



Draft Tier 1 Environmental Impact Statement and Preliminary Section 4(f) Evaluation

Section 3.6, Economic Impacts

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1 3.6 Economic Impacts

2 A preliminary economic impact analysis was conducted to anticipate the response of the
3 regional economy to changes in demand, income, and employment as a result of the No Build
4 and Build Corridor Alternatives. The analysis included interviews with representatives of local
5 jurisdictions to determine economic landscapes, economic development plans, and potential
6 land use and community impacts. The interviews helped to inform a quantitative economic
7 impact analysis that was conducted to examine changes in economic activity and the effects on
8 the economy in the Interstate 11 (I-11) Corridor Study Area (Study Area) (see **Appendix E6**).

9 Potential changes in economic activity would be triggered by: (1) capital investment
10 expenditures and (2) efficiencies gained from transportation improvements. The analysis of
11 changes to the economy captured and combined the following three types of effects:

- 12 • **Direct effects:** Changes in economic activity as a direct consequence of the investment
13 (e.g., transportation-related construction expenditures, savings in production costs due to
14 transportation-related efficiencies, and additional residents or employment due to new
15 development)
- 16 • **Indirect effects:** Changes in economic activity related to supplier spending
- 17 • **Induced effects:** Changes in economic activity related to employee spending (by
18 employees of firms affected by the direct and indirect effects)

19 Note that the effects of additional residents or employment due to new development have not
20 been included in the analysis. The indirect and induced effects are sometimes referred to as
21 *multiplier effects*, since they can be formulated as a factor proportional to the direct effects. The
22 direct effects can be multiplied by this factor to estimate total economic impacts. The sum of the
23 direct, indirect, and induced effects represents the overall potential impact on the economy in
24 the I-11 Corridor Study Area.

25 This section presents the regulatory setting and explains the methodology, data, and results
26 from the interviews and economic analysis.

27 3.6.1 Regulatory Setting

28 Economic impact is not regulated by any state or local government. It merely measures the
29 effect that an event, policy change, or development will have on the economy within a specified
30 area by quantifying business revenue, wages, and jobs. However, development activity that
31 generates the underlying economic impact is regulated by local plans and codes, including the
32 general plans, zoning ordinances, and building codes of cities, towns, and counties along I-11.
33 These regulatory documents dictate allowable land uses and provide standards for construction,
34 which ultimately determine the potential economic impact that an activity will have on the local
35 economy.

36 Within the Study Area, there are many county, municipal, and Tribal governments. Each has its
37 own regulatory codes that affect economic development and land use goals that impact
38 transportation infrastructure. Section 3.3, Land Use and Section 6(f), provides an overview of
39 the jurisdictions' comprehensive/general plans.

1 3.6.2 Methodology

2 In-person interviews were conducted with economic development, planning, public works, and
3 management representatives of local jurisdictions within the Study Area to understand the
4 potential impact that the Build Corridor Alternatives would have on land use, community, and
5 economic development. Input was solicited on a range of topics, including current economic
6 drivers, industry targets, locations of existing and future employment centers, changes in land
7 use or economic development resulting from I-11, and the potential support that new highway
8 interchanges and other transportation improvements (e.g., accessibility) might provide to
9 industrial, retail, or service businesses (see **Appendix E6**).

10 The economic impact analysis was conducted using Arizona Department of Transportation's
11 (ADOT's) Regional Economic Models, Inc. (REMI) TranSight model (a commercial analysis tool
12 licensed to ADOT for studies such as the I-11 Draft Tier 1 Environmental Impact Statement and
13 Preliminary Section 4(f) Evaluation [EIS]). This is a widely applied economic impact analysis
14 model used to evaluate the effects of transportation investments and policies at the regional
15 level.¹ REMI TranSight is often described as a *hybrid analytical tool* because it combines
16 several economic modeling approaches: input-output analysis, econometric analysis, new
17 economic geography, and computable general equilibrium modeling. Unlike simpler input-output
18 analysis tools, such as Impact Analysis for Planning and Regional Input-Output Modeling
19 System, it is a dynamic forecasting model that accounts for changes in demographic and
20 economic conditions (e.g., changes in prices and wages) over time. The model is structured
21 around five major elements related specifically to conditions in the Study Area:

- 22 • Output and demand
- 23 • Labor and capital demand
- 24 • Population and labor supply
- 25 • Compensation, prices, and costs
- 26 • Market shares

27 Economic impacts within and between these elements are estimated using a series of equations
28 that trace the dynamic interactions among businesses and consumers across sectors of
29 Arizona's economy. Note that direct, indirect, and induced impacts are estimated in REMI. While
30 the indirect impact refers to the change in economic activity resulting from purchases by
31 suppliers to the directly impacted businesses (i.e., supply chain impact), the induced impact
32 refers to the change in economic activity resulting from spending by employees of the directly
33 and indirectly affected businesses (i.e., employee spending impact).

