERVICE – FAYETTEVILLE	PSYCHIATRIC	80
FAYETTEVILLE VA MEDICAL CENTER	VETERANS ADMINISTRATION	73
VANTAGE POINT OF NORTHWEST ARKANSAS – FAYETTEVILLE	PSYCHIATRIC	92
WASHINGTON REGIONAL MEDICAL CENTER - FAYETTEVILLE	GENERAL MEDICAL - SURGICAL WITH CARDIAC UNIT & LEVEL II TRAUMA CENTER	366

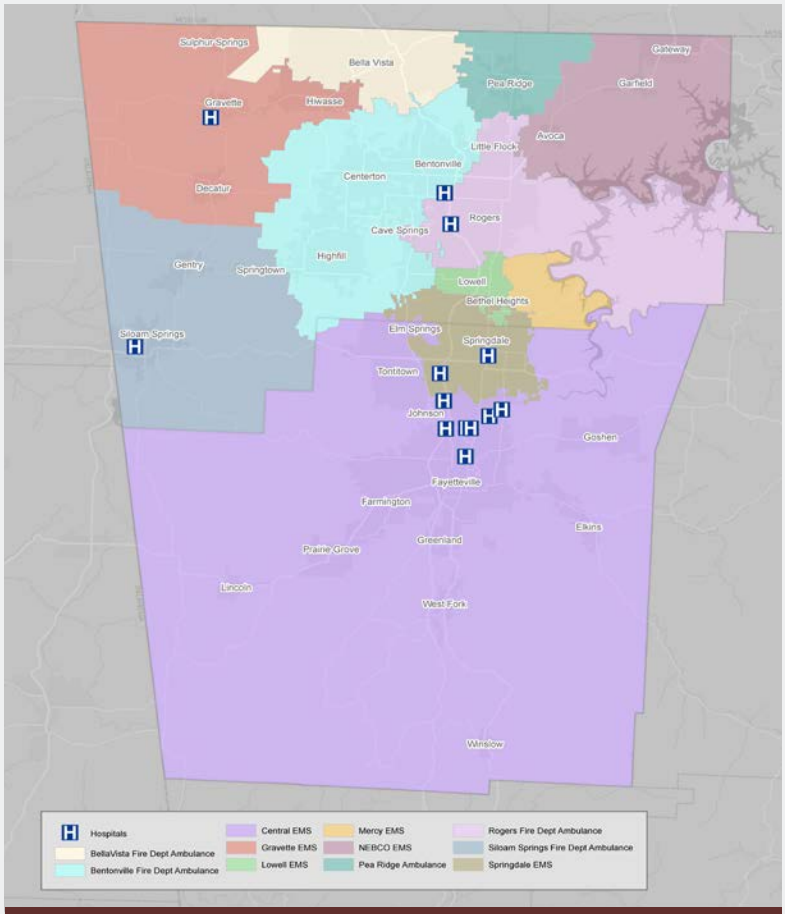
Information in this table was derived from Burns & McDonnell research, Arkansas Hospital Association reports, and contact with individual facilities.

EMS Response

Emergency Medical Services (EMS) in Benton and Washington counties are handled quite differently. In Benton County, there are 11 EMS Districts with the responsibility for service in these districts residing with fire departments. In Washington County, there are two EMS Districts. The Springdale Fire Department provides EMS service within its corporate limits, and Central EMS provides service to the remainder of Washington County from its 10 EMS stations located in Fayetteville, Johnson, Lincoln, Prairie Grove, Tontitown and West Fork.

Central EMS provides a fleet of 18 ambulances while the fire departments reported a combined 38 ambulances.

In addition to standard ambulance service offered by the fire departments and Central EMS, the region receives air ambulance services from Air Evac Life Team 4 and EagleMed 12. Air Evac Life Team 4 operates a base in Springdale next to Northwest Medical Center. According to Air Evac Life Team 4, it can respond to the most populated areas of Northwest Arkansas in less than 10 minutes. Response times to northwestern Benton County and southwestern Washington County could potentially approach 20 minutes. EagleMed 12 operates from a base in Joplin, Missouri but has Benton and Washington counties in its response area.



Hospital and EMS Map

EMS RESPONSE PROVIDERS

- BELLA VISTA FIRE DEPARTMENT
- BENTONVILLE FIRE DEPARTMENT
- CENTRAL EMS
- GRAVETTE FIRE DEPARTMENT
- LOWELL FIRE DEPARTMENT
- NEBCO FIRE DEPARTMENT
- PEA RIDGE FIRE DEPARTMENT
- ROGERS FIRE DEPARTMENT
- SILOAM SPRINGS FIRE DEPARTMENT
- SPRINGDALE FIRE DEPARTMENT
- MERCY EMS

EDUCATION
BACKGROUND

Source: Shutterstock

primary and secondary education

higher education

The rapid population growth in Northwest Arkansas caused area schools to expand. New schools were opening every year in many of the districts while private and higher education institutions were expanding as well.

Students in Benton and Washington counties comprise 17.7 percent of the state student population based on information reported by the Arkansas Department of Education Data Center.

