



Apache County Economic Review:

Part II - Workforce Development and Transportation Infrastructure in Apache County

Summer 2022

Prepared for:

Salt River Project & Tucson Electric Power

By: Rounds Consulting Group
4450 S. Rural Road, Suite C-220, Tempe, AZ 85282 | Phone: 480-508-4911 | www.roundsconsulting.com



Table of Contents

EXECUTIVE SUMMARY	2
PART II A - OPPORTUNITIES FOR WORKFORCE DEVELOPMENT IN APACHE COUNTY	3
<i>Key Opportunities – Advancing Educational Attainment.....</i>	<i>3</i>
PART II B - TRANSPORTATION INFRASTRUCTURE IMPROVEMENTS IN APACHE COUNTY	8
ADDITIONAL CONSIDERATIONS: SOCIAL AND SOCIOECONOMIC IMPACTS	14
KEY TAKEAWAYS AND PRELIMINARY POLICY RECOMMENDATIONS TO BE EXPLORED	15
INTRODUCTION – WORKFORCE AND TRANSPORTATION	17
WORKFORCE DEVELOPMENT OPPORTUNITIES FOR APACHE COUNTY	18
APACHE COUNTY WORKFORCE PROFILE AND ANALYSIS.....	18
ADVANCING EDUCATIONAL ATTAINMENT	22
<i>Economic Benefits of Enhancing Educational Attainment in Apache County</i>	<i>27</i>
ENHANCING EMPLOYMENT OPPORTUNITIES.....	30
<i>Economic Model for Enhancing Employment Opportunities</i>	<i>35</i>
APACHE COUNTY TRANSPORTATION INFRASTRUCTURE.....	37
APACHE COUNTY ROADWAYS AND PAVEMENT CONDITIONS	37
INFRASTRUCTURE IMPROVEMENT COSTS.....	42
ADDITIONAL OPPORTUNITIES FOR SUBREGIONAL ROAD IMPROVEMENTS	44
ADDITIONAL CONSIDERATIONS – FUNDING WITH VALUE CAPTURE.....	45
<i>State Route 30: A Case Study on the Benefits of Transportation Infrastructure.....</i>	<i>46</i>
CONCLUSIONS AND POLICY RECOMMENDATIONS.....	50
PRELIMINARY POLICY RECOMMENDATION SUMMARY.....	51



Executive Summary

For the past several decades, the economy in Apache County has benefited from the operations of the coal-fired power plants located in the region. However, Coronado Generating Station is scheduled closure for no later than 2032 and Springerville Generating Station units 1 and 2 are scheduled for closure in 2027 and 2032, respectively. . Thus, additional economic development planning and investment will be needed to not only offset these job losses but also expand the County’s economic base over the next several decades.

It is important to note that the economic development planning tools outlined in the noted reports are valid regardless of the issue with power plant closure. The coordination, planning, and implementation of an enhanced regional economic development effort will strengthen the local economy regardless.

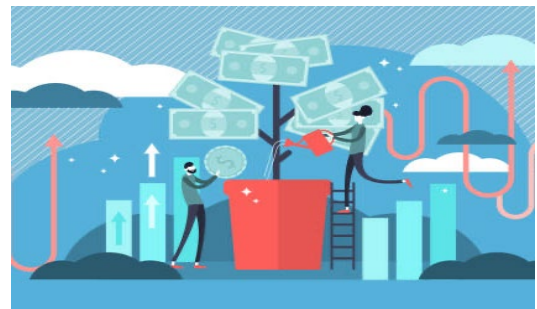
To support the communities that are impacted by these closures, a series of reports that examine economic development investment opportunities in Apache County have been commissioned by Salt River Project (“SRP”) and Tucson Electric Power (“TEP”). The overall purpose of the effort is to help these communities as they transition away from an overreliance on the powerplants and toward a more diversified economy.

Economic development reform at the needed scale must come in specific stages. First, a quality **assessment** of the region’s economy and economic potential must be conducted. That was the purpose of the previously published report on broadband investment and is also the focus of this report by expanding the research beyond broadband and into workforce and transportation influences. The design of these latter analyses is intended to be a gateway into obtaining additional grants and appropriations funding to help the local economy move forward as quickly as possible.

Note: This “assessment” phase will need to be followed with efforts related to strategy building, including public outreach, design, and policy development. These strategic economic development activities should occur in the summer of 2022 and into the fall months. The extent investment in broadband, workforce, and transportation infrastructure will positively impact the County will be dependent on these later planning activities.

For more guidance on how the Rounds Consulting Group’s (“RCG”) reports interact, consider the following additional detail on the commissioned scope of work.

Part I of this effort analyzed the benefits associated with making an investment that enhances access to broadband services throughout the County. The results of the analysis revealed that enhancing broadband creates job opportunities and strengthens other economic development elements within the County. The region secured a \$9.7M grant to enhance its broadband accessibility as a starting point in building economic diversity.



The following study represents Part II of the effort and focuses on the opportunities for workforce development and transportation infrastructure investment throughout the County. The review also references the extent to which the three focus areas (i.e., broadband, workforce, and transportation) must be integrated with one another to maximize the economic potential of the region. Preliminary policy recommendations are also included.



Part II A - Opportunities for Workforce Development in Apache County

The closure of the Springerville and Coronado Generating Stations is estimated to have a significant impact on employment in the County. A study from the Seidman Research Institute at Arizona State University estimated that the two generating stations directly employed approximately 400 people and supported another 835 jobs throughout the County as of 2022. It is expected that Apache County will lose approximately 1,235 jobs (the sum of the 400 and 835 jobs) and the annual equivalent of \$66.0M in real disposable personal income after the two generating stations cease operations completely.

This will be a significant loss to the County, especially when considering the weakened labor market conditions in the County. The number of residents that were in the labor force in 2021 declined by 4.1% from the previous year. Over the last 10 years, the number of County residents in the labor force has declined at an average rate of 2.1% per year.

This report also presents a high-level framework as part of this assessment phase for creating a workforce development strategy specific to Apache County that leverages potential improvements in transportation infrastructure as well as the pending investment in broadband infrastructure.

Key Opportunities – Advancing Educational Attainment

In 2021, Apache County reported a high school graduation rate of 77.3%. This was higher than the statewide average of 75.7%, according to the Arizona Department of Education (“ADE”). However, only an estimated 7.1% of these high school graduates in Apache County will complete a bachelor’s degree; this compares to the statewide average of 20.9%. The County is also deficient in the number of local trade school and community college opportunities.

Programs will need to be implemented to improve all types of advances in educational attainment, including apprenticeships, trade school training, community college training, and university-level educational advancement. This will require a financial sponsor.

The current attainment discrepancies translate into significant opportunity costs within the County, in terms of reduced job counts, household incomes, and government revenue that would otherwise be reinvested in the region. *Note: This opportunity cost is monetized in detail later in the report.*

For context, a review was conducted of an Arizona Board of Regents and business community report that focused on this topic, but in terms of bachelor’s degrees. Similar analyses will need to be completed for the other types of advancements in educational attainment.

The relatively low bachelor’s degree completion rate is likely because there is only one institution that offers a bachelor’s degree in Apache County and admission is restricted to those of Native-American descent. Therefore, those that are not of Native-American descent must travel outside the County in order to obtain a bachelor’s degree which may be cost-prohibitive for many residents.



For an economic region of this size, the higher education opportunities are disproportionately limited which is inefficient.

Enhancing the aforementioned broadband infrastructure in the County will provide residents with access to dozens of institutions from which a bachelor’s degree can be obtained without leaving the County via online courses. However, ***higher wage and specialized areas of higher education study will likely require new programs implemented by the state’s universities and possibly in partnership with select community colleges.***

The enhancements to the County’s educational attainment profile were monetized through economic and fiscal impact modeling to provide support if such programs are later pursued by local leaders. For a point of perspective, should Apache County optimistically increase its bachelor’s degree completion rate to match the statewide average, the County’s workforce with a bachelor’s degree would increase by 56 persons each year. ***There is a “compound economic development” effect from this kind of investment. The initial 56 graduates become 112 in year 2, 168 in year 3, etc.***

The workers would be qualified to earn approximately \$21,400 more per year, on average, than only obtaining a high school diploma as incomes would advance more rapidly over time, according to the U.S. Census Bureau. The problem would then not be solely with workforce supply, but also an issue of locating enough jobs to retain the local talent.

Ideally, the ripple effect of those workers spending their additional incomes would spread throughout the local and regional economies and further enhance economic development opportunities. Over 10 years, a total of 734 jobs, \$114.0M in labor income, and \$288.6M in economic output could be generated by increasing the bachelor’s degree completion rate to the statewide average. Over the same 10 years, a cumulative total of \$22.5M in state, Apache County, and local (i.e., municipal) tax revenues will be collected.

Specifically, the enhancements could produce \$20.8M in state tax revenues, \$384,800 in Apache County tax revenues, and \$1.4M in local municipal tax revenues.

Impact Category	Direct	Indirect	Induced	Total
Jobs	560	68	106	734
Labor Income	\$65,912,000	\$19,809,500	\$28,235,500	\$113,957,000
Economic Output	\$140,977,600	\$60,178,900	\$87,401,700	\$288,558,200
Tax Revenues	\$15,037,400	\$3,057,000	\$4,435,900	\$22,530,300
State	\$13,705,500	\$2,887,600	\$4,180,300	\$20,773,400
County	\$305,600	\$31,100	\$48,100	\$384,800
Local (Non-tribal areas)	\$1,026,300	\$138,300	\$207,500	\$1,372,100

Note: May not sum due to rounding. The jobs number is the total of the jobs created by year 10, while the rest of the impacts are cumulative totals.
Source: Arizona Board of Regents; U.S. Census Bureau; IMPLAN; Rounds Consulting Group, Inc.



These figures are important because they are a function of establishing a goal (increasing higher educational attainment to the statewide average) and they provide an estimate of the economic and fiscal benefits of reaching that goal.

For example, if the state is to benefit from reaching the education attainment goal by more than \$20M in net-new tax revenues, then an argument can be made that the state can invest up to this dollar amount to help the County reach its goal and still produce a positive return on investment for state taxpayers. This is the type of economic and fiscal argument that must accompany proposals for project funding.

Furthermore, the benefits of advancing educational attainment in the area are likely to be even larger when business development inputs are considered as a whole and not as separate units of production. The availability of an educated workforce is an important consideration for businesses seeking to expand or locate into new markets, but so are other inputs.

For example, if one assumes multiple tech-related manufacturing companies with 5-10 employees each for a total of 50 jobs locate in Apache County because of enhanced broadband access and other investments including a reasonable supply of skilled workers, and an adequate transportation infrastructure, the overall impact would be large. In this example, approximately 152 new jobs (sum of the direct, indirect, and induced jobs) would be supported by the business, and \$9.3M in labor income and \$47.1M in economic activity would be added to the region. Each year, \$560,700 in tax revenues would be generated by the 50-person manufacturer.

As previously noted, an expansion of business operations also creates additional demand in supplier industries (e.g., supplier of raw materials, transportation industries, etc.) and other service industries (e.g., janitorial services, food services, etc.).

This enhanced local supplier network and multiplier effect, in turn, magnify the impact. Furthermore, any program that enhances the bachelor's degree completion rate will also increase the college enrollment rate. Some of these new enrollees are likely to complete an associate degree or direct-to-work certificates if enhanced opportunities become available.

The key to economic development success is to identify a region's strengths and weaknesses, and realistically look for ways to improve.

This nearly always requires financial resources, and securing financial resources is highly dependent on making a proper argument to the investor.

Key Opportunities – Enhancing Job Growth

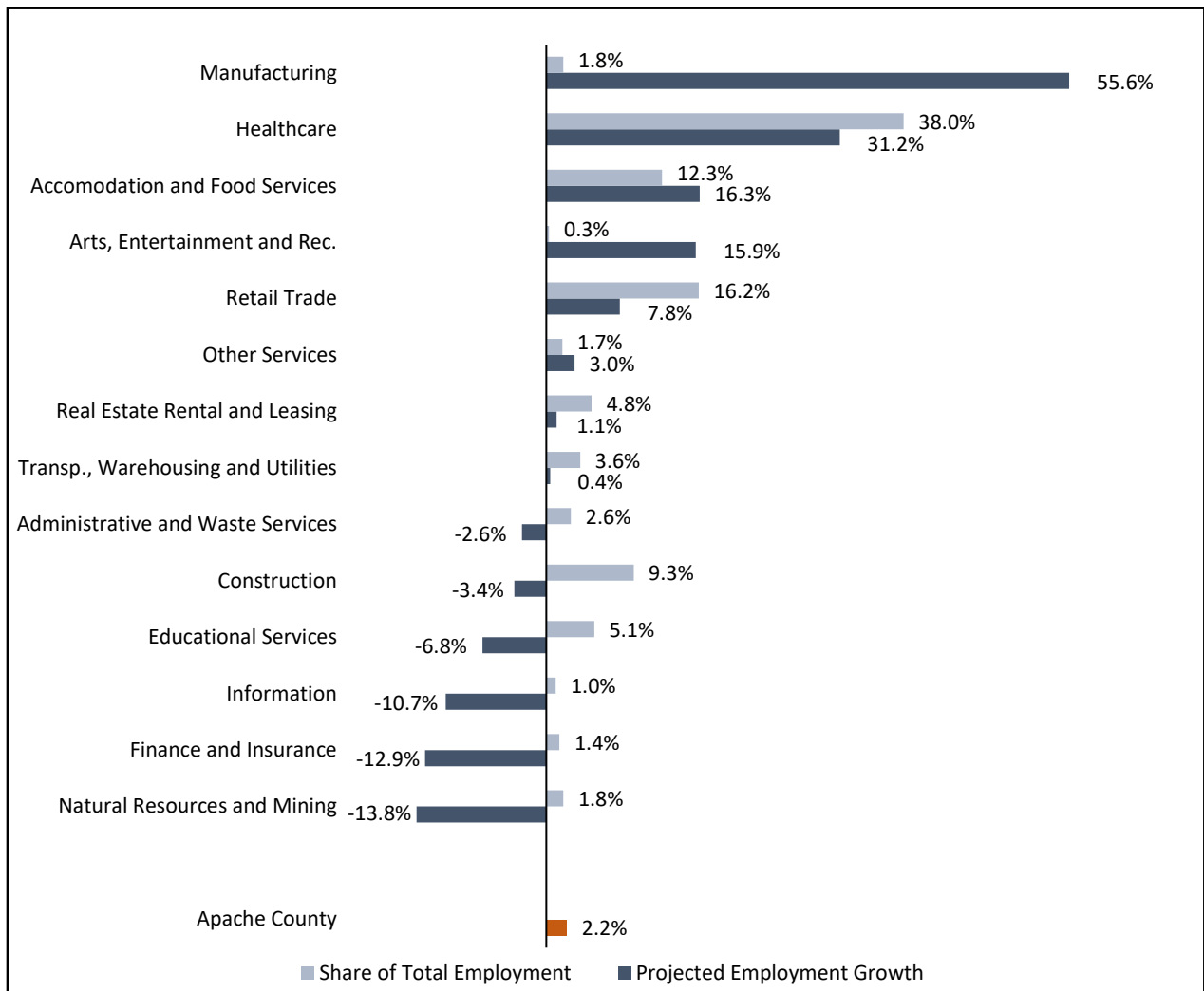
Workforce quality is important to economic development, but so is workforce quantity and overall demand for workers. An initiative that focuses on providing educational advancement or additional skills to the workforce is not sustainable if there are not enough businesses in the region to hire the newly educated workforce. Therefore, a workforce development strategy needs to enhance the education and skills of the



existing workforce, but also encourage business recruitment in the area so that job opportunities are available, and the newly trained workforce does not leave the County.

Initial opportunities for enhancing employment opportunities surround the expansion of existing industries that are expected to be in high demand in the County. The healthcare industry, for example, employed 38.0% of the County’s workforce in 2021 (the largest share of any industry) and is expected to grow by 31.2% over the next 10 years (see Figure 1).

Figure 1: 10-Year Employment Projections and Share of Total Employment in Apache County by Industry



Note: Excludes government employment and the projections do not take into account the possible closures of the generating stations. As of 2021, 2.5% of Apache County’s workforce is employed at the generating stations.

Source: U.S. Bureau of Labor Statistics; Arizona Office of Economic Opportunity

This may present an opportunity to create healthcare focused initiatives as there is likely to be high demand in the industry in the coming decade. Enhanced broadband access will significantly facilitate the ability of the County’s workforce to obtain the needed education, certifications or skills required to meet the upcoming demand through online courses and programs.



Enhancing broadband access will also support workforce development programs aimed at a rising trend in remote work in all industries. The economic shutdowns that occurred due to the COVID-19 pandemic resulted in the emergence of remote work. Employees were forced to work remotely due to public health mandates and other restrictions. However, even after the mandates were lifted, many employers continued to permit their employees to work remotely.

Remote workers represent a relatively new segment of the workforce that can be attracted to the region with relatively little investment from government or municipal organizations. Various other cities and towns across the U.S. have created incentive programs to attract remote workers.

Attracting remote workers is only a partial solution to the workforce development needs in Apache County. However, many remote workers are employed in the healthcare, technology, or finance industries and earn above average wages. As the workers locate to the County, they will buy/rent homes, pay taxes, and spend their incomes in the local economy, increasing the demand on existing businesses. These businesses will expand operations and create additional jobs.

Additionally, the presence of these high-wage and often highly educated workers will enhance the County's competitive position related to business recruitment. As businesses locate to and expand throughout the region, it will create a ripple effect of job growth that will strengthen the economic foundation of the County.

Finding a balance between workforce supply and demand will be challenging and will require a combination of focus on broadband investment, workforce training, and business recruitment, among other initiatives.