34 A principal indicator of the economic impact is the size of the economic multipliers (i.e., indirect
35 and induced impacts combined). In theory, a larger multiplier will generate a larger response
36 (i.e., total economic impact) to the initial change (i.e., direct effect). In reality, however, while
37 indirect and induced impacts occur with the implementation of new/improved transportation
38 infrastructure, the net impact on the total level of economic activity in an area may or may not be
39 increased by the multiplier effects. That outcome depends on the composition of businesses,
40 labor, and customers in the Study Area. Also, it depends on the extent to which additional
41 workers and capital resources are available within the Study Area or attracted from elsewhere.
42 In regions with limited economic activity, spending is likely to generate the occurrence of indirect
43 effects outside the region, causing lower impacts within the Study Area. In contrast, higher

¹ A full description of the model is available on REMI's website at remi.com/products/trans-sight.

1 multipliers would be found in larger and more economically diverse regions, which enable and
2 attract spending.²

3 The analysis was performed in relation to the overall Study Area and Corridor Options.
4 Economic effects associated with business displacement and related economic effects will be
5 addressed in Tier 2 analyses.

6 **3.6.3 Affected Environment**

7 **3.6.3.1 Economic Landscape**

8 Existing economic development plans for the international border and communities within the
9 Study Area have various goals and initiatives that support job creation and embrace
10 transportation infrastructure improvements by connecting people to employment hubs,
11 economic activity centers, and tourist attractions. The ultimate outcome of these plans and
12 infrastructure improvements is to help diversify and expand the economy by supporting existing
13 businesses, recruiting new businesses, and implementing key industry clusters. The Arizona-
14 Mexico Commission's *Arizona Border Communities Roadmap* (Arizona-Mexico Commission
15 2013) points to the need for infrastructure development, such as I-11, which would enhance
16 Arizona's global competitiveness and connectivity.

17 According to the ADOT Arizona Statewide Travel Demand Model, leading economic sectors
18 within the Study Area are agriculture, mining, and manufacturing, with projected growth in
19 construction, health services, retail, and wholesale trade. As one of the most important
20 industries driving the state's economy, tourism has an economic impact. Direct visitor statewide
21 spending on lodging, food, retail, entertainment, recreation, and transportation in 2016 was
22 \$21.2 billion (Dean Runyan Associates 2017). Many tourist attractions can be found within the
23 Study Area, including parks, recreational trails, and cultural destinations. Information on
24 recreation can be found in Section 3.4 and parks can be found in **Chapter 4** (Preliminary Draft
25 Section 4(f) Evaluation).

26 Additionally, wildlife recreation contributes to Arizona's economy. According to United States
27 Fish and Wildlife Service (USFWS) data, Arizona residents and nonresidents spent \$2.4 billion
28 on wildlife recreation in 2011 (USFWS 2011). That total includes trip-related expenditures of
29 \$897 million and equipment expenditures of \$1.1 billion. The remaining \$326 million was spent
30 on licenses, contributions, land ownership and leasing, and other items. In 2016, Arizona's
31 Governor issued an Executive Order recognizing the importance of hunting, fishing, and other
32 outdoor recreation to the state's economy (Arizona Game and Fish Department [AGFD] 2018).

33 Communities along the Build Corridor Alternatives receive hundreds of thousands of visitors
34 each year, with the majority coming from out of state. For example, a recent National Park
35 Service (NPS) study estimates that Saguaro National Park (SNP) contributed more than \$88
36 million to the Tucson economy in 2017 (Thomas et al. 2018). The same study found that SNP
37 visitors spent an estimated \$60.7 million in local gateways and that 98.8 percent of that
38 spending is from non-local visitors. Several spots along the I-11 Corridor, such as Santa Cruz

² Note that comparisons of multipliers by Study Area market size must be understood with information on the context because many different factors can lead to higher or lower values. For example, it is counter-intuitive but possible for multipliers in the same sectors to be smaller in a geographically larger Study Area. This outcome can occur, for example, if a number of related sectors are concentrated at a regional level (thus requiring fewer imports); the analysis would then reveal relatively high multipliers. But, then at a state level, for example, multipliers can be lower than in that smaller region if similar businesses that are located outside that smaller region draw primarily on labor, goods, or services from outside the state, which would lower the overall multiplier.