There are 15 public school districts, 23 private schools, and six open-enrollment charter schools in the two counties. Collectively, close to 90,000 students are enrolled in kindergarten through 12th grade as of fall 2016. An additional 3,676 students, or 3.9 percent of the student population, are homeschooled.

Upon graduating from high school, students have several options to continue their education. The Arkansas Department of Higher Education Annual Enrollment report indicated a 0.8 percent decrease in statewide enrollment. Despite statewide decline, the University of Arkansas in Fayetteville is among the fastest-growing public 4-year university, and John Brown University is the second fastest-growing private institution in the state. More than 70 percent of the higher education students in the region, or 16 percent of statewide students, attend the University of Arkansas, but there are seven other schools that students can choose from to meet their higher education needs.

Education facilities help maintain regional growth.

PRIMARY AND SECONDARY

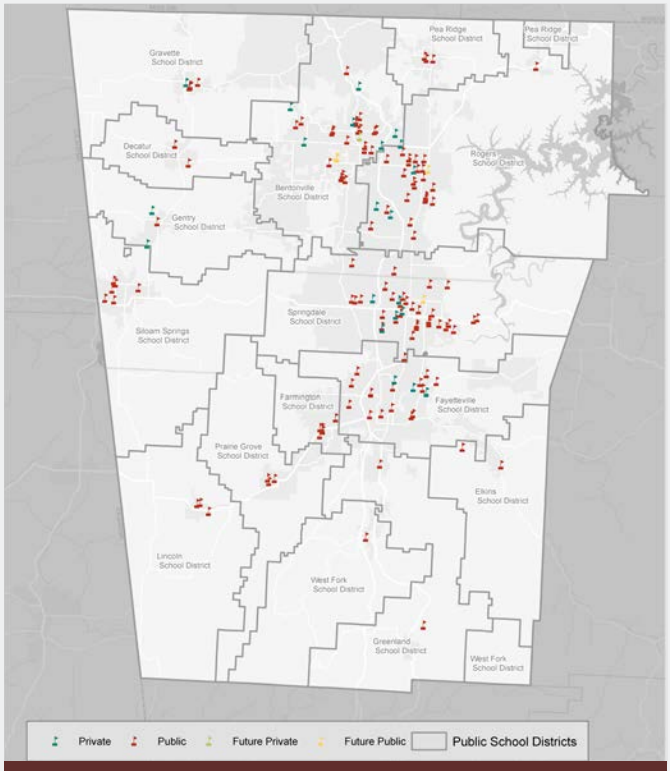
EDUCATION

Despite rapid student population growth, school districts have added capacity through building new schools and hiring more teachers to maintain a high level of service to students. The region's student-to-teacher ratio remains relatively low at 14:1.

The two-county area has 15 school districts that serve the region along with six open-enrollment charter schools. The largest district is the Springdale School District with 21,826 students. The smallest district is the Decatur School District with 573 students. The largest charter school is the Arkansas Arts Academy in Rogers with 779 students. Combined, the 15 school districts and charter schools serve 84,627 students. The public and charter schools reported plans for 19 new schools in development, including expansion of Haas Hall Academy to Rogers and Springdale.

There are also 23 private schools. The largest is Shiloh Christian which serves Pre-K through 12th grade. Its enrollment is 1,011 students. Two private schools are in development. The Thaden School will open in Bentonville in 2017 to initially serve grades 7 and 9, with plans to serve grades 6 through 12 in the years ahead. The Ozark Catholic Academy is in the planning stages and projecting it will open in Fall 2018 as the region's first Catholic high school.

Families in Benton and Washington counties have chosen to homeschool their children at a rate slightly higher than the statewide and national averages. Inside the two counties, 3,676 students were homeschooled during the 2015-2016 school year, or 3.9 percent of the total student population.



K-12 Education Locations

The average national rate of homeschooling is 3 percent while in Arkansas it is 3.5 percent.

The K-12 Education Locations map and the table on pages 55–58 provide the distribution of these schools, along with information regarding student enrollment at individual schools.

The information reported in the following tables was provided by the Arkansas Department of Education, Arkansas Nonpublic School Accrediting Association, and individual private school contacts.

The two-county area has 15 school districts, six open-enrollment charter schools, and 23 private schools.