Even if workforce training is provided and higher levels of educational attainment are reached, there must be a demand for those workers, or the region will lose its best trained people and the economic benefits will be much less.





The following economic analysis estimated the benefits that would occur as a result of a slight increase in the expected employment growth over the next decade deriving from workforce development improvements. It is important to remember that the benefits realized under this scenario are partly possible due to the pending investment in broadband.

Over the next 10 years, Apache County is projected to add 398 jobs (a 2.2% increase). This can be considered a “no action” forecast, less the closing of the powerplants. For perspective, if one assumes that workforce development efforts lead to a marginal 0.5 percentage point increase in the employment rate of growth (2.2% vs. 2.7% growth), the County would add an additional 95 jobs.

Thus, each 0.5 percentage point increase in the County’s employment growth rate would add \$4.6M in labor income throughout the County, and the annual economic activity generated by the increased rate of growth would equal \$11.6M. The state would collect an additional \$246,200 in tax revenues each year, Apache County would collect \$10,500 each year, and local municipalities would collect \$39,200 each year. ***This example is simply to provide perspective on the extent small changes in the economic projections would deliver net-new tax revenues that can be reinvested, thus furthering the growth cycle.***

The figures were calculated based on an incremental economic and fiscal impact model. Meaning, if one supposes that the employment rate of growth could increase further, the impact estimates can be multiplied by the same incremental value. For example, if one assumes that the rate of growth could be twice as much as the 0.5 percentage points (i.e., 1 percentage point), the impacts can be doubled.

Impact Category	Direct	Indirect	Induced	Total
Jobs	56	15	24	95
Labor Income	\$2,655,000	\$797,900	\$1,137,300	\$4,590,300
Economic Output	\$5,678,700	\$2,424,000	\$3,520,600	\$11,623,300
Tax Revenues	\$177,700	\$48,000	\$70,200	\$295,900
State	\$145,200	\$41,200	\$59,800	\$246,200
County	\$7,300	\$1,200	\$2,000	\$10,500
Local (Non-tribal areas)	\$25,200	\$5,600	\$8,400	\$39,200

Note: May not sum due to rounding. Annual impacts.
 Source: Arizona Office of Economic Opportunity; IMPLAN; Rounds Consulting Group, Inc.

Part II B - Transportation Infrastructure Improvements in Apache County

Economies will grow and prosper only to the extent they can remain competitive in terms of core economic fundamentals. Core fundamentals include various elements, ranging from workforce and education quality, public safety, the regulatory environment, taxation competitiveness, and broadband infrastructure.

Transportation infrastructure is also one of those critical core fundamentals, and improvements generate significant benefits beyond simply addressing travel conditions or alleviating traffic congestion. Investments in transportation infrastructure also facilitate business retention, expansion, and attraction as well as increase property values; create jobs; generate tax revenues; enhance the quality of life of residents; and add significant economic value to a region.



Transportation infrastructure investments often refer to expanding infrastructure to accommodate residential and economic growth that has or will soon exceed the current infrastructure's capacity. However, in Apache County, the primary concern is that the condition of the existing infrastructure has had a negative effect on the economic growth potential of the County.

The most pressing issue is to address the condition of the major arterials that connect the County to regional and national commercial trade routes. It is on these roadways that supplies are brought to local businesses and local products/services are exported out of the County.



The Arizona Department of Transportation ("ADOT") estimates that in 2020, approximately 54.1% of the major arterials in Apache County were in either fair or poor condition. This compares to 46.1% of the major arterials across the state which were in similar condition.

At the County level, there are multiple cost figures to consider. First, a report completed by the Arizona Association of County Engineers (AACE) identifies that the 10-year cost of maintaining County roads is \$52.2M. Furthermore, the same report identifies an additional cost of \$21.3M to bring the condition of these same roads to acceptable standards. This translates into a cost of about \$47,500 per mile. These roads (in blue) are highlighted in Figure 2A.

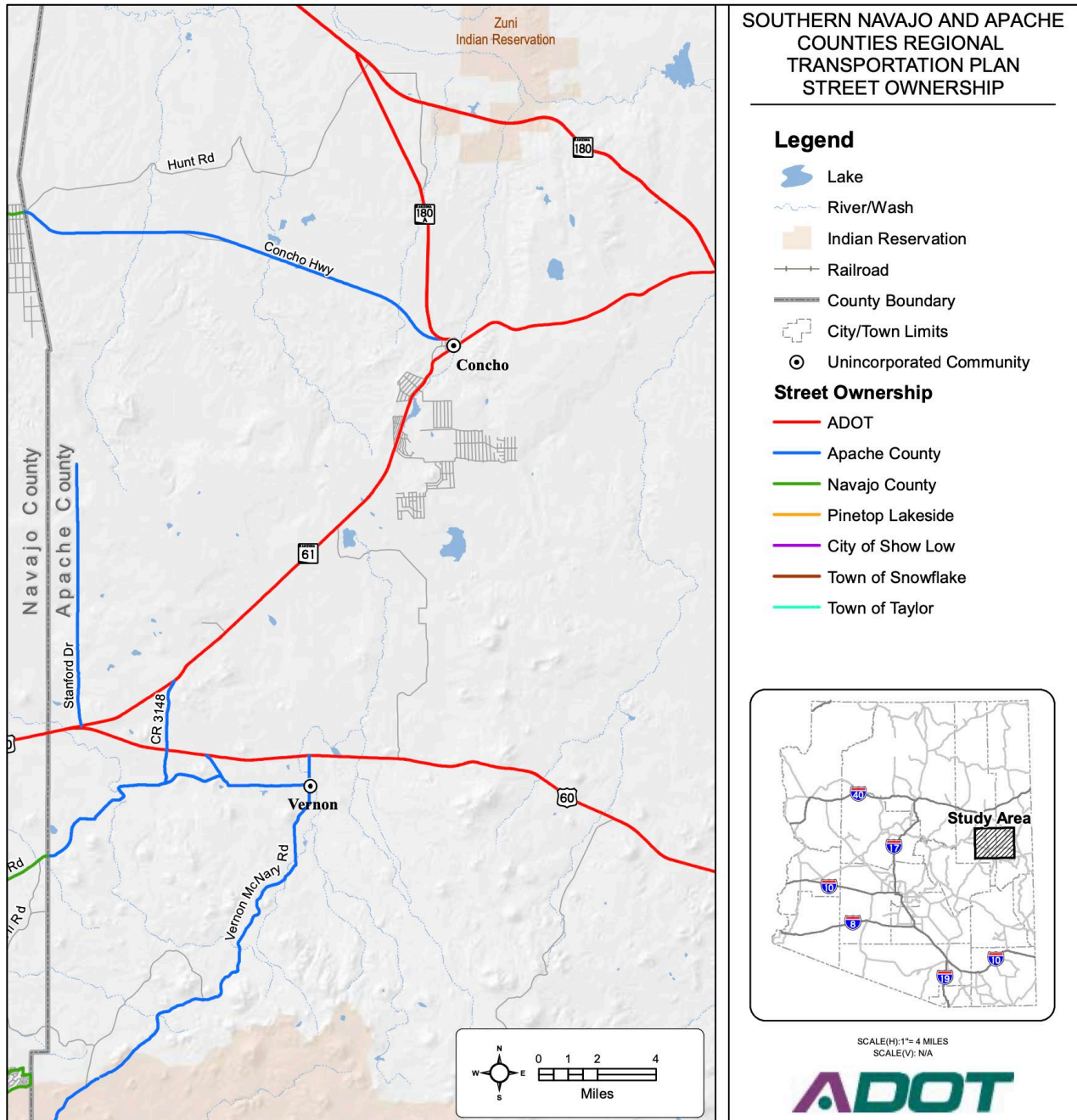
The third estimate that needs to be considered is the cost to maintain and/or improve a portion of the state and federally funded roads in the region. If the same \$47,500 cost per mile is used as a proxy for maintenance and is applied to the road segments listed in Table 3, the cost to maintain the segments sums to \$7.7M over 10 years. However, if the cost per mile is instead higher based on below-average current conditions, the economic benefits associated with the improvements would need to be proportionately higher.

Figure 2B displays the U.S. and State Route roads in the region along with current conditions. Green segments indicate adequate conditions, orange indicates fair conditions, and red indicates poor conditions. Most of the roads in the area are considered only fair, meaning that there is likely a negative economic development impact associated with local transportation infrastructure.



Note: The Figure 2B map only displays the non-County roads. The cost to maintain and improve the County specific roads is the aforementioned \$73.5M. Each of these scenarios is modeled below for breakeven investment purposes.

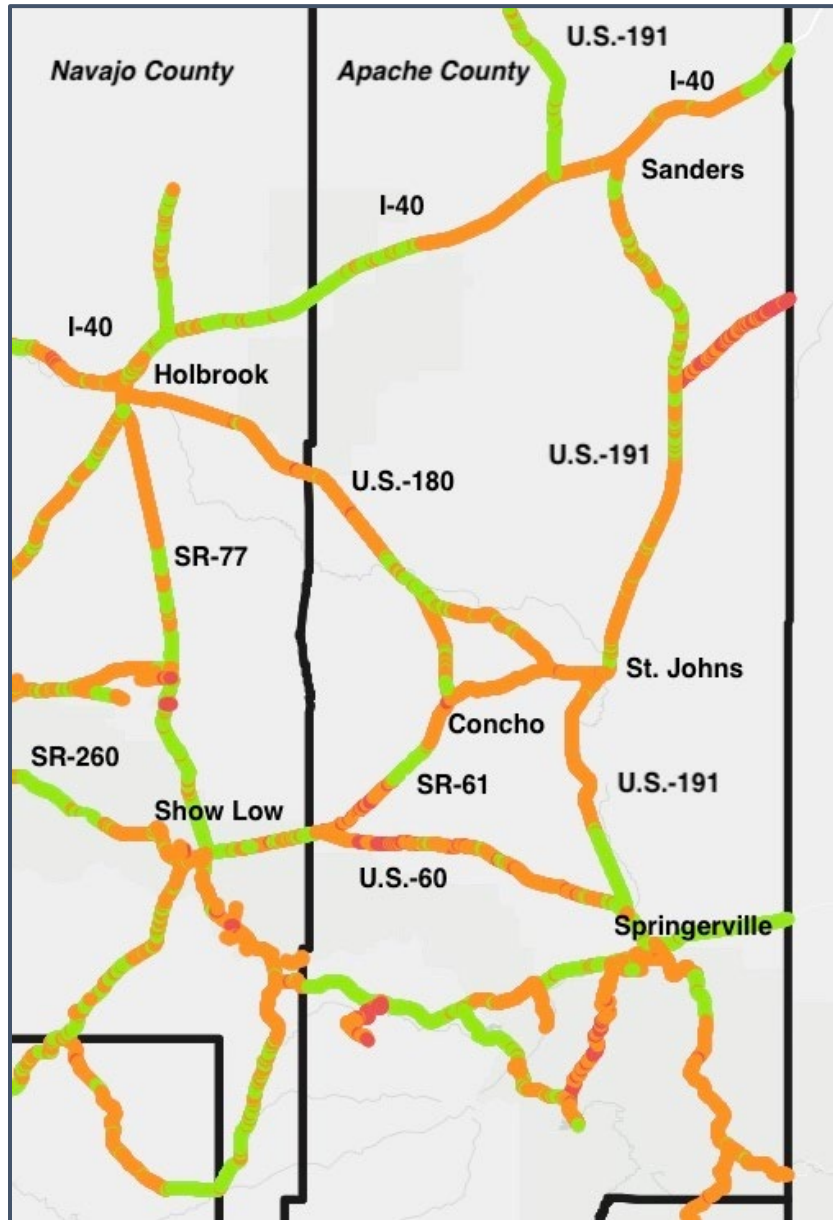
Figure 2A: Apache County Managed Roads



Source: Arizona Department of Transportation



Figure 3B: Pavement Conditions for Select Arterials in Apache County



Note: green indicates good pavement conditions, orange indicates fair pavement conditions and red indicates poor pavement conditions.

Source: Arizona Department of Transportation; Esri



Table 3: Estimated Cost of Partial Improvements to Select Major Arterials

Roadway and Route	Total Miles	Miles of Repair	Estimated Cost
U.S. 60			
Between Show Low and Springerville	46.2	35.9	\$1,705,641
SR-61			
Between Show Low and St. Johns	45.2	32.2	\$1,529,047
U.S. 180			
Between the West County Line and St. Johns	57.3	45.7	\$2,170,816
U.S. 191			
Between Springerville and the I-40	81.5	49.1	\$2,334,489
Total	230.2	162.9	\$7,739,994

May not sum to the total due to rounding.

Source: ArcGIS; Arizona Association of County Engineers; Rounds Consulting Group, Inc.

The improvements should be considered the minimum investment needed to prevent the road conditions from hindering the economic growth potential of the County. A breakeven analysis identifying the level of job growth needed for the state to collect taxes in the amount of \$7.7M over a 10-year period was completed to assist with future arguments for heightened state investment in the region.

Apache County would need to add approximately 556 new jobs (or 56 jobs a year) over a 10-year period for the state to recoup \$7.7M in local roadway investments within 10 years. If federal monies are instead considered, the state commitment and benefits estimate would decrease in proportion. The \$7.7M cost/benefit value is equivalent to roughly half of the estimated \$13.7M in state tax revenues generated by advancing educational attainment in the County to the state level (see Table 1).

The economic development investment opportunities, including broadband, workforce, and transportation, must blend together to maximize the economic benefit to the region.

Table 4 summarizes the cumulative economic and fiscal impacts of adding 56 new jobs a year for 10 years in Apache County. This would generate \$7.9M in state tax revenues, compared to the \$7.7M investment in partial improvements to select major arterials. The wages for the new jobs in this example (\$47,000) is higher than the County average (\$45,000). However, many factors would influence the extent this variance grows or is reduced.

For economic development planning purposes, the actual job creation target is only 330 because the other 88 indirect and 138 induced jobs would happen as a result of the primary employment creation.



Table 4: Cumulative 10-Year Economic Impact of Adding 56 New Jobs a Year in Apache County				
Impact Category	Direct	Indirect	Induced	Total
Jobs	330	88	138	556
Labor Income	\$85,429,000	\$25,675,200	\$36,596,300	\$147,700,300
Economic Output	\$182,721,600	\$77,998,000	\$113,281,900	\$374,001,600
Tax Revenues	\$177,700	\$48,000	\$70,200	\$295,900
State	\$4,643,800	\$1,328,100	\$1,922,600	\$7,894,500
County	\$204,400	\$40,900	\$61,900	\$307,200
Local (Non-tribal areas)	\$764,700	\$179,400	\$269,000	\$1,213,100

Note: May not sum due to rounding. The jobs number is the total of the jobs created by year 10, while the rest of the impacts are cumulative totals.
 Source: Arizona Office of Economic Opportunity; IMPLAN; Rounds Consulting Group, Inc.

Based on the conditions of the roads in Apache County, the estimated cost to bring the Apache County transportation network to a state-of-good-repair is \$21.3M. Furthermore, the cost to maintain roadways in Apache County over the next 10 years is estimated to be \$52.2M. In total, \$73.5M is needed to bring the roads in Apache County to a state-of-good-repair and maintain them over 10 years.

The same breakeven analysis can be utilized to find a breakeven point in the level of job growth needed to generate \$73.5M in state taxes over a 10-year period. Apache County would need to add approximately 5,221 new jobs (or 522 jobs a year) over a 10-year period for the state to regain the \$73.5M investment in the local roadways.

In select cases, large scale transportation projects can be reviewed for breakeven points over a 15-year period. If a 15-year period is instead utilized, Apache County would need to add approximately 3,587 new jobs, or 239 new jobs each year, for the state to recoup the \$73.5M in roadway investment. The impact of these two scenarios is summarized in the following tables (Table 5 & Table 6).

Table 5: Cumulative 10-Year Economic Impact of Adding 522 New Jobs a Year in Apache County				
Impact Category	Direct	Indirect	Induced	Total
Jobs	3,100	825	1,296	5,221
Labor Income	\$802,513,000	\$241,191,500	\$343,782,300	\$1,387,486,800
Economic Output	\$1,716,475,200	\$732,709,500	\$1,064,163,100	\$3,513,347,500
Tax Revenues	\$52,728,300	\$14,545,200	\$21,171,000	\$88,444,500
State	\$43,622,600	\$12,475,700	\$18,060,800	\$74,159,100
County	\$1,921,300	\$383,500	\$583,300	\$2,888,100
Local (Non-tribal areas)	\$7,184,400	\$1,686,000	\$2,526,900	\$11,397,300

Note: May not sum due to rounding. The jobs number is the total of the jobs created by year 10, while the rest of the impacts are cumulative totals.
 Source: Arizona Office of Economic Opportunity; IMPLAN; Rounds Consulting Group, Inc.



Impact Category	Direct	Indirect	Induced	Total
Jobs	2,130	587	890	3,587
Labor Income	\$775,307,500	\$233,015,400	\$332,128,000	\$1,340,450,600
Economic Output	\$1,658,286,200	\$707,870,300	\$1,028,087,500	\$3,394,244,300
Tax Revenues	\$52,628,700	\$14,536,400	\$21,158,800	\$88,323,900
State	\$43,579,900	\$12,468,400	\$18,050,300	\$74,098,600
County	\$1,898,700	\$382,800	\$583,100	\$2,864,600
Local (Non-tribal areas)	\$7,150,100	\$1,685,200	\$2,525,400	\$11,360,700

Note: May not sum due to rounding. The jobs number is the total of the jobs created by year 15, while the rest of the impacts are cumulative totals.
 Source: Arizona Office of Economic Opportunity; IMPLAN; Rounds Consulting Group, Inc.