1 Flats and the Gila River, provide habitats that host unique species or wildlife populations and
2 attract hunters and wildlife watchers from around the globe. While visitor spending contributes to
3 the local economy, visitors also impact the performance of transportation facilities.

4 The following is a summary of each section as it relates to the economy:

- 5 • Santa Cruz and Pima counties; Nogales, Sahuarita, Tucson, and Marana municipalities; and
6 the Pascua Yaqui and the Tohono O’Odham Nation Tribes are located in the South Section.
7 The City of Tucson in Pima County has the most diverse economy within the South Section
8 as well as the largest population and employment base. Nogales, which is situated on the
9 United States (US)/Mexican border, is a major gateway into the US for produce,
10 manufactured goods, and visitors using the Mariposa and DeConcini Land Ports of Entry.
- 11 • Pinal County is an emerging employment market in the Central Section that includes the
12 cities of Casa Grande and Eloy as well as the Ak-Chin Indian Community, located adjacent
13 to the City of Maricopa. The Gila River Indian Community is located farther east. Based on
14 forecasts from the Arizona Statewide Travel Demand Model, employment growth in this area
15 is projected to be higher than areas to the north and south through 2040, with manufacturing
16 growth in the Central Section outpacing manufacturing growth in the other two sections.
- 17 • Maricopa County is located in the North Section. Although Maricopa County is home to the
18 Phoenix Metropolitan Area, the portion that falls within the Study Area is the most sparsely
19 populated and has the least employment. Affected communities within this section include
20 Goodyear, central Buckeye, and Wickenburg. Current employment is concentrated in the
21 service, health services, and leisure industries, with substantial growth projected within the
22 construction sector. Employment growth within the area, which has several large master-
23 planned communities on the horizon, is projected to be the second fastest within the Build
24 Corridor Alternatives, based on forecasts from the Arizona Statewide Travel Demand Model.

25 3.6.3.2 Industry Targets and Economic Centers

26 Firms within certain industries, like aerospace and automotive, tend to cluster within a dense
27 area. This clustering affords various advantages, such as access to a shared labor pool,
28 proximity to key suppliers and customers, and transfer of knowledge and technology within
29 industries. The Arizona Commerce Authority (2017) prepared a 5-year business plan for the
30 state in which they strategically targeted six key industries to create high-wage jobs. These
31 industries generate exports and have strong supply chains and multiplier effects that will drive
32 economic development:

- 33 • Aerospace and defense;
- 34 • Bioscience and health care;
- 35 • Business and financial services;
- 36 • Film and digital media;
- 37 • Manufacturing; and
- 38 • Technology and innovation.

39 Detailed discussions of the current and/or growth targets of the above industries within each
40 section of the Build Corridor Alternatives are presented below.

41 Industry targets for the South Section include aerospace, bioscience, manufacturing, mining,
42 transportation and logistics, and tourism. Within the South Section, existing employment centers



1 are concentrated at the international border and along I-10 and I-19 near the Tucson
2 International Airport. Large mining operations are located adjacent to I-19 near Sahuarita.

3 As noted in Section 3.3, this area contains about 14,500 acres of existing commercial, industrial,
4 mixed use, and office land uses to accommodate business. There are plans for approximately
5 12,700 additional acres to accommodate future employment uses. Existing and planned
6 economic centers within the South Section include:

- 7 • Mariposa International Commerce/Industry Park Area (Existing): Employment center,
8 industrial parks, and distribution facilities near the Mariposa Land Port of Entry, which is the
9 third largest border crossing by volume in the US.
- 10 • Sahuarita Farms (Planned): Approximately 7,000 acres of farmland. The farmland is
11 approved for a new mixed-use, master-planned community with 19,055 dwelling units and
12 5 million square feet of commercial, office, hospitality, and employment space.
- 13 • Sonoran Corridor (Proposed): Auxiliary interstate freeway that would connect I-19 with I-10
14 south of Tucson. The freeway would loop around Tucson International Airport to the south
15 and east.
- 16 • Port of Tucson (Existing): An intermodal freight facility fulfilling both domestic and
17 international shipments along I-10 and the Union Pacific Railroad Sunset Limited mainline
18 corridor east of Tucson.
- 19 • Tucson Aerospace Business Park (Planned): Located south of Tucson International Airport
20 and the proposed Sonoran Corridor, this business park will provide key infrastructure
21 improvements for existing businesses, but also will foster opportunities for new aviation and
22 defense-related uses by creating a high-tech multimodal transportation corridor.
- 23 • Ryan Airfield (Existing): Located north of State Route (SR) 86 at the Valencia Road
24 intersection, this airfield consists of 1,800 acres of commercial and industrial land.
- 25 • Marana Regional Airport (Existing): An activity center with opportunities to house
26 manufacturing and distribution facilities is planned for this general aviation airport, which has
27 a 6,900-foot runway.
- 28 • Pinal Airpark (Existing): This is a designated transportation and logistics activity center.
29 Currently, the Western Army National Guard Aviation Training Site, parachute training and
30 testing, and some aerospace companies have operations here. The long-term vision is that
31 the Pinal Airpark could be used as a cargo airport.