PUBLIC SCHOOLS

SCHOOL NAME	GRADES	2016-2017 ENROLLMENT
Bentonville School District		
Apple Glen Elementary School	K-4	633
Ardis Ann Middle School	5-6	675
Bentonville High School	9-12	3,511
Bentonville West High School	9-12	1,236
Bright Field Middle School	5-6	650
Centerton Gamble Elementary School	K-4	798
Central Park At Morning Star	K-4	861
Cooper Elementary School	K-4	651
Elm Tree Elementary School	K-4	660
J. William Fulbright Junior High School	7-8	886
Lincoln Junior High School	7-8	872
Mary Mae Jones Elementary School	K-4	629
Old High Middle School	5-6	622
R.E. Baker Elementary School	K-4	571
Ruth Barker Middle School	5-6	635
Sugar Creek Elementary School	K-4	498
Thomas Jefferson Elementary School	K-4	536
Washington Junior High School	7-7	752
Willowbrook Elementary School	K-4	933
Total		**16,609**
Decatur School District		
Decatur High School	9-12	157
Decatur Middle School	5-8	154
Decatur Northside Elementary School	K-4	262
Total		**573**
Elkins School District		
Elkins Elementary Primary School	P-2	239
Elkins Elementary School	3-5	255
Elkins High School	9-12	409
Elkins Middle School	6-8	287
Total		**1,190**
Farmington School District		
Bob Folsom Elementary School	K-3	371
Farmington Career Academies	1-12	548
Farmington Freshman Academy	9-9	200
George R Ledbetter Intermediate School	4-5	397
Jerry "Pop" Williams Elementary School	K-3	394
Randall G. Lynch Middle School	6-8	593
Total		**2,503**
Fayetteville School District		
Asbell Elementary School	K-4	305
Butterfield Elementary School	K-4	530
Fayetteville High School	9-12	2,882
Fayetteville Virtual Academy	K-12	48
Happy Hollow Elementary School	K-4	473
Holcomb Elementary School	K-4	620
Holt Middle School	5-6	441
Leverett Elementary School	K-4	291

PUBLIC SCHOOLS

SCHOOL NAME	GRADES	2016-2017 ENROLLMENT
McNair Middle School	5-6	755
Owl Creek School	K-6	790
Ramay Junior High School	7-8	626
Root Elementary School	K-4	410
Vandergriff Elementary School	K-4	598
Washington Elementary School	K-4	333
Woodland Junior High School	7-8	762
Total		**9,864**
Gentry School District		
Gentry High School	9-12	472
Gentry Intermediate School	3-5	344
Gentry Middle School	6-8	294
Gentry Primary School	K-2	297
Total		**1,407**
Gravette School District		
Glenn Duffy Elementary School	K-2	401
Gravette High School	9-12	593
Gravette Middle School	6-8	441
Gravette Upper Elementary School	3-5	419
Total		**1,854**
Greenland School District		
Greenland Elementary School	K-4	281
Greenland High School	9-12	279
Greenland Middle School	5-8	235
Total		**795**
Lincoln School District		
Lincoln Elementary School	K-5	313
Lincoln Middle School	6-7	377
Lincoln New Tech High School	8-12	497
Total		**1,187**
Pea Ridge School District		
Pea Ridge High School	9-12	517
Pea Ridge Intermediate School	3-5	445
Pea Ridge Manufacturing & Business Academy	11-12	138
Pea Ridge Middle School	6-8	514
Pea Ridge Primary School	K-2	452
Total		**2,066**
Prairie Grove School District		
Prairie Grove Elementary School	K-4	702
Prairie Grove High School	9-12	625
Prairie Grove Middle School	5-8	582
Total		**1,909**
Rogers School District		
Bellview Elementary School	K-5	430
Bonnie Grimes Elementary School	K-5	472
Eastside Elementary School	K-5	489

PUBLIC SCHOOLS

SCHOOL NAME	GRADES	2016-2017 ENROLLMENT
Elmwood Middle School	6-8	749
Elza R. Tucker Elementary School	K-5	617
Frank Tillery Elementary School	K-5	593
Garfield Elementary School	K-5	132
Grace Hill Elementary School	K-5	450
Janie Darr Elementary School	K-5	616
Joe Mathias Elementary School	K-5	550
Jones Elementary School	K-5	538
Kirksey Middle School	6-8	945
Lingle Middle School	6-8	915
Lowell Elementary School	K-5	454
Northside Elementary School	K-5	513
Oakdale Middle School	6-8	810
Old Wire Elementary School	K-5	566
Reagan Elementary School	K-5	471
Rogers Heritage High School	9-12	1,932
Rogers High School	9-12	2,044
Rogers New Technology High School	9-12	637
Westside Elementary School	K-5	476
Total		**15,399**
Siloam Springs School District		
Delbert "Pete" & Pat Allen Elementary School	1-2	630
Northside Elementary School	P-K	321
Siloam Springs High School	9-12	1,338
Siloam Springs Intermediate School	5-6	620
Siloam Springs Middle School	7-8	651
Southside Elementary School	3-4	652
Total		**4,212**
Springdale School District		
Bayyari Elementary School	K-5	610
Bernice Young Elementary School	K-5	526
Central Junior High School	8-1	927
Elmdale Elementary School	K-5	556
George Elementary School	K-5	609
George Junior High School	8-9	729
Har-Ber High School	9-12	2,265
Harp Elementary School	K-5	538
Helen Tyson Middle School	6-7	742
Hellstern Middle School	6-7	997
Hunt Elementary School	K-5	604
J. O. Kelly Middle School	6-7	683
John Tyson Elementary School	K-5	541
Jones Elementary School	K-5	541
Lakeside Junior High School	8-9	696
Linda Childers Knapp Elementary School	K-5	613
Linda Childers Knapp Pre-K	P-P	299
Monitor Elementary School	K-5	651
Parson Hills Elementary School	K-5	555
Robert E. Lee Elementary School	K-5	520
Sonora Elementary School	K-5	596
Sonora Middle School	6-7	847