Additional Considerations: Social and Socioeconomic Impacts

The assessment of local economic conditions and opportunities for further growth is primarily based on economic and financial considerations. However, there are several qualitative issues that are more difficult to monetize but, nonetheless, impact the lives of area residents. Select points that must be included in any economic investment plan are highlighted below.

Depressed economic conditions and the lack of adequate investment in education and roads also results in:

- More poverty,
- Reduced levels of educational attainment,
- Homelessness,
- Health issues,
- Occasional problems with access to basic needs such as water and food,
- Regularly flooded roads and the inability to go to work, school, etc.
- Low volumes of internet access,
- Greater reliance on government assistance programs,
- Others





Key Takeaways and Preliminary Policy Recommendations to be Explored

Economic outcomes in Apache County have declined over the past decade as population growth has stagnated, job prospects remain limited, and residents lack the critical infrastructure to gain a quality education and the skills necessary to be competitive in the workforce and create small businesses in the local area. These trends, among others, have complicated the steps to improving economic outcomes and residents' quality of life.

To effectively address the challenges faced in the County, a multi-faceted approach is recommended which combines the adoption of new broadband services, an enhanced workforce development, and improved transportation infrastructure. The synergy between the areas of improvement plays a critical role in reversing declining economic trends, bolstering growth, and serving as a model for future rural development efforts.

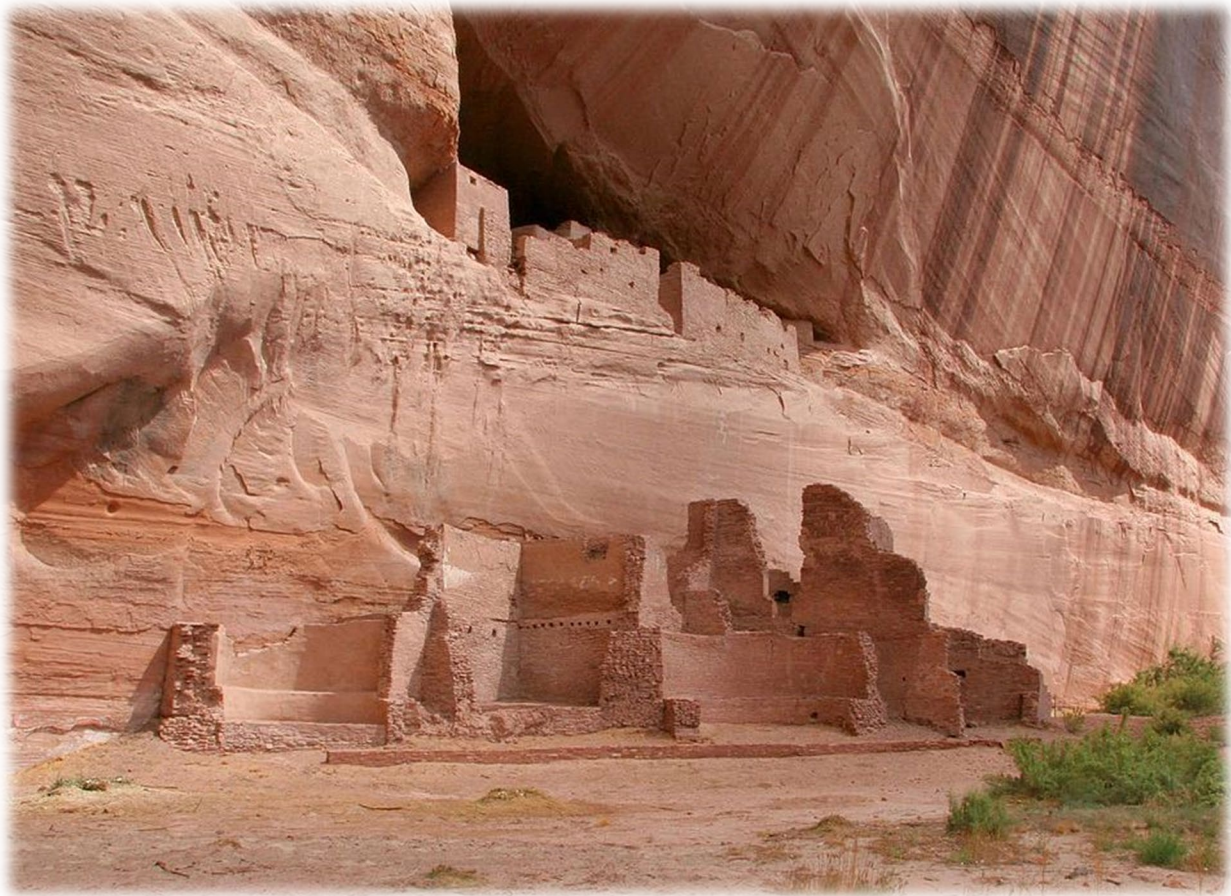
A number of policy initiatives will be required to have a significant impact on the local economy; however, a limited number of recommendations are listed below as a starting point in the discussion. The next step in the process will be to identify a more formal list of initiatives that includes a prospectus to potential funding entities.

The prospectus items will need to be listed by potential cost, estimated return on investment, and a queue of when and where programs and infrastructure will be implemented. ***Initial recommendations related to advancing economic development in the region include:***

- If state funding is required, which will be the case with the larger transportation infrastructure projects and workforce programs, legislative outreach will be needed, and a plan will need to be developed by the end of the calendar year.
- Legislative outreach will require regional leaders to contact multiple rural lawmakers and provide them with a specific funding “ask.” Also supply them with the materials needed to defend any funding requests.
- Seek funding to allow the state’s universities to develop a rural program that improves access to higher education resources and make an argument for a pilot program to be implemented in the local region.
- Develop a marketing initiative with the objective of increasing awareness of online certification programs and educational courses; then partner with one or more of these programs to offer tuition assistance for those enrolling in select programs.
- Analyze various industries to identify which occupations would be in the highest demand in the local economy, and then target those occupations for advanced training programs.
- Develop an initial list of target industries to help with planning focus. Potentially include healthcare and environmental technology research and development, among others.
- Identify the transportation projects that would be impactful in increasing export opportunities or improving efficiency and lowering costs to local businesses.



- Develop a formal infrastructure funding request for each type of roadway improvement and a supporting prospectus related to the needed road improvements in the region. Monetize the state and local benefits to gain legislative support.





Introduction – Workforce and Transportation

As part of an ongoing effort to offset the negative economic impacts associated with the announced closure of the Springerville and Coronado Generating Stations, SRP and TEP have commissioned a series of reports that analyze and identify potential opportunities in which economic development investments can be made in Apache County.

The following report represents the second and third segments of this effort and analyze the opportunities for workforce development and transportation infrastructure improvements. Many of these opportunities are made possible by enhancing broadband access throughout the County.

This report highlights the current workforce profile in Apache County which includes employment composition by industry as well as an educational attainment profile. The profile helps to identify the needs of the County by examining the County's performance related to a variety of workforce metrics compared to surrounding counties and the State of Arizona.

Broadband will support workforce development by providing additional opportunities for advancing education and workplace skills via online education courses and classes as well as provide enhanced access to a greater variety of employment opportunities through the emergence of remote work.

The infrastructure conditions of Apache County roadways are also examined to determine the primary needs of the County. Transportation improvements will encourage business recruiting and expansion efforts, streamline the operations of existing businesses, and help to advance industries like tourism. If completed simultaneously, improvements to the transportation infrastructure will facilitate the expansion of broadband access by eliminating the need to “dig twice”.

At present, this report is a stand-alone document. However, the information provided should be read in the context of being a component of an overall economic development strategy that incorporates broadband enhancements, workforce development, and transportation infrastructure improvements.





Workforce Development Opportunities for Apache County

Synopsis: *The Seidman Institute at Arizona State University estimates that Apache County will lose approximately 1,235 jobs and the annual equivalent of \$66.0M in real disposable personal income after the Springerville and Coronado Generating Stations cease operations.*

A high-level review is included as part of this assessment phase for creating a workforce development strategy specific to Apache County that leverages potential improvements in transportation infrastructure as well as the pending investment in broadband infrastructure. Two focus areas were identified. The first relates to advancing educational attainment and the second relates to enhancing employment opportunities throughout the County.

For an economic region of its size, Apache County is underserved in terms of opportunities for higher education. As a result, educational attainment beyond a high school diploma is lacking in the County compared to statewide averages. The current attainment disparity in Apache County represents a significant economic cost. For example, if the bachelor's degree completion rate in the County was raised to match the statewide average, a total of 734 jobs, \$114.0M in labor income, and \$288.6M in economic output would be generated over a 10-year period. This new economic activity also represents additional tax revenues that can be reinvested into local communities.

However, even if workforce training is provided and educational attainment increases, there must be a demand for those workers. If not, they are likely to leave the County. Therefore, a workforce development strategy in Apache County must strive to find a balance between enhancing workforce quality as well as quantity. For context, consider the following. If workforce development efforts lead to a 0.5 percentage point increase in the projected employment growth, an additional \$4.6M in labor income and \$11.6M in economic output would be generated over 10 years.

The pending broadband investment will be a key component in advancing local workforce development efforts. It will provide significantly greater opportunities for residents to obtain higher education and additional workforce training through online courses. This investment will need to be supported by additional business recruitment efforts in order to increase the demand for the newly trained workforce.

Apache County Workforce Profile and Analysis

An analysis of the changes in the County's workforce profile over time will help identify the overall trends that are specific to Apache County. The results of this analysis will help to determine focus areas recommended for additional development.

The current workforce profile in Apache County is also examined in relation to comparable counties (e.g., Navajo and Gila Counties) as well as the statewide average. This comparison will provide insight as to how Apache County is currently performing and provide examples of benchmarks that can be utilized when establishing economic development goals and objectives for the County.

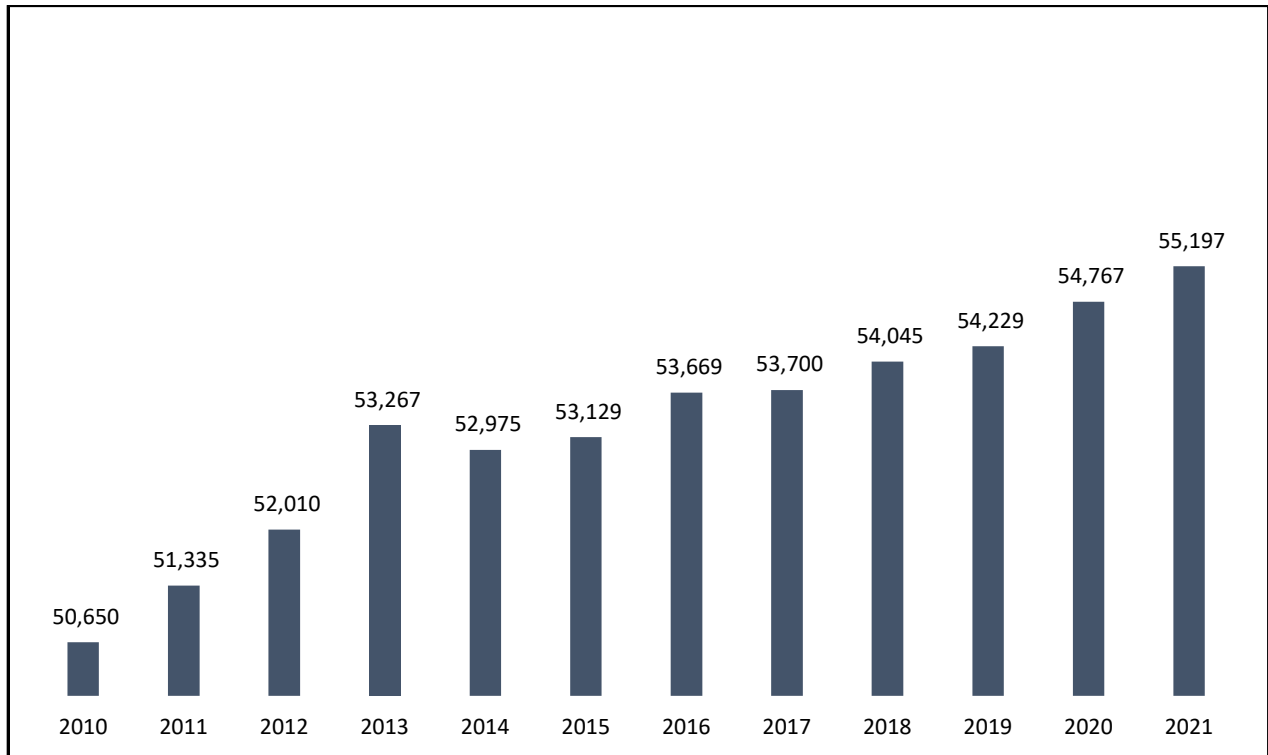
The County's workforce (also referred to as the labor force) represents the total number of people ages 16 and older in Apache County that are either employed or seeking employment. The share of these people compared to the total number of people in the County that are above the age of 16 is known as the labor



force participation rate. This number is an indicator of the overall labor resources and the health of the labor market in the County.

In 2021, there were 55,200 people above the age of 16 in Apache County, which was a 0.8% increase from 2020. Over the last 10 years, the population above the age of 16 in the County has grown at an average rate of 0.7% per year.

Figure 4: Population Level Above 16 Years Old in Apache County 2010-2021



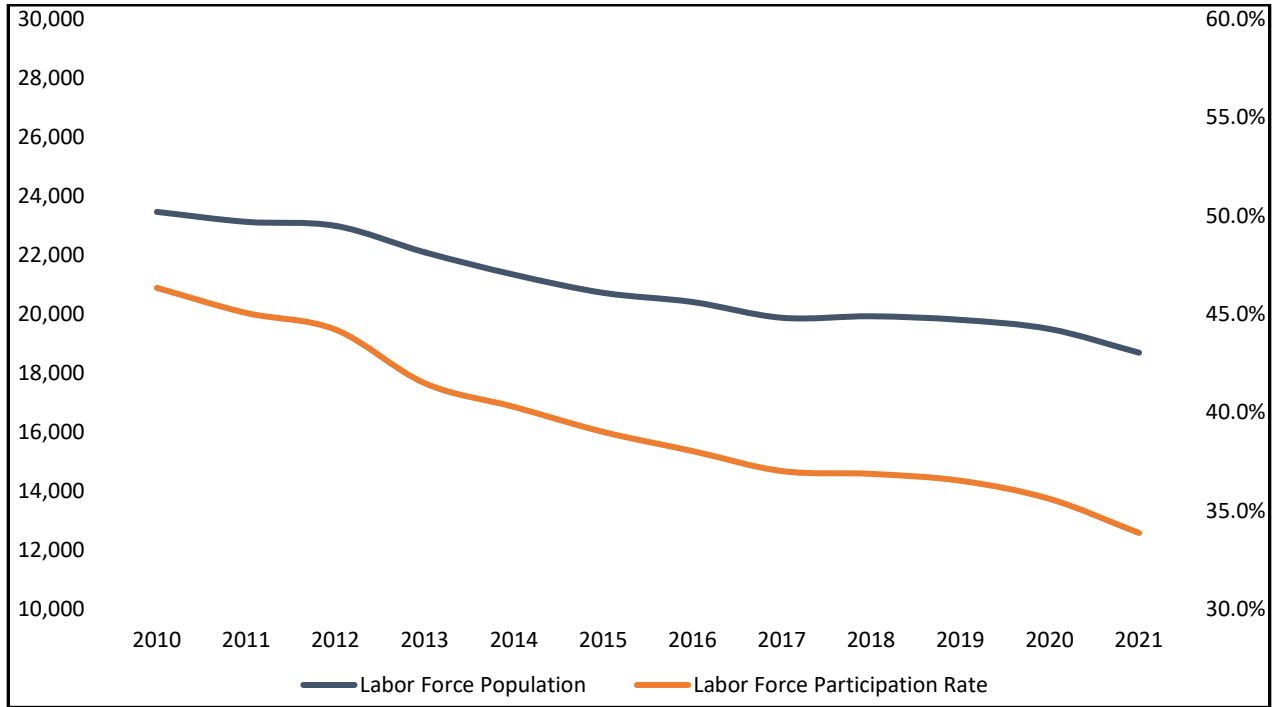
Source: U.S. Census Bureau; Esri; Arizona Office of Economic Opportunity

While the number of residents above the age of 16 has increased in the County, the number of those in the labor force has been declining in recent years. There were an estimated 18,700 residents in the labor force in 2021, according to estimates from the U.S. Census Bureau and U.S. Bureau of Labor Statistics (“BLS”). This was a 4.1% decline from 2020. Over the past decade, the number of Apache County residents in the labor force has declined by 2.1% per year.

This means that the labor force participation rate in the County has also been on a downward trend. In 2021, 33.9% of those above the age of 16 were in the labor force. This was a decline from 35.6% in 2020 and a decline from 46.3% in 2010. This means that although there is a growing number of residents that are above the age of 16 in the County, fewer people are either employed or actively seeking employment.