PUBLIC SCHOOLS

SCHOOL NAME	GRADES	2016-2017 ENROLLMENT
Southwest Junior High School	8-9	630
Springdale High School	9-12	2,171
Springdale Don Tyson School Of Innovation	8-12	502
Thurman G. Smith Elementary School	K-5	630
Turnbow Elementary School	K-5	605
Walker Elementary School	K-5	548
Westwood Elementary School	K-5	503
Willis Shaw Elementary School	K-5	592
Total		**21,826**
West Fork School District		
West Fork Elementary School	K-4	380
West Fork High School	9-12	347
West Fork Middle School	5-8	347
Total		**1,074**

CHARTER SCHOOLS

SCHOOL NAME	CITY	GRADES	2016-2017 ENROLLMENT
Arkansas Arts Academy	Rogers	K-12	779
Haas Hall Academy Bentonville	Bentonville	7-12	301
Haas Hall Academy Fayetteville	Fayetteville	7-12	344
Northwest Arkansas Classical Academy	Bentonville	K-8	491
Northwest Arkansas Classical Academy High	Bentonville	9-12	65
Ozark Montessori Academy Springdale	Springdale	K-7	179

PRIVATE SCHOOLS

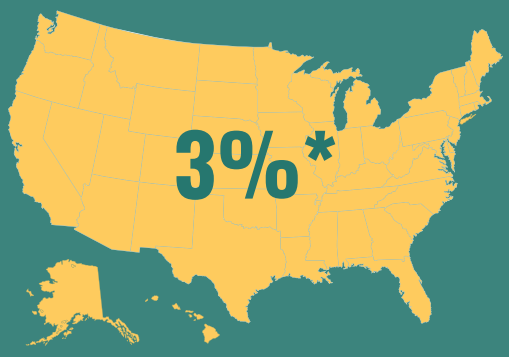
SCHOOL NAME	CITY	GRADES	2016-2017 ENROLLMENT
Ambassadors For Christ Academy	Bentonville	P-8	95
ANH Montessori School	Rogers	P-6	120
Bentonville Christian Academy	Bentonville	P-5	120
Bentonville Seventh-day Adventist	Bentonville	P-8	55
Fayetteville Christian School	Fayetteville	P-12	250
Fayetteville Creative School	Fayetteville	P-K	112
Fayetteville Montessori School	Fayetteville	P-6	425
First Baptist Christian School	Rogers	K-6	179
Gentry Mennonite School	Gentry	1-8	35
Grace Lutheran School	Lowell	P-9	35
Holiness Bible School	Gravette	K-12	8
Life Way Christian School	Centerton	P-12	550
New Heights Christian School	Bentonville	1-12	36
Oak Grove Montessori School	Springdale	P-1	90
Ozark Adventist School	Gentry	9-12	152
Prism Education Center	Fayetteville	K-11	113
Providence Classical Christian Academy	Rogers	K-12	529
Shiloh Christian School	Springdale	P-12	1,011
Springdale Adventist School	Springdale	K-8	23
St. Joseph Catholic School	Fayetteville	P-8	271
St. Vincent De Paul Catholic School	Rogers	P-8	403
The New School	Fayetteville	P-9	418
Walnut Farm Montessori School	Bentonville	P-3	102

ENROLLMENT BY TYPE

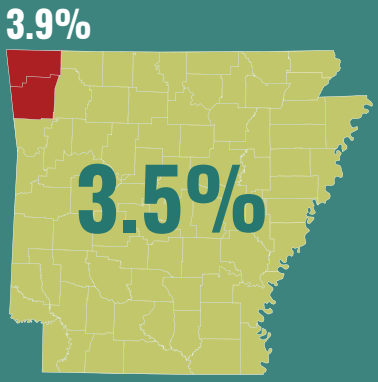
PUBLIC SCHOOLS	PRIVATE SCHOOLS	HOME-SCHOOLS
84,627 STUDENTS	**5,132** STUDENTS	**3,676** STUDENTS

**Note: Home-school enrollment is 2015-2016 data.*

HOME-SCHOOLED PERCENTAGES



UNITED STATES



ARKANSAS/
NORTHWEST ARKANSAS

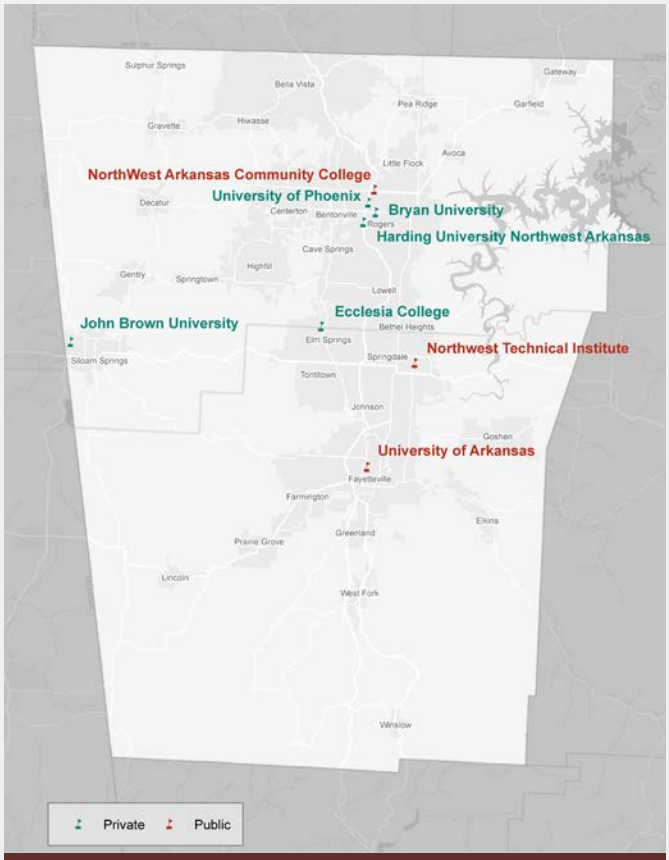
**Note: US average as reported by the National Center for Education Statistics during the 2011-2012 school year*

HIGHER
EDUCATION

Northwest Arkansas is home to Arkansas' flagship university, the University of Arkansas. The University of Arkansas educates about 70 percent of the more than 38,000 students enrolled in the region's higher education institutions.

Fall 2016 enrollment at the University of Arkansas was 27,194 students. The University of Arkansas offers 78 undergraduate majors, 86 master's degree programs, 50 doctoral programs and 17 graduate certification programs. The University of Arkansas has 17 ongoing or proposed construction projects that total $350 million.

The remaining Northwest Arkansas higher education students attend one of the seven other schools. NorthWest Arkansas Community College (NWACC) serves nearly 70 percent of students not attending the University of Arkansas, while John Brown University serves most of the remaining 30 percent. Harding University in Rogers is the next largest followed by Northwest Technical Institute, Ecclesia College, and Bryan University. The University of Phoenix is not discussed further in this report because it refused to provide information, citing a policy of not participating in research studies.



Higher Education Institution Locations

"Schools play an increasingly important role in meeting the unique skills-training and continuing education needs of Northwest Arkansas employers."

HIGHER EDUCATION

SCHOOL NAME	TYPE	CITY	2016-2017 ENROLLMENT
Bryan University	Private	Rogers	61
Ecclesia College	Private	Springdale	184
Harding University - Northwest Arkansas Campus	Private	Rogers	300
John Brown University	Private	Siloam Springs	2,686
NorthWest Arkansas Community College	Public	Bentonville	7,973
Northwest Technical Institute	Public	Springdale	276
University of Arkansas	Public	Fayetteville	27,194

NWACC plays an important role in the region, serving about 8,000 students, as an alternative to the University of Arkansas. NWACC has well-respected health science and nursing programs as well as culinary arts and information technology focuses. The culinary arts program is housed in a recently completed $15 million expansion funded by the Walton Family Foundation.

NWACC operates centers in Farmington and Springdale in Washington County as satellites of its main campus in Bentonville. In 2014, NWACC purchased 20 acres in Springdale for a centralized Washington County campus. The school is currently in a $15 million fundraising campaign for the planned 50,000-square-foot facility, arts lab building, and fine arts and special events center.

Institutions of higher education in Northwest Arkansas have a role larger than traditional enrollment figures suggest. For example, in addition to the 276 high school graduates who are taking courses for degree credit at Northwest Technical Institute, there are 2,635 other people who attend the Springdale technical school for an array of purposes. They include 1,567 people in adult education classes and 650 employees of area companies, who are advancing their job skills. Similarly, NWACC trains an additional 5,499 people, 3,521 of which are workforce development students.

John Brown University is a private, Christian college in Siloam Springs that serves more than 2,600 students. There are $9.25 million of improvements underway with plans for another $2.5 million over 10 years.

CONCLUSION

According to the Arkansas Census State Data Center, the combined population of Benton and Washington counties is projected to grow from the latest U.S. estimate of 475,149 to just over 800,000 people by 2040.

The 2040 Northwest Arkansas Metropolitan Transportation Plan includes a breakdown of the population growth. Benton County should grow to 404,736 residents by 2040, and Washington County is on pace to reach 397,636 residents that year.

Benton County's fastest growth should occur in the city of Centerton. Three small cities — Johnson, Tontitown and Farmington — should have Washington County's fastest growth rates. All three are projected to be about 2.5 times larger in 2040 than they were in 2010.

Those and other growth projections emphasize the need for reliable infrastructure systems. The region's infrastructure related to transportation, water, energy, solid waste, communication, emergency services and education allows for the continued delivery of necessary services. When sufficient infrastructure is in place and operated well, it helps ensure a vibrant region. When infrastructure systems are insufficient, economic growth could be negatively impacted.

Transportation: Roadways, Public Transportation, Trails, Aviation and Railroads

Owners and planners work diligently to maintain and expand roads, highways, public transportation, trails, airports and railroads as needs dictate. The 2040 Metropolitan Transportation Plan, prepared by the Northwest Arkansas Regional Planning Commission, functions as a framework for continued regional awareness and cooperation between local governments.

Of the nine most congested roadway sections identified by the planning commission's Congestion Management Process Report in 2015, four of the congested roadway sections are being addressed. A fifth section is being partially addressed by capacity improvements by the Arkansas State Highway and Transportation Department (AHTD). These ongoing improvements are a part of the Connecting Arkansas and Interstate Rehabilitation Programs that since 2011 have provided nearly $400 million into the region's highway system. AHTD and many of the region's larger cities are planning and discussing new transportation funding programs.