Figure 5: Labor Force Population and Labor Force Participation Rate in Apache County 2010-2021



Source: U.S. Census Bureau; Esri; Arizona Office of Economic Opportunity

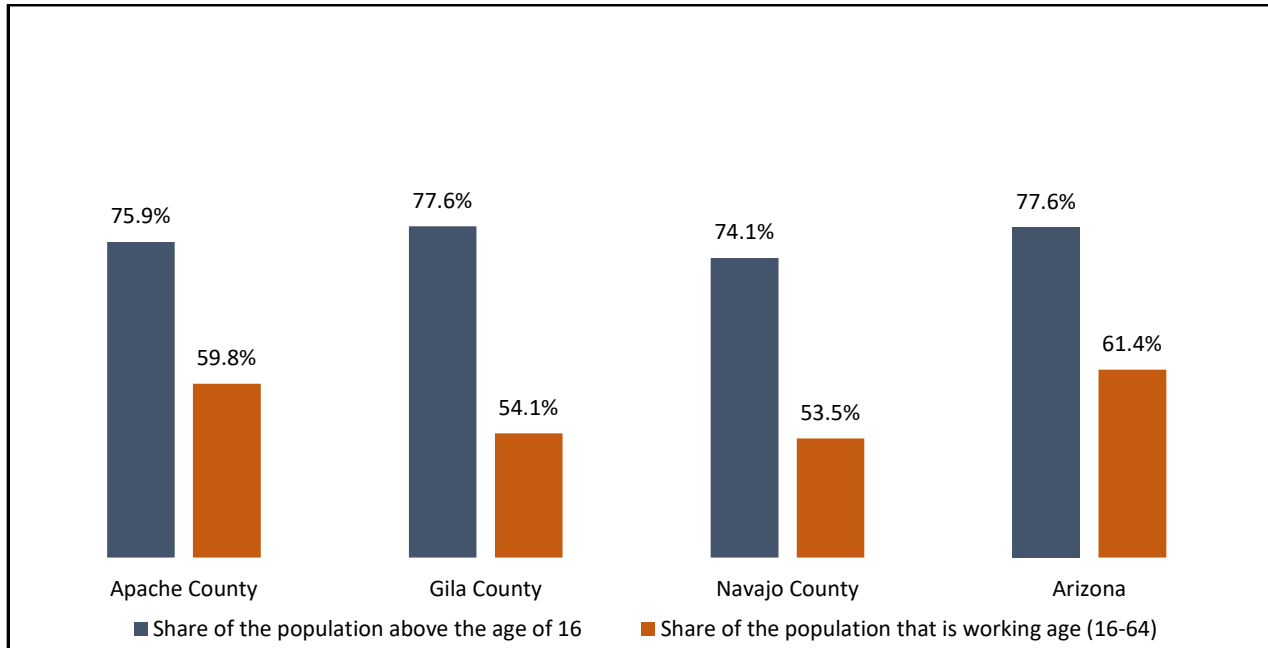
Declining labor force participation can have various causes, depending on a variety of economic and demographic factors. For example, it could indicate a growing number of residents transitioning into retirement as well as an indication of declining employment opportunities. In other words, the downward trends in Apache County do not definitively indicate that the overall economy is in decline.

Those that were above the age of 16 in Apache County in 2021 represented 75.9% of the total population. This compared to 74.1% of the population in Navajo County and 77.6% in Gila County reported being above the age of 16. Approximately 77.6% of Arizona's total population was above the age of 16 in 2021.

Approximately 43,500 people (59.8% of the population) in Apache County were of working age (i.e., between the ages of 16-64) in 2021. This was a larger share than in both Navajo and Gila Counties in which 53.5% and 54.1% of the population were of working age in 2021, respectively. Throughout the state, 61.4% of the population were of working age in 2021.



Figure 6: 2021 Labor Force Population Share for Apache, Gila, and Navajo Counties and Arizona



Source: U.S. Census Bureau; U.S. Bureau of Labor Statistics

As previously discussed, there are a variety of reasons that can cause a low labor force participation rate, depending on various economic and demographic factors. The relatively large share of the Apache County population that is between the ages of 16 and 64 means it is unlikely that the decline in the labor force is caused by an increase in residents entering retirement.

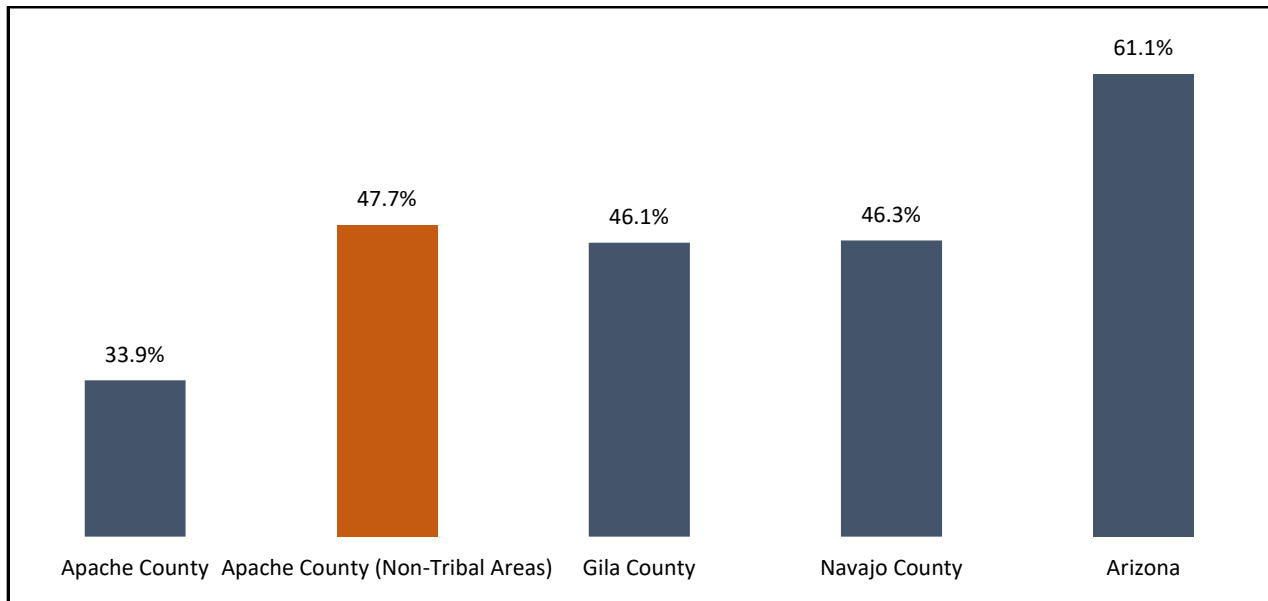
However, Apache County is unique in that a significant share of the County’s land area and population consists of the Navajo Nation Indian Reservation. Those living on the reservation may be old enough to be counted in the labor force (e.g., above the age of 16) but are not actively seeking employment.

These residents will skew the County’s labor force participation rate and as a result, not provide an accurate depiction of the labor force conditions in the non-tribal areas of the County.

After adjusting the figures to include only the non-tribal areas, the labor force participation rate in the County is greater than the comparison counties. In 2021, there were an estimated 14,100 people above the age of 16 in the non-tribal areas of Apache County. Of those, 47.7% were either employed or actively seeking employment.



Figure 7: 2021 Labor Force Participation Rate for Apache, Gila and Navajo Counties and Arizona



Source: U.S. Census Bureau; U.S. Bureau of Labor Statistics

The primary purpose of this report is to provide an initial framework for developing a workforce development strategy for Apache County. This framework will further the discussion related to workforce investments and workforce-related initiatives in Apache County.

The three different development categories examined in this effort (i.e., enhancing broadband access, workforce development, and improving transportation infrastructure) are an example of how different development initiatives can be utilized to support each other and how the benefits generated for the region are magnified beyond what each initiative would produce by itself.

Overall, the conditions of the labor force market in Apache County are favorable compared to the selected comparison counties and are more favorable than the trends indicated upon initial examination. For example, there is a higher labor force participation rate in Apache County when only the non-tribal areas are considered, and a higher share of working-age residents compared to the select comparable counties.

This means that there is a relatively large base of potential workers throughout the County. As such, a primary goal of a workforce development strategy should 1) improve access to educational and training resources for these potential workers and 2) enhance the employment opportunities that are available to Apache County residents by enhancing the County’s competitive position related to business recruitment.

Advancing Educational Attainment

One of the most critical issues related to workforce development is educational attainment. Improving educational attainment is often a foundational piece of any workforce development strategy. The following examines the County’s educational profile to provide insight related to secondary and post-secondary education performance throughout the County.

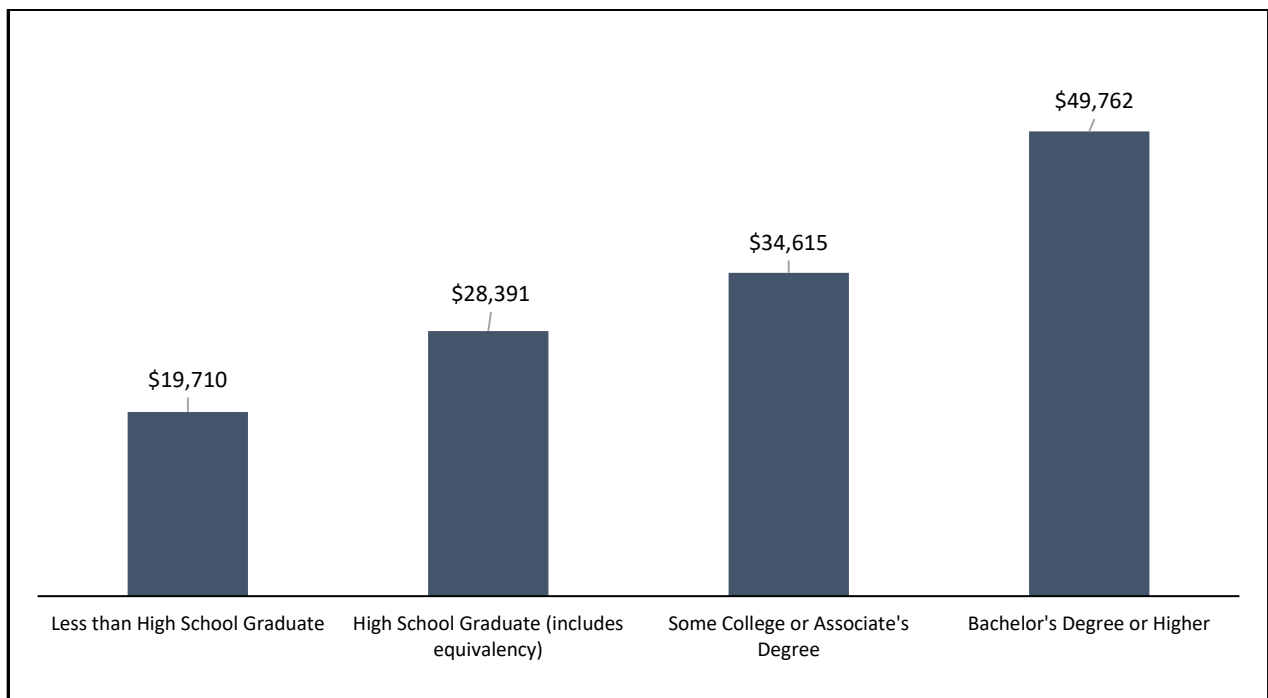


A highly skilled workforce will help to attract high value-added businesses and generate economic activity that will ripple throughout the region. Higher levels of educational attainment are correlated to greater health outcomes, lower crime, more employment opportunities, and higher wages.

For example, the U.S. Census Bureau estimated that as of 2020, the median wage for someone without a high school diploma in Apache County was \$19,700. A worker with a high school diploma earned a median wage of \$28,400 in 2020.

By simply enrolling in a post-secondary education program or completing an associate degree, a worker in Apache County can earn \$6,200 more annually than those with just a high school diploma. In 2020, those with a bachelor's degree or above earned an annual wage of \$49,800, a 75.3% increase compared to those with a high school diploma.

Figure 8: 2020 Median Annual Wage in Apache County by Educational Attainment



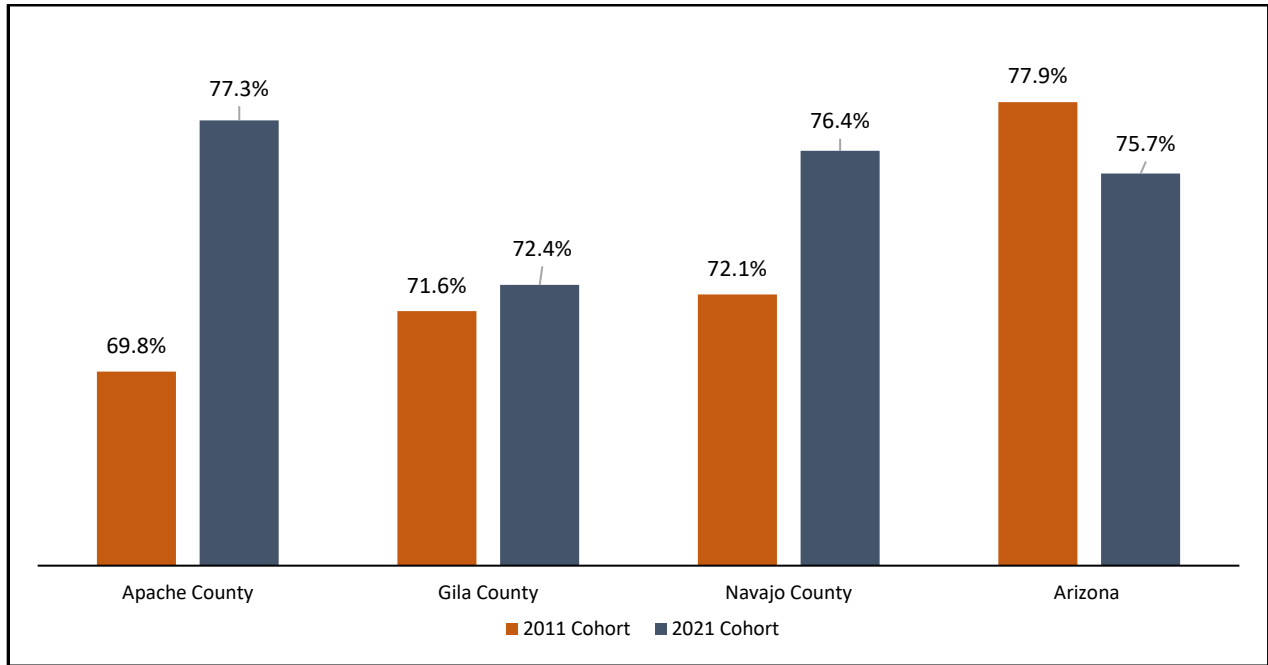
Source: U.S. Census Bureau: American Community Survey, 2016-2020 5-year estimates

In 2021, Apache County reported a high school graduation rate of 77.3%. This was the highest rate among the comparable counties and was higher than the statewide average of 75.7%, according to the Arizona Department of Education (“AZED”).

This was also a significant improvement from 10 years ago when Apache County reported a high school graduation rate of 69.8%. This was the lowest rate among the comparison counties and the statewide average at the time.



Figure 9: High School Graduation Rate in Apache, Gila and Navajo Counties and Arizona



Source: Arizona Department of Education

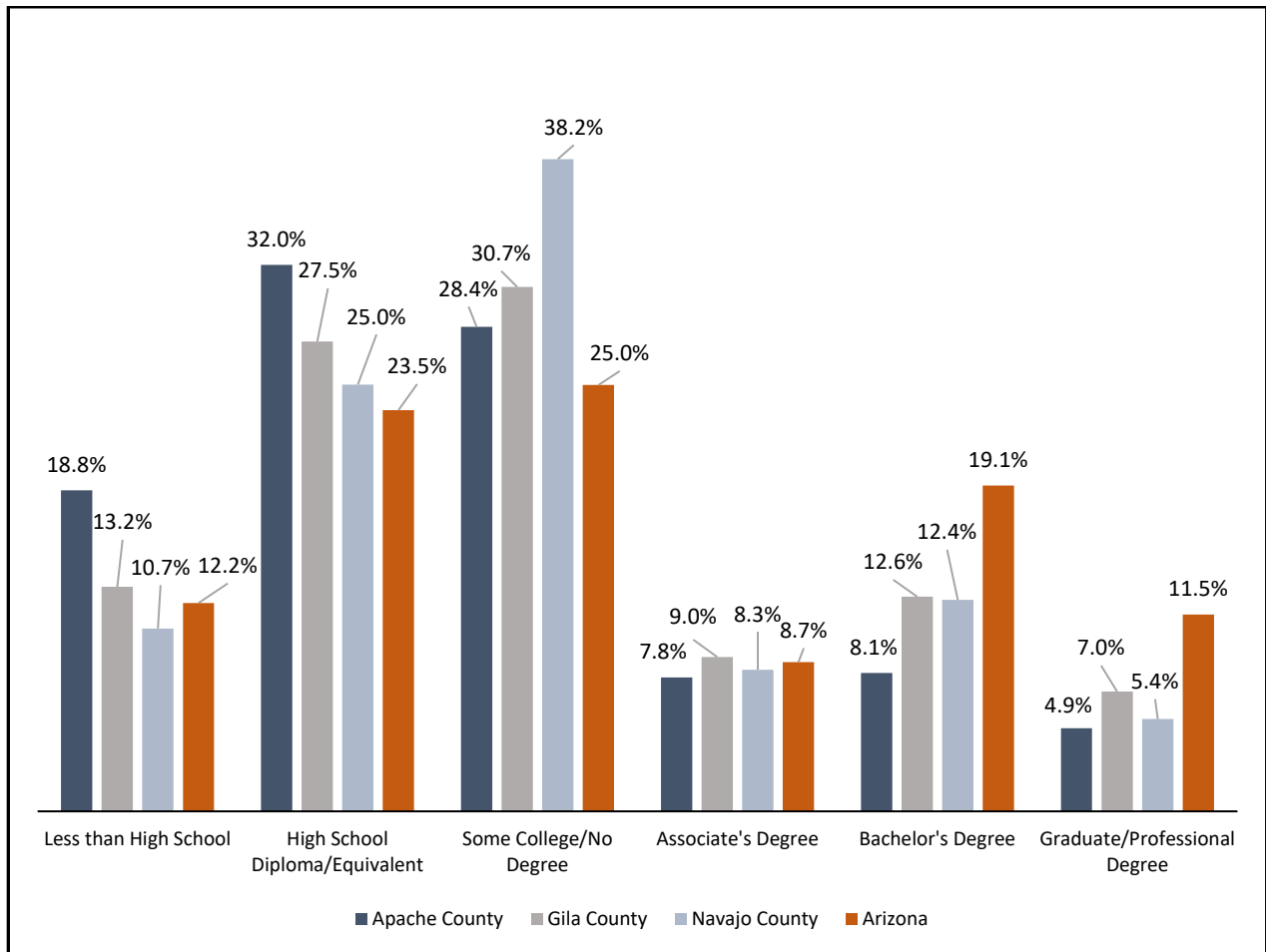
As of 2021, 8.1% of the Apache County residents above the age of 25 had attained a bachelor’s degree as the highest level of education. This compares to 12.4% of Navajo County residents, 12.6% of Gila County residents, and 19.1% of the total state population.

The highest level of educational attainment for 32.0% of the Apache County residents above the age of 25 was a high-school diploma in 2021. This compared to 25.0% of the population in Navajo County and 27.5% of Gila County residents.

Overall, for 23.5% of the statewide population above the age of 25, the highest level of educational attainment was a high school diploma in 2021.



Figure 10: 2021 Educational Attainment in Apache, Gila and Navajo Counties and Arizona



Source: U.S. Census Bureau; Esri

The relatively high graduation rate among high school students and the relatively low levels of associate degree and bachelor’s degree attainment in the County indicate the need to address the college enrollment process for students as they are preparing to graduate high school.

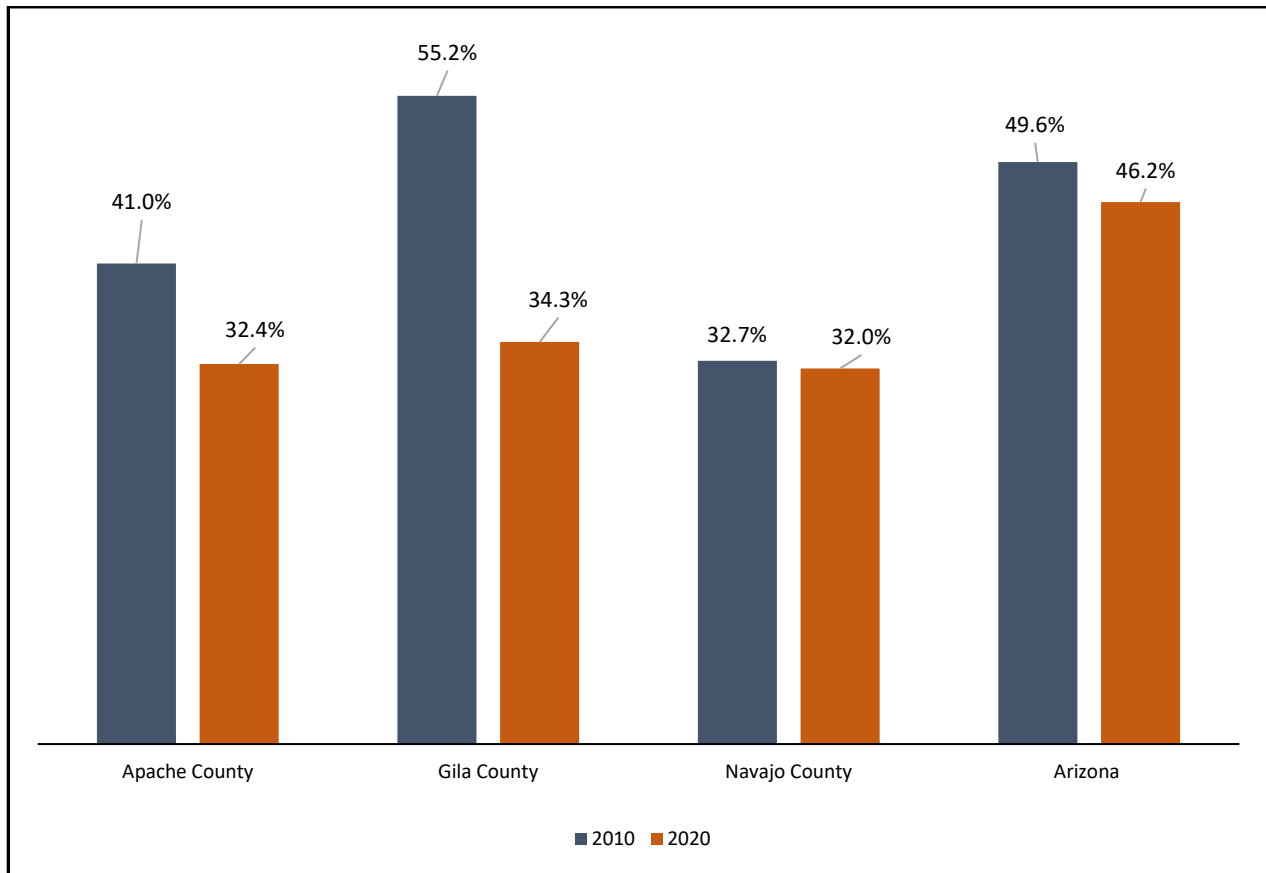
The Arizona Board of Regents (“ABOR”) estimated that 32.4% of the high school graduates in Apache County enrolled in either a 2-year or 4-year post-secondary program in 2020 (the most recently available data). This compared to 32.0% in Navajo County, 34.3% in Gila County, and the statewide average of 46.2%.

Unlike the high school graduation rate, the college enrollment rate in Apache County has declined over the last 10 years. In 2010, an estimated 41.0% of the high school graduates in the County enrolled in a post-secondary program in the year following high school graduation.

While there are many factors that can account for this decline, one may be that there are limited options in the County where residents can obtain a post-secondary degree.



Figure 11: College Enrollment Rate in Apache, Gila and Navajo Counties and Arizona



Source: Arizona Board of Regents

At present, there are two institutions that offer post-secondary degrees and certificates. Diné College is in Tsaile, Arizona which is on the Navajo Nation Reservation. This college offers bachelor's and associate's degrees and direct-to-work certificates. However, admission to Diné College requires an official Certificate of Indian Blood and is restricted to those of Native-American descent. Therefore, this is not a viable option for many living in the non-tribal areas of the County who are not of Native-American descent.

Northland Pioneer College has various campuses and education centers located throughout Apache and Navajo Counties. There are two education centers in Apache County, located in St. Johns and Springerville. While these centers are more accessible for those living in the non-tribal areas, the types of programs offered are limited to associate's degrees and direct-to-work certificates. There is not an institution that offers a bachelor's degree located in the non-tribal areas of the County.

Therefore, those seeking a bachelor's degree would be required to travel outside the County and the various costs associated with leaving the County can inhibit residents from advancing their education.

The issue of limited post-secondary educational opportunities for Apache County residents can be addressed and potentially eliminated by enhancing access to broadband. With a reliable broadband connection, the opportunities for County residents to advance education expand from scarce (e.g., 2 institutions that offer associate degrees and direct-to-work certificates) to nearly every post-secondary institution in the nation.

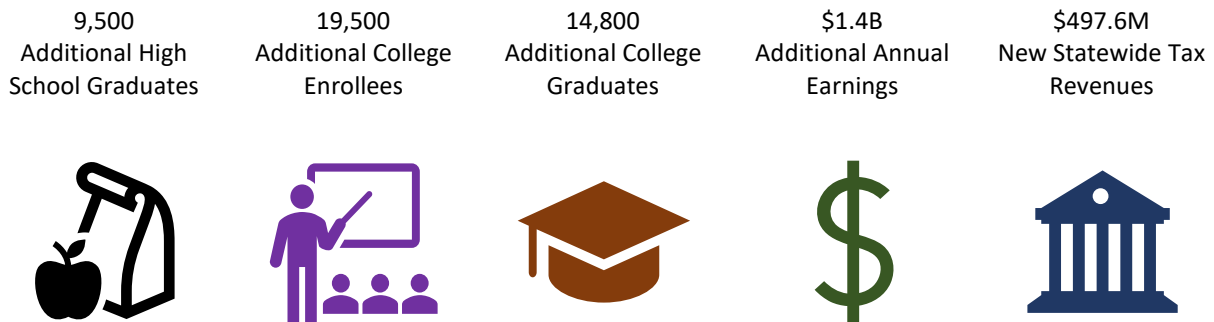


Economic Benefits of Enhancing Educational Attainment in Apache County

The economic and fiscal benefits of advancing educational attainment are significant. In a recently released report commissioned by ABOR, RCG estimated the economic and fiscal impacts of Arizona raising educational attainment to match the national average.

The results of the report revealed that if Arizona's educational attainment is raised to match national averages, the additional wages earned through educational advancements would produce \$1.4B in earned income annually. This increase in income would also yield an additional \$497.6M in state and local tax revenues annually or \$5 billion over ten years.¹

Table 7: The Annual Impact of Raising Educational Attainment in Arizona to the U.S. Level



Source: Public High School Graduation Rates: U.S. Department of Education’s National Center for Education Statistics, 2019; Graduation Rates, Dropout Rates, and Enrollment Reports: Arizona Department of Education, 2020; Postsecondary Attainment Report, Arizona Board of Regents, 2020; Conditions of Education: U.S. Department of Education’s National Center for Education Statistics, 2019; Completing College National and State Reports: National Student Clearinghouse, 2021; Arizona Department of Revenue; IMPLAN; Rounds Consulting Group, Inc.

These benefits are generated as residents earn higher wages as a result of increased education and workplace skills. The higher wages are then spent throughout the local economy, creating a domino effect that advances overall economic growth.

A similar, abbreviated model was developed for Apache County. The model estimated the economic impact on the local and regional economy if the bachelor’s degree completion rate in Apache County was raised to the statewide average.

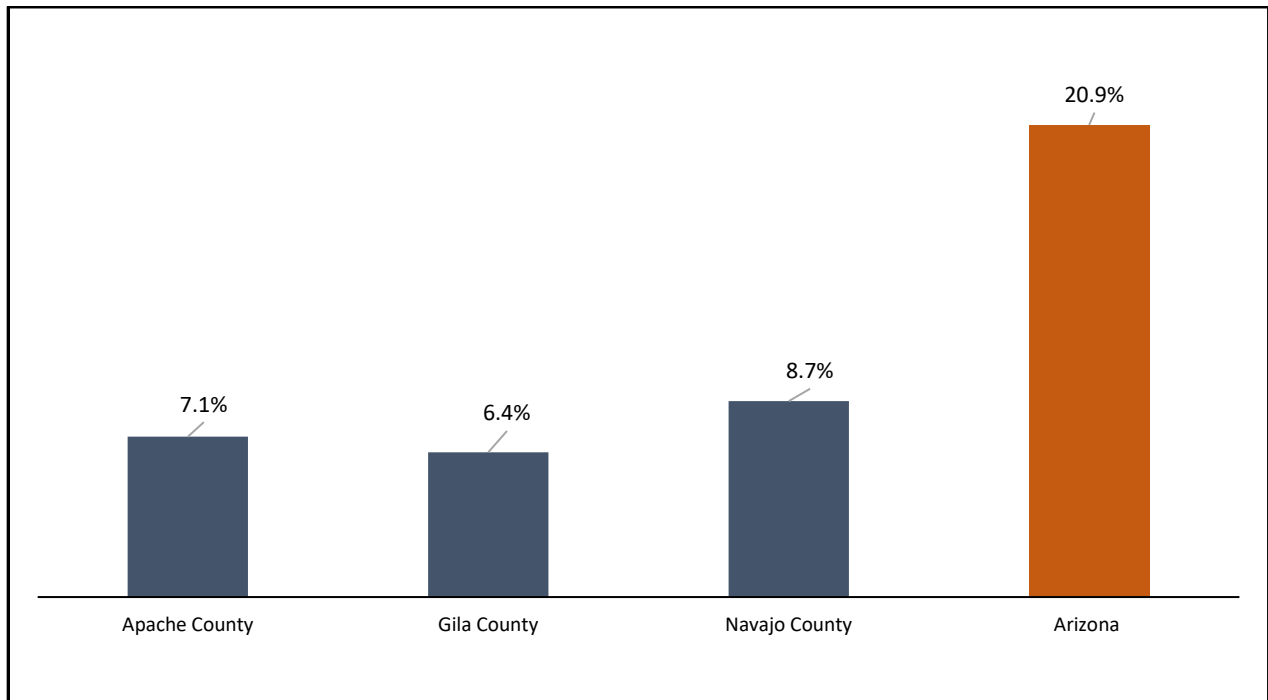
The bachelor’s degree completion rate is reported by ABOR and measures the share of high school graduates that are able to complete a post-secondary education program with a bachelor’s degree within 6 years of graduating high school.

As of 2021, approximately 7.1% of Apache County’s high school students that graduated in 2015 were able to receive a bachelor’s degree. This compares to 8.7% in Navajo County and 6.4% in Gila County. Overall, in Arizona, 20.9% of the 2015 high school graduates completed a bachelor’s degree, according to ABOR.

¹ Arizona Board of Regents, Advancing Arizona’s Economy - Investment in Workforce Development, 2022.



Figure 12: 2021 College Completion Rate in Apache, Gila and Navajo Counties and Arizona



Source: Arizona Board of Regents

Suppose that as a result of educational advancement and development programs, the bachelor’s degree completion rate in Apache County was raised to the statewide average. Under this assumption, an additional 97 students that graduated high school in Apache County would obtain a bachelor’s degree. Of these, approximately 56 are estimated to be employed in the County.

These 56 new workers would each earn an annual wage of approximately \$49,800. This represents a \$21,400 (75.3%) increase in annual wage, compared to the median wage earned by a worker in Apache County with a high school diploma as of 2020, according to the U.S. Census Bureau.

These direct workers could enhance the productivity of the businesses at which they are employed. The increased productivity could increase the demand for supplier businesses and operations in tangential industries, creating additional indirect jobs. The new employees then spend their incomes throughout the local and regional economy. This additional activity creates more induced jobs in the supporting businesses (grocery stores, food services, etc.).

After 10 years, raising the bachelor’s degree completion rate in Apache County to the statewide average would generate a total of 734 jobs (direct, indirect, and induced). These workers would earn a total of \$114.0M in wages and generate \$288.6M in additional economic output by year 10. The additional employment and economic activity would produce approximately \$22.5M in state and local tax revenues over 10 years including \$1.4M in local tax revenues for the non-tribal areas of the County.



Table 8: 10-Year Cumulative Impact of Enhancing Educational Attainment in Apache County

Impact Category	Direct	Indirect	Induced	Total
Jobs	560	68	106	734
Wages	\$65,912,000	\$19,809,500	\$28,235,500	\$113,957,000
Economic Output	\$140,977,600	\$60,178,900	\$87,401,700	\$288,558,200
Tax Revenues	\$15,037,400	\$3,057,000	\$4,435,900	\$22,530,300
State	\$13,705,500	\$2,887,600	\$4,180,300	\$20,773,400
County	\$305,600	\$31,100	\$48,100	\$384,800
Local (Non-tribal areas)	\$1,026,300	\$138,300	\$207,500	\$1,372,100

Note: May not sum due to rounding. The jobs number is the total of the jobs created by year 10, while the rest of the impacts are cumulative totals.
 Source: Arizona Board of Regents; U.S. Census Bureau; IMPLAN; Rounds Consulting Group, Inc.

The economic model above provides a brief glimpse of the estimated benefits of advancing education in Apache County; those benefits should be considered conservative.

The benefits of advancing educational attainment in the area are likely to be even larger when business development inputs are considered as a whole and not as separate units of production. The availability of an educated and highly skilled workforce is an important consideration for businesses seeking to expand or locate in new markets. This is especially true when considering higher value-added businesses in high-growth industries that require such a workforce (i.e., advanced manufacturing, high-tech, health services, among others).

For example, if one assumes a 50-person tech related manufacturing company locates in Apache County because of enhanced broadband access and other investments including a reasonable supply of skilled workers, and an adequate transportation infrastructure, the overall impact would be large. In this example, approximately 152 new jobs (sum of the direct, indirect, and induced jobs) would be supported by the business, and \$9.3M in labor income and \$47.1M in economic activity would be added to the region. Each year, \$560,700 in tax revenues would be generated by the 50-person manufacturer.

Growth in these higher value-added businesses creates additional demand in supplier industries (e.g., supplier of raw materials, transportation industries, etc.) and other service industries (e.g., janitorial services, food services, etc.). An enhanced local supplier network, in turn, magnifies the impact of educational advancement.

Additionally, any program that enhances the bachelor’s degree completion rate will also, by default, increase the college enrollment rate. Some of the additional students that enroll in college will complete an associate degree or direct-to-work certificate, while some will not complete any program.

However, each of these new enrollees will earn higher wages than they would with just a high school diploma. These additional incomes are not considered in the abbreviated model described above but will enhance economic activity and spending, further magnifying the economic impacts.

However, it is also worth noting that a disproportionate focus on enhancing educational attainment without a solid base of robust employment opportunities can be detrimental to the overall growth in the region. For example, a worker may make the effort to advance their education and acquire new skills, but without



adequate employment options available in the region, the worker may leave in search of more attractive employment.

This is the case in Apache County, policymakers and community leaders should consider implementing strategies that not only aim to enhance educational attainment, but that create partnerships with the business community to increase the employment opportunities within the County.

Enhancing Employment Opportunities

Before an investment is made to enhance employment opportunities, it is important to understand the employment market in the County. A review of the industry composition in the County over time will provide insight as to which industries have been the most resilient through the expansions and contractions of the business cycle. This can be an initial step in creating a workforce development initiative as there is an existing base of workers for these industries.