Work in the public transportation sector is also ongoing. The Transit Development Plan, which will be prepared by the Regional Planning Commission next year, should address questions about funding and transportation needs. One major goal in advancing Ozark Regional Transit, which serves the largest geographic area in the two counties, is to increase its overall ridership.

Work together to build a safe, healthy and vibrant community.

CONCLUSION

Work by the Regional Planning Commission on the Northwest Arkansas Regional Bicycle and Pedestrian Master Plan appears to be moving the region in a positive direction when it comes to trail development. The plan helps ensure a comprehensive, interconnected network of trails to link communities and sites of interest. The plan contains measurable goals to assess its progress as the plan is implemented.

Decisions at the Northwest Arkansas Regional Airport (XNA) are guided by a comprehensive master plan. The plan helps inform decisions and ensure that expanded air service and new or expanded infrastructure are available to Northwest Arkansas' businesses and leisure travelers.

While the region's Arkansas & Missouri Railroad line connects the downtowns of Fayetteville, Springdale and Rogers, recent studies have shown that its use as a commuter rail corridor is not economically feasible due to insufficient population density. The abandonment of the portion of its line that connected the NorthWest Arkansas Community College to central Bentonville reduced the corridor's possible use for connecting the region's largest employment centers. However, there is periodic dialogue among city planners about making the rail corridor ready for expanded passenger service as the region's only passenger service now are railroad leisure trips from Springdale to Van Buren.

There is interest in Northwest Arkansas in protecting an abandoned rail corridor between the Kansas City Southern tracks near Gentry and the Northwest Arkansas Regional Airport. The KCS-XNA corridor should continue to be protected as the region's population grows and commercial development expands.

Energy: Electricity and Natural Gas

Most electricity and natural gas in the region is sold by private companies. Those companies limited what information they'd make available for this report. Each provider was confident of its ability to meet future energy demands in Northwest Arkansas. If the Northwest Arkansas Council intends to include energy providers in a future 25-year capacity plan, additional data and information about their energy systems will need to be shared.

The U.S. Department of Energy indicated Arkansas produced approximately 12 percent of its energy from renewable sources with hydroelectric power and biomass-fueled facilities comprising the majority of the production. Anchored by the Beaver Lake Dam's hydroelectric turbines, production in Northwest Arkansas tracks slightly higher than 12 percent.

Renewable energy production in the region seems poised to increase if the Ozarks Electric solar facility provides an attractive economic return. This might encourage Ozarks Electric or other providers to install additional solar facilities. With interest in the development of wind farms continuing, Northwest Arkansas could see wind power as part of what's generated as well.

Water: Drinking Water, Stormwater, and Wastewater

Plentiful, affordable drinking water is a primary reason for Northwest Arkansas' remarkable growth since the Beaver Lake Dam's construction was finished 50 years ago. While the availability of high-quality water has made growth possible, there remain significant, water-related challenges that must be addressed.

The region must continue with its work that has ensured that it is meeting water supply needs. There is ample water in the lake as of 2016, but it remains necessary to protect the lake and preserve its overall water quality. The failure to protect the lake increases the cost of treating drinking water and threatens the region's long-term growth.

Delivering drinking water to the rapidly growing communities of Northwest Arkansas is an on-going challenge for water system operators. Within the larger and fastest-growing communities, geographic information systems (GIS) are being used to keep information about the water systems.

However, in a number of the smaller water systems serving

rural Benton and Washington counties, GIS is not being used to preserve records about such things as water line locations. The small systems are reactive to problems as they occur, and they rely too heavily on their staffs' institutional knowledge to manage their operations. While reliance on institutional knowledge is common across Arkansas, it creates a risk related to staff turnover and the ability to effectively respond to a high water-demand industry or economic development opportunity when it occurs.

Northwest Arkansas also faces significant challenges in its handling of wastewater treatment plant effluent. Most of the region's plants discharge into the Illinois River watershed and its tributaries. The region must consider the water-quality standards of downstream Oklahoma.

With downstream impacts being a key consideration, the region's treatment plants will need to be expanded to address future population growth and will have to treat wastewater more efficiently to meet more stringent standards. Cities operating wastewater treatment plants identified more than $80 million in needed upgrades to address the population growth and water discharge requirements, and that's likely to be only a portion of the true costs that are to come.

As is the case in many regions of the United States, what's most uncertain in Northwest Arkansas is how much it will cost to reduce the impact of stormwater discharges into streams and lakes. Stormwater, which flows from parking lots, roads and rooftops, impacts water quality. Addressing non-point source discharges will be necessary to meet nutrient limits in the Illinois River.

Solid Waste: Waste Disposal and Recycling

A fast-growing region must address its increasing trash volumes. That is why significant recycling programs are important. However, recycling alone typically cannot offset the amount of new waste that is generated.

The region's primary landfill for waste is called Eco-Vista and is owned and operated by Waste Management. It's located near the center of the region just south of Tontitown, making it quickly accessible to most of the region's trash haulers.

The Class 1 landfill that receives the municipal waste has approximately 7.5 years of capacity left if the current amount of waste continues to be buried. About nine years of capacity is left at the company's adjacent Class 4 landfill, which receives construction and demolition debris.

It's typical for Arkansas landfill owners to begin planning for expansions to meet future needs when there are about five years of capacity left. Waste Management indicated late this year that it expects to follow a similar course of action. The company owns 554.5 acres at Eco-Vista and less than half of those acres are dedicated to landfill capacity. This means there is room to expand the Class 1 and Class 4 landfills. The company will have to request an Arkansas Department of Environmental Quality permit and get it approved before expansion can occur.

Many of the region's communities have credible recycling programs, but Fayetteville is now leading a regional discussion about expanding recycling.

Fayetteville continues to communicate with other Northwest Arkansas cities, the Boston Mountain Solid Waste District and the Benton County Solid Waste District about a single-stream materials recovery facility to serve Fayetteville and potentially other communities. Discussions about the materials recovery facility started in 2015, and discussions were expected to continue into 2017.

A regional single stream materials recovery facility would allow the region to standardize the type of materials (plastics, glass, metals, paper, etc.) that can be recycled curbside in each community and allow the region to divert more recyclable materials from the landfill.

CONCLUSION

Communications: Mobile Access and Broadband Access

The Federal Communications Commission's 2016 Broadband Progress Report notes that 10 percent of all Americans and 39 percent of rural Americans lack access to broadband. Arkansas trails the national averages with 25 percent of all Arkansans and 48 percent of rural Arkansans without access to broadband. Connections are generally better in Northwest Arkansas. Where Northwest Arkansas businesses and residents have broadband access, it typically exceeds the 25 megabytes per second minimum with speeds of 100 megabytes often available.

The region is poised to have greater access to faster communication technology, suggested by recent announcements by Ozarks Electric Cooperative, Cox Communications and AT&T. Gigabit service technology is being rapidly deployed in select locations across the United States. Northwest Arkansas is often compared with so-called "peer regions" identified by the Northwest Arkansas Council and all of those peer regions (Madison, Raleigh, Durham-Chapel Hill, Des Moines-West Des Moines and Austin-Round Rock) either already have gigabit service or specific plans for its availability have been announced.

The three Northwest Arkansas gigabit providers were asked about specific plans for how many residents in the two-county region could expect the service and how soon, but they would not provide the answer. It will be important for these deployments in Northwest Arkansas to come to fruition for economic competitiveness reasons.

Emergency Services: Police, Fire, Hospitals, and Emergency Medical Services

The region's police, fire, hospitals and emergency medical services report plans to expand to keep pace with population growth.

Burns & McDonnell noted in collecting data for this report that law enforcement agencies in Benton and Washington counties reported per-capita staffing levels below national averages, but the region's three largest cities exceeded the national average for cities with more than 50,000 residents.

It will be necessary in the 25-year infrastructure capacity plan to address the importance of police staffing and how it could impact Northwest Arkansas in the long term.

Meanwhile, the region's health-care providers are expanding to provide more high-quality care. In addition to the investments into a new children's hospital in Springdale, the region's two largest hospital systems are making upgrades. There's a regional goal of establishing Northwest Arkansas as a health-care destination, and continued investments will be an important part of making that occur.

Education: Primary, Secondary, and Higher Education

Northwest Arkansas is home to the University of Arkansas, the state's flagship institution of higher education. Population growth in the region has led to higher enrollment at all levels of the educational system. School districts and institutions of learning have kept pace with the growth by adding facilities and staff.

Northwest Arkansas' elementary and secondary education providers have maintained a student-to-teacher ratio of 14:1 despite the remarkable challenges presented by the population growth. The information collected by Burns & McDonnell indicated there are plans for 19 public schools and two more private schools.

Much like with elementary and secondary education, enrollment in higher education institutions continues to increase. Schools responded to growth with significant new investment in facilities.

The University of Arkansas, which educates 70 percent of the higher education students in the region, has planning and ongoing work on 17 projects worth a combined $350 million. Other colleges and universities have nearly $25 million in expansions planned, and NorthWest Arkansas Community College's vision for a Washington County center in Springdale is among the largest of those projects.

Recommendations

Burns & McDonnell found that the owners and operators of Northwest Arkansas infrastructure systems have done a good job of expanding and upgrading their systems to support the region's fast pace of growth. There were improvements that could have been made sooner, and there remains work that needs to be accomplished to catch up with demand in some sectors. This is typical of any region experiencing rapid growth. The owners and operators contacted by Burns & McDonnell understand the importance of their role in supporting economic growth and providing reliable service.

It is critically necessary to continue the work being performed and to improve upon the operation of infrastructure systems serving Benton and Washington counties. Focused action will allow Northwest Arkansas to maintain the necessary services and increase its economic influence as the region grows toward 800,000 residents by 2040.

Burns & McDonnell's recommendations, some of which are included in this report's executive summary, include the following:

• Leverage the Regional Planning Commission's GIS infrastructure to better manage infrastructure assets in small cities and for rural water systems that often lack sophisticated, reliable asset management systems.

• Expand the knowledge and documentation of infrastructure asset conditions. Records about infrastructure's condition are not always kept.