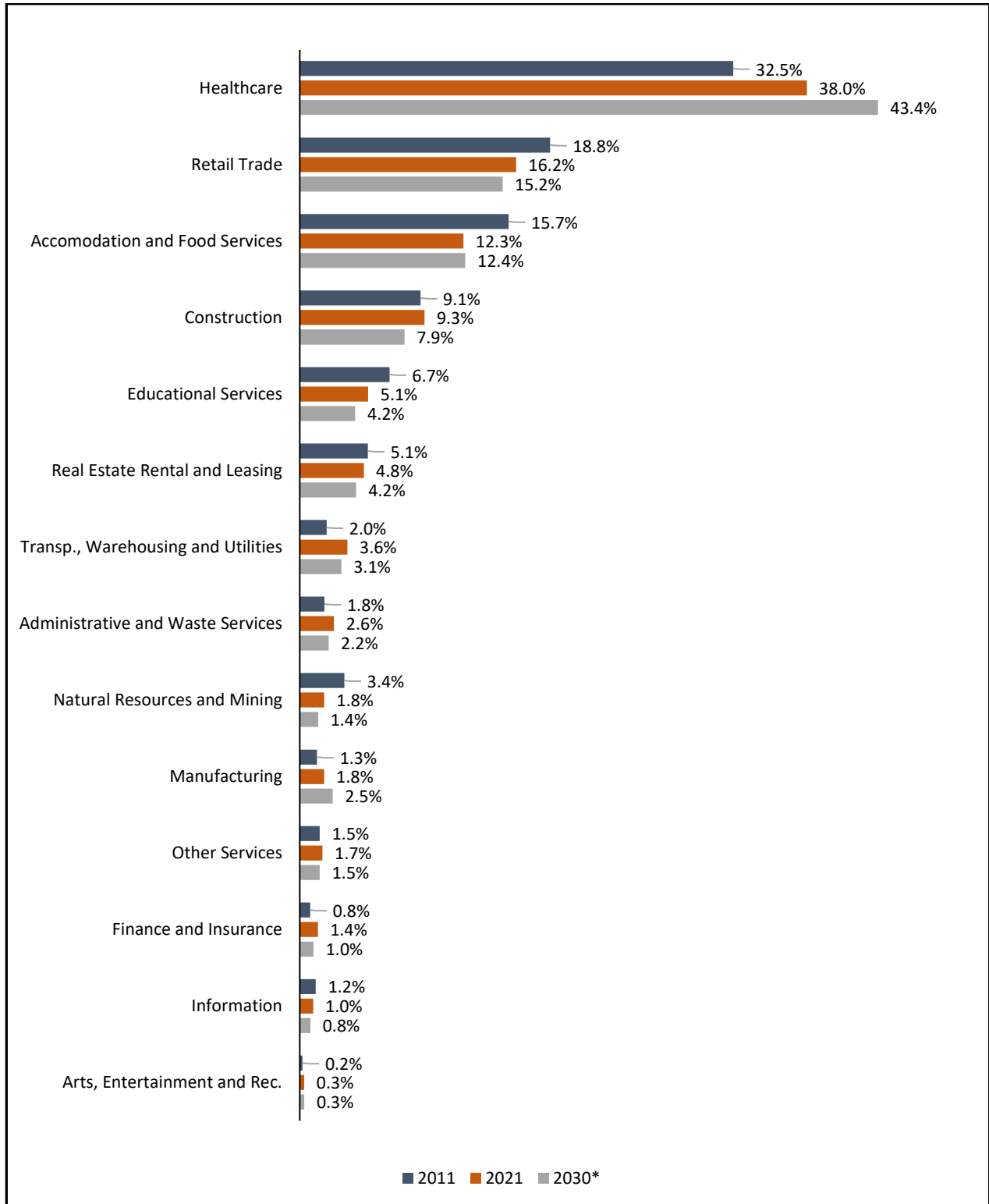
As of 2021, there were a total of 16,800 people employed in the County. Of these, 38.0% were employed in the healthcare industry. This industry employed the most residents of Apache County in 2021 followed by the retail trade industry which employed 16.2% of the County’s workforce, and the accommodation and food service industry which employed 12.3% of the workforce, according to the BLS.

In 2011, the healthcare industry was also the most employed industry in the County, employing 32.5% of the workforce. The retail trade industry employed 18.8% of the workforce, and the accommodation and food service industry employed 15.7% of the workforce.





Figure 13: Employment Composition in Apache County by Industry 2011, 2021 and 2030



*Projected Values.

Note: Excludes government employment and the projections do not take into account the possible closures of the generating stations. As of 2021, 2.5% of Apache County's workforce is employed at the generating stations.

Source: U.S. Bureau of Labor Statistics; Arizona Office of Economic Opportunity



These three industries have employed a significant portion of the workforce in Apache County in 2011 and 2021 and are expected to employ a large share of the workforce in 2030. A stand-alone workforce development strategy would likely focus on these industries. Such a strategy would build on the existing strengths of the labor force without consideration to reversing any declining trends or targeting underperforming areas of the labor force market.

However, as previously discussed, a workforce development strategy in Apache County should be designed to be implemented in tandem with two other initiatives. The combination of these initiatives, particularly enhancing broadband access, provides an opportunity for the workforce development strategy to reverse declining trends and enhance previously underserved industries.

For example, the economic shutdowns that occurred due to the COVID-19 pandemic resulted in the emergence of remote work. Employees were forced to work remotely due to public health mandates and other restrictions.

However, even after the mandates were lifted, many employers continued to permit their employees to work remotely. The growing demand from the workforce for remote employment positions is making the use of technology a necessity. In particular, a strong and reliable broadband connection is essential for remote work to be feasible.

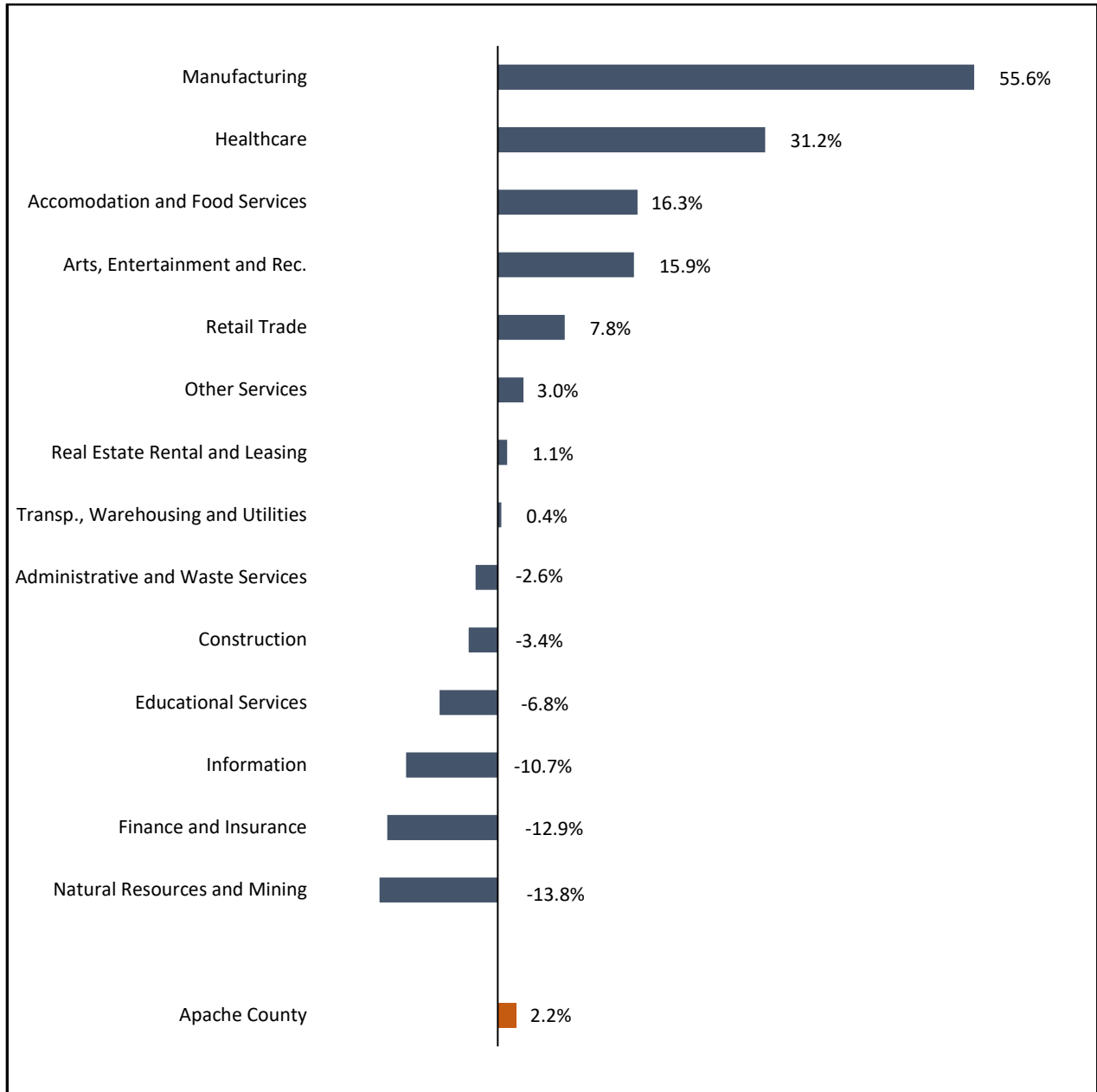
Going forward, consideration should also be given to those industries that are projected to be in high demand in Apache County over the next decade and additional research should be conducted to determine which of these industries can be developed with the support of broadband enhancements.

The Arizona Office of Economic Opportunity (“OEO”) estimates that by 2030, employment in the manufacturing industry could grow by 55.6% and employment in the healthcare industry is projected to grow by 31.2% and employ 43.4% of the County’s workforce.

Retail trade industry employment is expected to increase by 7.8% and employment in the accommodation and food services industry could grow by 16.3% by 2030. This compares to the overall projected employment growth of 2.2% for Apache County.



Figure 14: 10-Year Employment Growth in Apache County by Industry (2020-2030)



Note: Excludes government employment and the projections do not take into account the possible closures of the generating stations. As of 2021, 2.5% of Apache County's workforce is employed at the generating stations.

Source: U.S. Bureau of Labor Statistics; Arizona Office of Economic Opportunity

Across the U.S., approximately 15.0% of the healthcare workforce consists of remote workers. Approximately 10.0% of the workforce in the technology industry worked remotely, as of 2021, and over 9.0% of the financial services industry worked remotely.²

² Owl Labs; Findstack: The Ultimate List of Remote Work Statistics for 2022. (<https://findstack.com/remote-work-statistics/>)



Remote work has become particularly popular among younger workers. According to CBRE, approximately 69.0% of the millennial workforce would forgo certain workplace benefits in favor of a remote work environment.³

The surge of remote workers is unlikely to fade. A study from Stanford University found that 42.0% of the U.S. workforce are remote workers and account for nearly 67.0% of the economic activity, in 2020.⁴ This presents a great opportunity for Apache County and other rural areas. By enhancing broadband connectivity, a new segment of the workforce can be reached.

A workforce development strategy that targets remote workers can encourage these workers to relocate to the County. These workers, many of which earn above-average incomes, could increase the economic activity throughout the local and regional economies.

The list below represents various incentive programs that have been implemented by various cities and towns across the U.S. in an attempt to attract remote workers as part of an economic development strategy.

Additional research will need to be conducted at a later time to determine the efficacy of these programs. Those that are successful should be considered as potential case studies for Apache County.

- Manilla, Iowa - The City of Manilla is offering single-family lots for free, complete with utility access, no hookup fee, and a 5-year, 100% tax abatement. There is also down-payment assistance for up to \$34,999. These incentives were developed to attract remote workers.⁵

In response to these incentives and similar programs throughout the state, Iowa state lawmakers approved the earmarking of over \$100M to fund Iowa's Empower Rural Iowa Broadband Grant Initiative. The goal of the program is to provide universal broadband access to all state residents by 2025.⁶

- Harmony, Minnesota - The Harmony Economic Development Authority developed a cash rebate program to incentivize remote workers to relocate to the area. The program returns a certain percentage of the costs associated with building a house in the area. The amount of the rebate varies depending on the estimated market value of the new home.⁷
- Bemidji, Minnesota – The City of Bemidji will reimburse moving expenses and provide a 1-year membership to a coworking center located in the downtown district.⁸ Bemidji is unique in that nearly the entire region has access to a fiber optic broadband connection. The county in which Bemidji is located (Beltrami County) is the number 1 county in the state for broadband access.⁹
- Quincy, Illinois – People that move to the City of Quincy are eligible for a property tax rebate of up to \$5,000 after one year and with proof of employment in the City. This

³ CBRE; Findstack: The Ultimate List of Remote Work Statistics for 2022. (<https://findstack.com/remote-work-statistics/>)

⁴ Stanford Institute for Economic Policy Research (<https://siepr.stanford.edu/publications/policy-brief/how-working-home-works-out>)

⁵ Manilla Economic Development Corporation (<https://www.manillaia.com/business.asp?key=1>)

⁶ Iowa Capital Dispatch (<https://iowacapitaldispatch.com/2022/03/10/rural-broadband-is-a-farm-bill-focus/>)

⁷ Harmony Economic Development Authority (<https://www.harmony.mn.us/?SEC=022F2A6B-7FAA-4E0D-88F0-ED95E1CB6D8C>)

⁸ Greater Bemidji 218 Relocate Program (<https://www.218relocate.com/relocation-incentive-package/>)

⁹ The Bemidji Pioneer (<https://www.bemidjipioneer.com/business/benefited-by-broadband-beltrami-county-leads-the-state-in-high-speed-internet-access>)



program was recently expanded to allow remote workers to be eligible. This means that a person does not need to be employed by a business located in Quincy to qualify for the program.

- Newton, Iowa – Homebuyers in Newton can receive a cash incentive of up to \$10,000 for building a single-family residence valued at \$190,000 or more. A new co-working space was developed in a repurposed Maytag headquarters in an effort to encourage remote/freelance workers to relocate to the area. The building includes a robust power grid complete with strong broadband connectivity.¹⁰

Attracting remote workers is not likely to address the long-term need to enhance the County’s workforce as those workers are not employed by businesses that are located in the County. However, it can be a step in the right direction.

Many remote workers are employed in the healthcare, technology, or finance industries and as such earn above average wages. As the workers locate to the County, they would begin spending those incomes in the local economy, driving demand for existing businesses. These businesses would expand operations and create additional jobs.

Additionally, the presence of these high-wage and often highly educated workers could enhance the County’s competitive position related to business recruitment. As businesses locate to and expand throughout the region, it could create a ripple effect of job growth that would strengthen the economic foundation of the County.

An economic model estimates the benefits that would occur as a result of a slight increase in the expected employment growth over the next decade. It is important to remember that the benefits realized under this scenario are only possible due to the investment in broadband.

Economic Model for Enhancing Employment Opportunities

Over the next 10 years, Apache County is projected to add 398 jobs (a 2.2% increase). This can be considered a “no action” forecast, less the closing of the powerplants. For perspective, if one assumes that workforce development efforts lead to a marginal 0.5 percentage point increase in the employment growth rate (2.2% vs. 2.7% growth), the County would add an additional 95 jobs.

Thus, each 0.5 percentage point increase in the County’s employment growth rate would add \$4.6M in labor income throughout the County, and the annual economic activity generated by the increased rate of growth would equal \$11.6M. The state would collect an additional \$246,200 in tax revenues each year, Apache County would collect \$10,500 each year, and local municipalities would collect \$39,200 each year. This example provides perspective on the extent small changes in the economic projections would deliver net-new tax revenues that can be reinvested, thus furthering the growth cycle.

¹⁰ Newton Economic Development (<https://www.newtongov.org/806/Housing-Initiative>)



The figures were calculated based on an incremental economic and fiscal impact model. Meaning, if one supposes that the employment growth rate could increase further, the impact estimates can be multiplied by the same incremental value. For example, if one assumes that the growth rate could be twice as much as the 0.5 percentage points (i.e., 1 percentage point), the impacts can be doubled.

Impact Category	Direct	Indirect	Induced	Total
Jobs	56	15	24	95
Labor Income	\$2,655,000	\$797,900	\$1,137,300	\$4,590,300
Economic Output	\$5,678,700	\$2,424,000	\$3,520,600	\$11,623,300
Tax Revenues	\$177,700	\$48,000	\$70,200	\$295,900
State	\$145,200	\$41,200	\$59,800	\$246,200
County	\$7,300	\$1,200	\$2,000	\$10,500
Local (Non-tribal areas)	\$25,200	\$5,600	\$8,400	\$39,200

Note: May not sum due to rounding. Annual impacts.
Source: Arizona Office of Economic Opportunity; IMPLAN; Rounds Consulting Group, Inc.





Apache County Transportation Infrastructure

***Synopsis:** Transportation infrastructure is one of the core economic development fundamentals and the growth potential of any economy is limited to the extent that it can remain competitive in terms of those fundamentals. Other fundamental elements include workforce and education quality, public safety, the regulatory environment, taxation competitiveness, and broadband infrastructure, among many more.*

While infrastructure improvements can often refer to the expansion of existing roadways to accommodate an increase in residential and commercial traffic, the most pressing issue in Apache County is to address the condition of the major arterials that connect the County to regional and national commercial trade routes. The relatively poor condition of these roadways can hinder future economic growth as it is on these roadways that supplies are brought to local businesses and local products/services are exported out of the County.

According to ADOT, approximately 54.1% of the major arterials in Apache County were in either fair or poor condition, as of 2020. This compares to 46.1% of the major arterials across the state which were in similar condition. A breakeven analysis showed that the County would need approximately \$7.7M to improve and maintain the major arterials over the next 10 years. When the non-major arterials and county roads are considered, a total of \$73.5M is needed for necessary improvements.

Transportation infrastructure improvements generate significant benefits beyond simply addressing travel conditions or alleviating traffic congestion. Investments in transportation infrastructure also facilitate business retention, expansion, and attraction, as well as increase property values, create jobs, generate tax revenues, enhance the quality of life of residents, and add significant economic value to a region.

These benefits are magnified when investments are combined with other development initiatives. For example, as previously mentioned, improving roadways and expanding broadband infrastructure simultaneously could decrease costs and increase the efficiency of the already limited resources.

The result is a compounded ROI where the benefits of both improved infrastructure and enhanced broadband access are generated from a single application of funding.

Apache County Roadways and Pavement Conditions

Located along the northeastern boundary of Arizona, Apache County is one of the most rural counties in the state with only 14.5% of the residents living in an incorporated community, as of 2021. As a result of the remote locations of municipalities, extreme weather conditions of the Great Basin Desert, and limited resources, the conditions of many major roadways throughout the County show signs of deterioration.

Traffic volumes for each major roadway in the County and data related to the payment conditions for the County's major roadways, as reported by ADOT, are examined to provide insight into the problem areas in the non-tribal region of the County.

There are nearly 1,600 miles of county and local roads throughout Apache County. According to the Arizona Association of County Engineers ("AACE"), approximately 7.0% of the County maintained roads in Apache County were paved, as of 2018.



These roads are primarily occupied by residential traffic, with less than 1.0% being categorized as major arterial, according to the Federal Highway Administration (“FHWA”). However, as economic activity increases throughout the region, it will be important that these roads be able to handle the increased traffic volume.

The AACE estimated that 17.0% of county roads are either in “poor” or “very poor” condition. The total cost of raising the county roads to a “state of good repair” was estimated to be \$21.3M and the total cost to maintain these roads over the next 10 years was estimated to be \$52.2M.¹¹

While the condition of the county roadways needs to be addressed, additional analysis will be required to determine the most efficient timing and allocation of County resources for completing improvements on county roads.

A more pressing issue is the condition of the major arterials that connect the County to regional and national commercial trade routes. It is on these roadways that supplies would be brought to local businesses and local products/services would be exported out of Apache County.

Principal state routes and U.S. roadways in the County include the following:

- Interstate 40 (“I-40”)
- U.S. Route 60 (“U.S. 60”)
- U.S. Route 64 (“U.S. 64”)
- U.S. Route 70 (“U.S. 70”)
- U.S. Route 160 (“U.S. 160”)
- U.S. Route 180 (“U.S. 180”)
- U.S. Route 191 (“U.S. 191”)
- Arizona State Route 61 (“SR-61”)
- Arizona State Route 75 (“SR-75”)
- Arizona State Route 78 (“SR-78”)
- Arizona State Route 260 (“SR-260”)
- Arizona State Route 264 (“SR-264”)
- Arizona State Route 564 (“SR-564”)

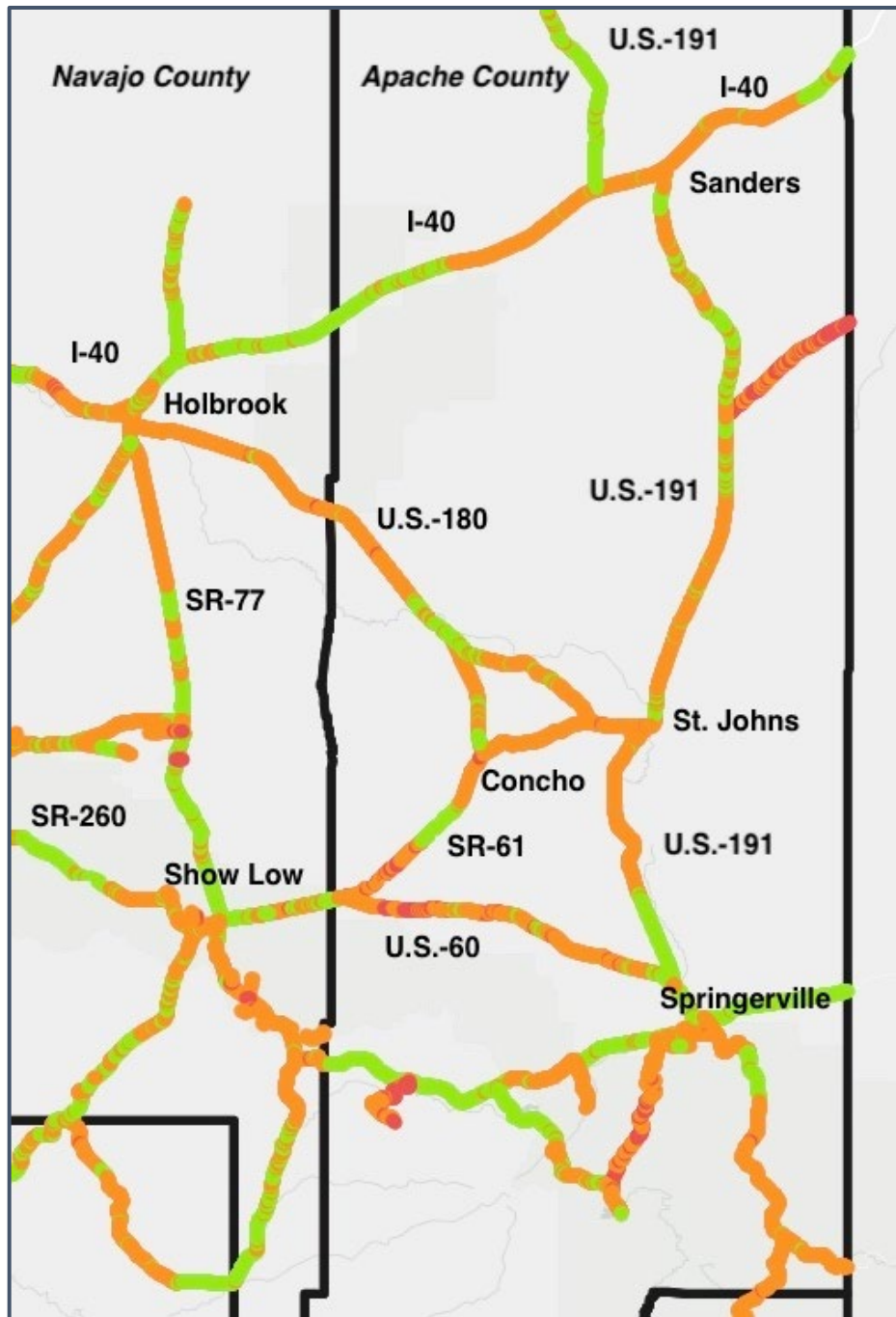
The map below displays the pavement conditions of these major arterials, according to the ADOT. Roads highlighted in red are areas where pavement conditions are poor. Those in orange have fair pavement conditions and those in green have good pavement conditions, as of 2020.

ADOT estimated that in 2020, approximately 54.1% of the major arterials in Apache County were in either fair or poor condition. This compares to 46.1% of the major arterials across the state which were in similar condition. An analysis of the commercial traffic patterns and volumes will provide context on the roads that would likely need to be addressed as economic and business activity in the region increases.

¹¹ Arizona Association of County Engineers – Roadway Needs Study
(https://cdn.ymaws.com/www.azace.org/resource/resmgr/docs/2018_aace_roadway_needs_asse.pdf)



Figure 15: Pavement Conditions for Major Arterials in Apache County



Note: green indicates good pavement conditions, orange indicates fair pavement conditions and red indicates poor pavement conditions.

Source: Arizona Department of Transportation; Esri



Adequate transportation infrastructure is a critical component in building a strong economic foundation upon which a strategic development plan can be created. The infrastructure in Apache County could support future population growth and enhance the ability of both existing and future businesses to expand operations in the County.

As the economic activity throughout the County increases resulting from broadband enhancements and workforce development programs, businesses would require that supplies be brought to the County and would in turn increase the number of goods that are exported from the County.

It is necessary, therefore, to review the primary commercial trucking routes utilized to travel to, from, and within the County as well as the routes taken by trucks that are just passing through the County. This will help to identify the roadways that are the most likely to be addressed.

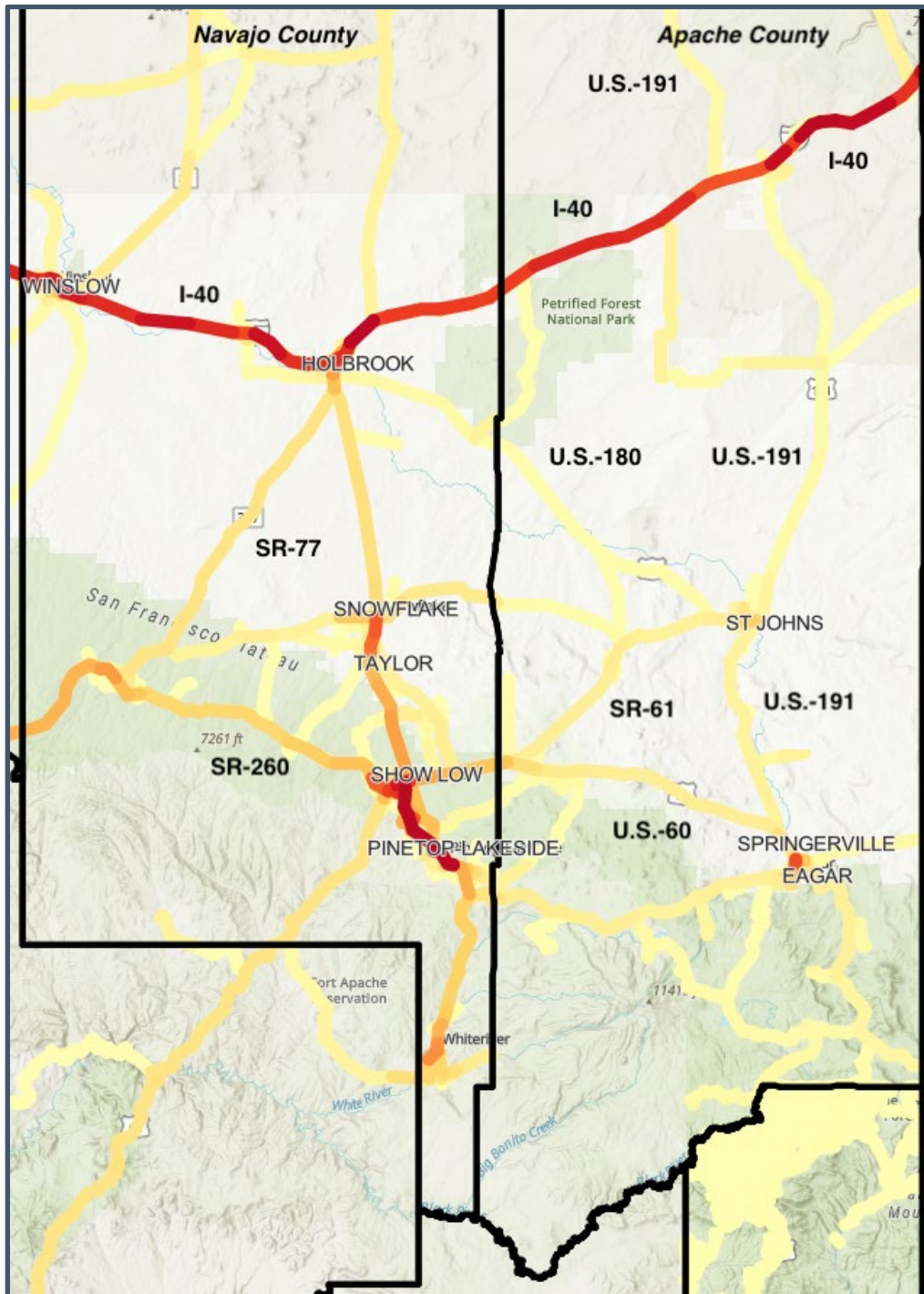
Trucks are the mode of transportation for the majority of goods that travel to, from and within Arizona. In 2020, the FHWA estimated that a total of 257.0B tons of goods traveled to, from or within Arizona, 62.1% of these goods traveled via truck (159.7B tons).

Much of this commercial traffic is concentrated in the Phoenix metro area. However, traffic flowing to and from Apache County is flowing via the I-40 or the U.S. 60 (Figure 16). This indicates that commercial traffic is the most concentrated in Springerville, as of 2020. However, between Show Low and Springerville, approximately 77.7% of the U.S. 60 is in poor or fair condition.

As the economic activity in the County grows, it will be critical that there is an adequate infrastructure that connects the incorporated areas of the County to the I-40. In the non-tribal areas of the County, the most direct routes to the I-40 are via the U.S. 191. From Springerville to the I-40, approximately 60.2% of the pavement on the U.S. 191 is in poor or fair condition.



Figure 16: Annual Traffic Volumes in Apache County



Note: Darker red indicates heavier traffic volumes.

Source: Esri; Arizona Department of Transportation; Rounds Consulting Group, Inc.



Goods and supplies traveling to and from the County from the Phoenix area are likely to travel via the SR-87 and the SR-260, connecting to the U.S. 60 in Show Low. Figure 15 indicates that in Show Low (where the SR-260 connects with the U.S. 60) a slightly greater amount of traffic flows to or from the I-40 near Holbrook via the SR-77, while a smaller amount travels to or from Springerville via the U.S. 60.

Goods and products that leave the County are most likely to do so via the I-40. Stretching over 2,550 miles from Barstow, California to Wilmington, North Carolina, the I-40 is a principal arterial for commercial trucking and interstate travel for residential commuters.

ADOT reported that in 2021, approximately 340,100 vehicles **passed through** Apache County via the I-40. This is different than aggregate traffic flow in that it captures those trucks that do not stop in Arizona except to refuel. The figures for I-10 are smaller because many of the vehicles stop for commerce beyond refueling. Regardless, there is a significant flow of potential business inputs just north of the economic region. Figure 16 displays the volume of commercial trucks that passed through Arizona in 2017 (the most recently available data).

Figure 17: Commercial Truck Volume Passing Through Arizona, 2017



Source: U.S. Department of Transportation, Federal Highway Administration

Infrastructure Improvement Costs

A roadway needs study conducted by the AACE estimated the cost required to bring the infrastructure in Apache County to a “state of good repair”. According to this study, improving the roadway conditions to this state in Apache County is estimated to cost \$47,500 per mile.¹² These improvements include the initial

¹² Arizona Association of County Engineers – Roadway Needs Study
(https://cdn.ymaws.com/www.azace.org/resource/resmgr/docs/2018_aace_roadway_needs_asse.pdf)



surface level repairs to existing infrastructure and the maintenance required to keep the roads from decaying over the next decade.

The table below displays the estimated cost to repair the primary roadways that are most likely to experience an increase in traffic volume as the commercial activity in the County increases. According to the table below, it will cost an estimated \$7.7M to improve these select roadways to a state of good repair and maintain this state over the next 10 years.

Table 10: Estimated Cost of Improvement to Major Arterials			
Roadway and Route	Total Miles	Miles of Repair	Estimated Cost
U.S. 60			
Between Show Low and Springerville	46.2	35.9	\$1,705,641
SR-61			
Between Show Low and St. Johns	45.2	32.2	\$1,529,047
U.S. 180			
Between the West County Line and St. Johns	57.3	45.7	\$2,170,816
U.S. 191			
Between Springerville and the I-40	81.5	49.1	\$2,334,489
Total	230.2	162.9	\$7,739,994

May not sum to the total due to rounding.

Source: ArcGIS; Arizona Association of County Engineers; Rounds Consulting Group, Inc.

It should be noted that these improvements will become necessary only when the economic growth in the region begins to strain the capacity of the existing infrastructure. It is at this point that inadequate transportation infrastructure can hinder continued growth. At present, the County has not reached this point.

However, it is possible that the County will reach that point over the coming decades. It will be more likely as initiatives like the broadband enhancements and workforce development programs outlined in this report are implemented.

In anticipation of the eventual need to improve the infrastructure, it is recommended that improvements and repairs are coordinated with the enhancements to the broadband infrastructure. While the short-term cost of doing broadband enhancements and infrastructure improvements simultaneously will be higher, the increased efficiency will generate a higher long-term ROI.

A breakeven analysis identifying the level of job growth needed for the state to collect taxes in the amount of \$7.7M over a 10-year period was completed to assist with future arguments for heightened state investment in the region.

Apache County would need to add approximately 556 new jobs (or 56 jobs a year) over a 10-year period for the state to recoup \$7.7M in local roadway investments within 10 years. If federal monies are instead considered, the state commitment and benefits estimate would decrease in proportion.

Based on the conditions of the roads in Apache County, the estimated cost to bring the Apache County transportation network (i.e., non-major arterials and county roads) to a state-of-good-repair is \$21.3M. Furthermore, the cost to maintain roadways in Apache County over the next 10 years is estimated to be \$52.2M. In total, \$73.5M is needed to bring the roads in Apache County to a state-of-good-repair and maintain them over 10 years.



The same breakeven analysis can be utilized to find a breakeven point in the level of job growth needed to generate \$73.5M in state taxes over a 10-year period. Apache County would need to add approximately 5,221 new jobs (or 522 jobs a year) over a 10-year period for the state to regain the \$73.5M investment in the local roadways.

In select cases, large scale transportation projects can be reviewed for breakeven points over a 15-year period. If a 15-year period is instead utilized, Apache County would need to add approximately 3,587 new jobs, or 239 new jobs each year, for the state to recoup the \$73.5M in roadway investments. The impact of these two scenarios is summarized in the following tables (Table 11 & Table 12).