• Create a data-sharing mechanism that addresses confidentiality and safety concerns expressed by some infrastructure owners to allow cooperative and comprehensive infrastructure planning across Northwest Arkansas.

• Advance toward a 25-year regional capacity plan as a way to provide a full understanding of all infrastructure needs and costs. The capacity plan may include both a synthesis of existing master planning as well as the identification of needs in areas that lack master planning and expect growth within the planning horizon.

Specific elements the capacity plan considers should include:

• Watershed protection and management of non-point source pollution will become increasingly important when nutrient limits in area streams are enforced. In order for the Illinois River Watershed Partnership to help the region meet its nutrient targets, a long-term funding mechanism will be needed.

• Improved management of municipal wastewater could benefit the region. Cities relying on Septic Tank Effluent Pump (STEP) systems should explore traditional wastewater collection and treatment options. While traditional systems require more capital investment by the municipality, they will require no maintenance by homeowners and less maintenance by cities. Traditional treatment opportunities could be achieved through the Northwest Arkansas Conservation Authority partnering with larger, nearby systems or the construction of a local system. Cities should explore the feasibility of these options to better position themselves for future growth.

• Stricter nutrient limits will become enforced in the region. This will likely result in lower permitted nutrient limits for wastewater treatment plants as permits renew. Cities and utilities must prepare to meet these limits. It will likely require a combination of operational and capital improvements at the region's wastewater plants so cities and/or utilities need to assess their financial ability to make improvements.

• There remain a number of planned highway improvements in the region that cannot be advanced due to a lack of funding. These include the completion of the Bella Vista Bypass and the Highway 412 Northern Bypass of Springdale, which have been identified as regional needs for two decades. Northwest Arkansas leaders should continue to work with the Arkansas State Highway and Transportation Department to explore ways to advance the construction of these highways. Consideration must be given to the role of the Regional Mobility Authority in meeting future transportation needs.

MAP SOURCES

Burns & McDonnell compiled the information presented in this report into a GIS database and delivered that database to the Northwest Arkansas Council. This database was used to create the maps included in this report. We'd like to acknowledge the various government entities and private companies that provided us with the information needed to create the maps.

Transportation

Major Roadways By Type: Benton County, Washington County, U.S. Department of Transportation, City of Fayetteville, Arkansas State Highway and Transportation Department, Esri

Local Roadways by Type: Benton County, Washington County, US Department of Transportation, City of Fayetteville, Arkansas State Highway and Transportation Department, Esri

Public Transportation Overview: Razorback Transit, Ozark Regional Transit, Esri

Public Transportation – North Region: Razorback Transit, Ozark Regional Transit, Esri

Public Transportation – South Region: Razorback Transit, Ozark Regional Transit, Esri

Northwest Arkansas Regional Bicycle and Pedestrian Trails: Northwest Arkansas Regional Planning Commission

Airport, Airstrip, and Heliport Locations: Federal Aviation Administration, Bentonville Municipal Airport, Siloam Springs Municipal Airport (Smithfield), Arkansas Department of Aeronautics, Fayetteville - Drake Field, Washington County, Esri

Railroads Map: Benton County, Washington County, Esri

Energy

Electric Utility: AEP/SWEPCO, Ozarks Electric Cooperative, Arkansas GIS Office, Carroll Electric, Esri, City of Siloam Springs Electric

Water

Water Supply Service Areas: Beaver Water District, Benton/Washington Regional Public Water Authority, Arkansas Department of Health, Bella Vista Public Works, Benton County, Centerton Utilities, Fayetteville, Rogers Water Utilities, Siloam Springs Water/Wastewater, Springdale Water Utilities, Tontitown, Washington County, Esri

Public Water Systems: Beaver Water District, Benton/Washington Regional Public Water Authority, Arkansas Department of Health, Bella Vista, Benton County, Centerton Utilities, Fayetteville, Rogers Water Utilities, Siloam Springs Water/Wastewater, Springdale Water Utilities, Tontitown, Washington County, Esri

Municipal Wastewater Treatment Plants: Arkansas Department of Health, Esri

Solid Waste

Solid Waste Facility Locations: Arkansas Department of Environmental Quality, Boston Mountain Solid Waste District, Benton County Solid Waste District, Esri

Recycling Center Locations: Washington County, Benton County, Benton County Solid Waste District, Boston Mountain Solid Waste District, Arkansas Department of Environmental Quality, Esri

Communication

Cell Towers: Federal Communications Commission, Esri

APSCN Broadband Status: Arkansas Department of Information Systems, Arkansas GIS Office

Potential Gigabit Service Area: OzarksGo

Emergency Services

Fire Station Locations: Benton County, Washington County, Esri

Police Station Locations: Benton County, Washington County, Esri

Hospital and EMS Locations: Arkansas Department of Health, Benton County, Washington County, Esri

Education

K-12 School Locations: Bentonville School District, Arkansas Department of Education, Washington County, Benton County, Fayetteville, Tontitown, Esri

Higher Education Locations: Arkansas Department of Higher Education, Washington County, Benton County, Esri

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Front Cover image: *Beaver Water District Water Treatment Plant, Beaver Water District*