Table 11: Cumulative 10-Year Economic Impact of Adding 522 New Jobs a Year in Apache County				
Impact Category	Direct	Indirect	Induced	Total
Jobs	3,100	825	1,296	5,221
Labor Income	\$802,513,000	\$241,191,500	\$343,782,300	\$1,387,486,800
Economic Output	\$1,716,475,200	\$732,709,500	\$1,064,163,100	\$3,513,347,500
Tax Revenues	\$52,728,300	\$14,545,200	\$21,171,000	\$88,444,500
State	\$43,622,600	\$12,475,700	\$18,060,800	\$74,159,100
County	\$1,921,300	\$383,500	\$583,300	\$2,888,100
Local (Non-tribal areas)	\$7,184,400	\$1,686,000	\$2,526,900	\$11,397,300

Note: May not sum due to rounding. The jobs number is the total of the jobs created by year 10, while the rest of the impacts are cumulative totals.
Source: Arizona Office of Economic Opportunity; IMPLAN; Rounds Consulting Group, Inc.

Table 12: Cumulative 15-Year Economic Impact of Adding 239 New Jobs a Year in Apache County				
Impact Category	Direct	Indirect	Induced	Total
Jobs	2,130	587	890	3,587
Labor Income	\$775,307,500	\$233,015,400	\$332,128,000	\$1,340,450,600
Economic Output	\$1,658,286,200	\$707,870,300	\$1,028,087,500	\$3,394,244,300
Tax Revenues	\$52,628,700	\$14,536,400	\$21,158,800	\$88,323,900
State	\$43,579,900	\$12,468,400	\$18,050,300	\$74,098,600
County	\$1,898,700	\$382,800	\$583,100	\$2,864,600
Local (Non-tribal areas)	\$7,150,100	\$1,685,200	\$2,525,400	\$11,360,700

Note: May not sum due to rounding. The jobs number is the total of the jobs created by year 15, while the rest of the impacts are cumulative totals.
Source: Arizona Office of Economic Opportunity; IMPLAN; Rounds Consulting Group, Inc.

Additional Opportunities for Subregional Road Improvements

The transportation network within a community includes the major highways that allow traffic to enter and exit the broader area, smaller roads including select county and city infrastructure that allows for the distribution of goods and movement of people, and smaller “neighborhood” scale roads that provide access to specific addresses.

It will be important to identify not just opportunities for major highway improvement projects, but also for the roads that allow commerce to occur at the individual and business levels. Outreach on these subregional projects identified select opportunities for economic advancement, as well as improved safety and quality of life measures.



The following examples were identified during this review process (note: the listed numbers represent mile markers):

- Stanford (Marker 82-35):
 - Connects neighborhoods to the state highway.
 - Deficiencies include 10 miles of gravel pavement that have allowed for individuals to become stranded and is limiting economic development opportunity.
 - Preliminary cost estimates for required pavement include \$12.4M for construction and design.

- Potter Mountain (Marker 31-44):
 - Critical for regional connectivity and to Navajo County.
 - Environmental constraints may exist
 - Preliminary cost estimates for required pavement include \$6.2M for construction and design.

- Salt Lake Road (Marker 60-40):
 - Railroad/road access for utilities and mining inputs.
 - Preliminary cost estimates for required pavement include \$10.0M for construction and design.

- Concho-Snowflake Road (Marker 50-20):
 - Provides additional Apache and Navajo County connectivity.
 - Preliminary cost estimates for required pavement include \$2.4M for construction and design.

Additional Considerations – Funding with Value Capture

Investment decisions regarding transportation infrastructure are critically important. Transportation investment generates significant secondary benefits beyond simply improving travel conditions or alleviating traffic congestion. It also facilitates business retention, expansion, and attraction, increases property values, creates jobs and wages, generates tax revenues, enhances the quality of life of residents, and adds significant economic value to a region.

These benefits are well understood by local and state governments. However, infrastructure investments can be difficult to fund. The difficulty can be compounded if the organization already has limited resources, as is the case in Apache County. The County is also unique in that the management and maintenance of the roads in Apache County are shared among several organizations. These include Apache County, local municipalities, the State of Arizona, the U.S. Forest Service, various tribal jurisdictions, and the Bureau of Indian Affairs. This can complicate the process of coordinating infrastructure improvements throughout the County.

To mitigate the fiscal burden of funding infrastructure investments, many government organizations utilize one or more value capture techniques. Value capture refers to a collection of funding and financing techniques that aim to share the burden of funding transportation infrastructure more equally between governments and those who benefit the most from a new transportation investment.¹³

¹³ Value Capture: Capitalizing of the Value Created by Transportation. Page 1.



The Federal Highway Administration (FHWA) more formally defines value capture as “a set of techniques that generally take advantage of the increase in property values, new transportation-related real estate opportunities, and/or the benefits of new transportation facilities to fund infrastructure improvements.”¹⁴

Inherent to the concept of value capture is the recognition that public infrastructure, particularly transportation facilities, generate significant ancillary benefits to the regions in which they are installed. Those benefits include increases in economic activity, tax revenues, property values, and land development.

Value capture techniques, therefore, represent a suite of mechanisms for government entities to target and harness the increased economic activity and redirect it to aid in the costs associated with the infrastructure project being considered.

The FHWA has identified a total of 12 value capture techniques broken up into six categories:¹⁵

- Developer Contributions – Techniques that obtain funds from private developers to generate revenue for an infrastructure project. Impact fees and negotiated exactions are included under this category.
- Transportation Utility Fees (TUF) – TUFs are a “use fee” that generate revenue by regularly levying fees on the property owners that are estimated to use the new transportation facility the most.
- Special Taxes and Fees – Techniques that generate revenues through the imposition of taxes or fees whose revenues are used exclusively for transportation projects.
- Tax Increment Financing (TIF) – A financing mechanism that captures the incremental growth of property tax revenues within a specific area or district.
- Joint Developments – Techniques where government works collaboratively with the private sector to improve the use of land above or near an infrastructure development.
- Naming Rights – Involves an entity selling the rights to name infrastructure to a private company in exchange for financial support.

Additional research and analysis are recommended as to the feasibility of utilizing a value capture technique to aid in funding infrastructure improvements in Apache County. For context on the benefits of infrastructure improvements consider the following.

State Route 30: A Case Study on the Benefits of Transportation Infrastructure

RCG developed an economic model to estimate and quantify the expected benefits of the proposed State Route 30 (“SR-30”), a major arterial in the Phoenix metro area that will connect the South Mountain Freeway and the Loop 303 freeway.

¹⁴ Value Capture: Capitalizing on the Value Created by Transportation. Page 7.
(https://www.fhwa.dot.gov/ipd/pdfs/value_capture/value_capture_implementation_manual_2019.pdf)

¹⁵ Value Capture: Capitalizing on the Value Created by Transportation.



The SR-30 is expected to enhance the connectivity of the region by alleviating residential traffic and providing a more efficient route for commercial traffic moving to and from the area by circumventing the most congested areas of the region.

This increased efficiency will increase the productivity of business operations in the area which will create jobs, enhance population growth, and encourage commercial and residential development.

The economic model analyzes the economic growth of the area surrounding the proposed SR-30 under three different scenarios - constrained growth, moderate growth, and aggressive growth. These growth scenarios were then compared to the baseline scenario. These four scenarios are described below.

- Baseline Growth Scenario: The impacts of the study area's projected 20-year economic growth forecast are examined under current conditions and without an investment in the SR-30 freeway.
- Moderate Growth Scenario: Examines the impacts of a moderate investment in the SR-30 freeway. This level of investment improves the infrastructure in the study area enough to allow for a moderate enhancement of the projected growth that is slightly above the Baseline Scenario.
- Aggressive Growth Scenario: Examines the impacts of an aggressive investment in the SR-30. This level of investment enhances the flow of commerce and business activity throughout the region.
- Constrained Growth Scenario: This scenario examines how increased traffic volumes and congestion can negatively affect growth projections in the study area if no investment in the SR-30 is made and increasing congestion hinders the growth in the study area. The impacts of this scenario can be considered lost economic development opportunities.

Under the baseline scenario, it is anticipated that approximately 30,500 residential housing units and 142.7M square feet ("sq. ft.") of commercial space will be developed in the area over the next 20 years. The construction of the structures will create a one-time effect of 227,500 jobs leading to an extra \$32.4B in economic activity.

After year 20, the 69,100 additional workers employed in the study area will earn \$3.5B more in labor income each year compared to current employment levels. Together, the 140,100 additional residents and 69,100 workers will generate \$9.4B in additional annual economic output and produce \$600.0M more in state and local tax revenues each year, compared to current levels.

The moderate growth scenario supposes that a partial investment in the SR-30 freeway is made. Under this scenario, over the 20-year period, there will be an estimated 16,900 additional residents and 8,500 more workers in the study area, compared to the Baseline Scenario.

This level of growth will demand an additional 3,700 new residential housing units and 10.6M new sq. ft. of commercial, office, retail and industrial development to be constructed.

This additional construction activity will support 27,800 more jobs, and these workers will earn \$1.3B in additional labor income compared to the Baseline Scenario over the 20-year period. Overall, an additional \$3.9B in economic output and \$300.0M in state and local tax revenues will be generated over 20 years from the new construction activity in the moderate growth scenario vs. the baseline growth scenario.



By year 20, a partial investment in the SR-30 will generate \$400.0M more in labor income, \$1.1B more in economic output and produce \$100.0M more in tax revenues *annually* than if there was not an investment in the SR-30 freeway (i.e., the baseline growth scenario).

Under the aggressive growth scenario, a full and aggressive investment in the SR-30 freeway is made. This level of investment will further enhance the population and employment growth in the study area. As a result of the improved infrastructure, the population will increase by 25,400, and employment will increase by 16,400, compared to the baseline scenario.

To accommodate for this growth, an additional 5,500 residential housing units will be required to be developed along with 20.5M sq. ft. of commercial office, retail, and industrial real estate over the 20-year period compared to the baseline scenario.

The construction activity under the aggressive growth scenario will support 49,900 more jobs earning an extra \$2.1B in wages and benefits than what is supported under the baseline scenario. In total, the additional activity generates \$7.1B more in economic output and \$600.0M more in tax revenues over the 20-year period than the baseline scenario.

By year 20, a full and aggressive investment in the SR-30 freeway (i.e., the aggressive growth scenario) will produce 16,400 additional jobs, \$800.0M in additional labor income, \$2.2B in economic output, and \$200.0M in additional state and local tax revenues *each year*, compared to no investment made in the SR-30 freeway (i.e., the baseline scenario).

The constrained growth scenario presents an alternate perspective on how the study area may be impacted absent an investment in the SR-30 freeway. Under this scenario, population and employment growth are hindered as a result of increasing traffic congestion and inadequate infrastructure.

Over a 20-year time period, the study area's population and employment levels are projected to grow by 46,200 and 22,800 fewer people than the baseline scenario, respectively. This slower rate of growth will demand 10,100 fewer new residential housing units and 28.4M fewer sq. ft. of commercial office, retail, and industrial facilities.

The impact of this construction activity is 75,100 fewer jobs, \$3.8B less in labor income, and \$10.8B less in economic output. The lack of activity results in \$800.0M fewer tax revenues compared to the baseline scenario over the 20-year period.

By year 20, under the constrained growth scenario, a lack of investment in the SR-30 freeway will result in 22,800 fewer jobs in the study area. This also means there will be \$1.2B in lost annual labor income, \$3.1B in forgone economic output each year and \$200.0M less annual tax revenues that will be collected when compared to the baseline scenario.



Table 13: Impact of the SR-30 Freeway Compared to the Baseline Scenario

Total Development After Year 20	Moderate Growth	Aggressive Growth	Constrained Growth
Residential Units	+3,700	+5,500	-10,100
Commercial Development (sq. ft.)	+10.6M	+20.5M	-28.4M
20-Year Construction Impacts			
Jobs ¹⁾	+27,800	+49,900	-75,100
Labor Income ²⁾	+\$1.3B	+\$2.1B	-\$3.8B
Economic Output	+\$3.9B	+\$7.1B	-\$10.8B
Tax Revenues ³⁾	+\$300.0M	+\$600.0M	-\$800.0M
Annual Impacts After Year 20			
Population	+16,900	+25,400	-46,200
Jobs ¹⁾	+8,500	+16,400	-22,800
Labor Income ²⁾	+\$400.0M	+\$800.0M	-\$1.2B
Economic Output	+\$1.1B	+\$2.2B	-\$3.1B
Tax Revenues ³⁾	+\$100.0M	+\$200.0M	-\$200.0M

1) Full-time equivalent jobs.

2) Salaries and wages plus benefits.

3) Sum of state and local (county and city) tax collections.

Note: May not sum to total due to rounding.

Source: Maricopa Association of Governments; U.S. Census Bureau; CoStar; Arizona Department of Revenue; IMPLAN; Rounds Consulting Group, Inc.

The SR-30 analysis provides an example of how adequate infrastructure can impact the economic growth of an area. Similar benefits can occur, on a smaller scale, in Apache County. The most relevant aspect of the SR-30 analysis to Apache County is the constrained scenario. Consideration should be given to monitoring the traffic volumes on the major arterials for commercial traffic going in and out of the County.

An efficient and well-maintained transportation system is important to the continuous flow of goods to, from, and through Apache County. These goods translate into economic activity providing local businesses with supplies and exporting goods produced within the County to surrounding regions.

The commercial flow of goods on Apache County roadways that drive economic activity is largely concentrated along the I-40, U.S.-60, and SR-61. If the condition of these major roadways is allowed to decline, commercial traffic is likely to be hindered or use alternative routes, thus avoiding Apache County, limiting the potential for economic activity.



Conclusions and Policy Recommendations

Economic outcomes in Apache County have declined over the past decade as population growth has stagnated, job prospects remain limited, and residents lack the critical infrastructure to gain a quality education and the skills necessary to be competitive in the workforce and create small businesses in the local area. These trends, among others, have complicated the steps to improving economic outcomes and residents' quality of life.

To effectively address the challenges faced in the County, a multi-faceted approach is recommended which combines the adoption of new broadband services, an enhanced workforce development, and improved transportation infrastructure. The synergy between the areas of improvement plays a critical role in reversing declining economic trends, bolstering growth, and serving as a model for future rural development efforts.

Broadband efforts in Apache County will address the 5.0% usage rate of residents through strategic investment in new broadband infrastructure for municipalities and rural areas. A minimal broadband investment of \$10.2M in Apache County will increase the usage by 14,400 people, employment by 1,060, and tax revenues by \$3.2M at stabilized levels.

Broadband investments in Apache County play a further role in enhancing outcomes in both workforce and transportation improvements as residents have easier access to educational opportunities and workforce training efforts through remote internet programs, and the cost savings gained from the concurrent addition of broadband lines with transportation improvement projects.

Workforce enhancements in Apache County are essential to improving upon stagnating and declining economic performance. These enhancements are made by increasing educational attainment and the employment opportunities available in the County.

With the increasing popularity of online educational programs, advancing one's education has become easier than ever. By enhancing broadband access throughout the County, residents will have significantly greater opportunities to obtain additional education and skills. This will, in turn, enhance the economic activity throughout the region. For example, advancing the bachelor's degree completion rate in Apache County to reach that of the state will result in 56 more workers with a bachelor's degree being employed in the County each year.

These workers will earn higher wages and support an increase in economic activity by spending those wages throughout the local and regional economy, creating a multiplier effect. Over 10 years, the increase in the bachelor's degree completion rate will create a total of 734 jobs that will pay \$114.0M in wages and generate \$288.6M in additional economic output.

However, while the benefits of advancing education are significant, a strong economic foundation that can provide ample employment opportunities is needed to prevent the newly educated and trained workforce from leaving the County and seeking employment elsewhere.

As broadband access is expanded, an emerging element of the workforce is within reach, the remote worker. Remote work gained traction during the COVID-19 pandemic and many rural communities have targeted this group of the workforce to encourage residential growth and increase local spending. These workers will



support the existing local businesses and enhance the area’s competitive position related to business recruitment by bringing highly skilled workers to the area. As additional jobs are created, the impacts will ripple through the region.

Transportation networks also improve their efficiency as employment increases from workforce efforts demanding a greater level of goods to flow into the region. The maintenance and advancements of roadway conditions in Apache County will mitigate risks of further economic declines in the region continuing the flow of goods to, from, and through the area. A minimum of \$7.7M is required to improve roads in “poor” and “very poor” condition.

Improving the roadway conditions in Apache County will require funding through federal and state grants. As the economy grows, new funding mechanisms (i.e., value capture) may be implemented. Such techniques have proven effective in growing regions throughout Arizona to improve major transportation infrastructure and bolster economic growth. A lack of funding for the minimum required improvements pose threats to the local economy as commercial flows are diverted and spending from commercial traffic is diminished.

Together the individual broadband, workforce, and transportation initiatives require both time and capital to execute. However, these initiatives support each other and when completed concurrently, the economic benefits are magnified. These benefits are important to improving the quality of life for Apache County residents, reducing inefficiencies that cost taxpayer funds, and generating revenues that can be used for additional public benefits.

Preliminary Policy Recommendation Summary

Initial recommendations related to advancing economic development in the region include:

- If state funding is required, which will be the case with the larger transportation infrastructure projects and workforce programs, legislative outreach will be needed, and a plan will need to be developed by the end of the calendar year.
- Legislative outreach will require regional leaders to contact multiple rural lawmakers and provide them with a specific funding “ask.” Also supply them with the materials needed to defend any funding requests.
- Seek funding to allow the state’s universities to develop a rural program that improves access to higher education resources and make an argument for a pilot program to be implemented in the local region.
- Develop a marketing initiative with the objective of increasing awareness of online certification programs and educational courses; then partner with one or more of these programs to offer tuition assistance for those enrolling in select programs.
- Analyze various industries to identify which occupations will be in the highest demand in the local economy, and then target those occupations for advanced training programs.
- Develop an initial list of target industries to help with planning focus. Potentially include healthcare and environmental technology research and development, among others.



- Identify the transportation projects that will be impactful in increasing export opportunities or improving efficiency and lowering costs to local businesses.
- Develop a formal infrastructure funding request for each type of roadway improvement and a supporting prospectus related to the needed road improvements in the region. Monetize the state and local benefits to gain legislative support.