32 The industry targets for the Central Section include aerospace, agriculture, education,
33 manufacturing, transportation and logistics, and destination entertainment. Currently,
34 employment is concentrated in Goodyear along Maricopa County 85/Bullard Corridor and in
35 Casa Grande north and south of SR 287 and Jimmie Kerr Boulevard.

36 This area has about 2,400 acres of existing commercial, industrial, mixed-use, and office land
37 uses, and there are plans for another approximately 11,400 acres. Existing and planned
38 economic centers within the area include:

- 39 • Dreamport Village (Planned): This theme park with multiple resorts and aquatic and
40 residential land uses consists of 1,500 acres located north and south of I-8 and west of I-10.
- 41 • Attesa (Planned): This is a motorsports raceway, research and development, and
42 automotive facility on 2,500 acres south of I-8 between Montgomery and Bianca roads.



- 1 • Nikola Motor Company (Planned): The Nikola Motor Company will build a \$1 billion
2 hydrogen-electric semi-truck manufacturing operation in Coolidge, which will manufacture
3 level-5 autonomous trucks (Khairalla 2018). The company, which plans to break ground on
4 500 acres in 2019, will have 1 million square feet of manufacturing space accommodating
5 up to 2,000 employees at build-out.
- 6 • Union Pacific Railroad Red Rock Classification Yard (Planned): Union Pacific Railroad
7 proposes to build this major railyard approximately 35 miles north of Tucson to serve its
8 Sunset Limited mainline corridor. The railyard is intended to be one of the largest logistics
9 centers in the western US.
- 10 • Phoenix Mart (Under Construction): This proposed global trade center in Casa Grande
11 would be an international exposition center similar to the Merchandise Mart in Chicago, and
12 it also would accommodate mixed-use development.
- 13 • Harrah's Ak Chin Casino and Resort (Existing): An entertainment center anchored with a
14 casino and hotel, this development is located west of SR 347 and south of Farrell Road.
15 Uses include gaming, dining, retail, a movie theater, and a bowling alley. The Southern
16 Dunes Golf Club is located nearby.
- 17 • Estrella, formerly Estrella Mountain Ranch (Existing): This 20,000-acre master-planned
18 community 17 miles west of downtown Phoenix, just south of I-10 and the Gila River is
19 located along the proposed SR 303L extension. Estrella has 5,000 dwelling units and is
20 currently approximately 10 percent built out. It will ultimately include three major mixed-use
21 activity centers and more than 50,000 dwelling units.

22 Industry targets for the North Section include aviation and aerospace, advanced manufacturing,
23 transportation and logistics, health services, and higher education. Much of the land in this area
24 is currently vacant or low-density residential along the various Corridor Options (S, U, and X).
25 There are no existing acres of industrial, commercial, mixed use, or office land uses. However,
26 according to planning documents, approximately 5,100 acres of employment-generating land
27 uses are proposed. Existing and planned economic centers within this area include:

- 28 • Buckeye Industrial Corridor (Existing): This corridor consists of more than 16 square miles of
29 industrial and business park property that supports both domestic and international
30 business.
- 31 • Belmont (Planned): This proposed 24,800-acre master-planned community would have
32 approximately 72,800 dwelling units and 2,100 acres for commercial and employment use.
- 33 • Douglas Ranch (Planned): This proposed 33,800-acre master-planned community, which is
34 approximately 14 miles north of I-10 in Buckeye, would have more than 104,000 dwelling
35 units and 55 million square feet of business and commercial use proposed.
- 36 • Forepaugh Industrial Rail Park (Existing): This 76-acre industrial park in the Town of
37 Wickenburg is planned for expansion to more than 700 acres, with rail and highway access
38 for light and heavy industrial uses.



1 **3.6.4 Environmental Consequences**

2 The economic impact analysis considers two types of impacts:

- 3 • Short-term impacts resulting from construction-related expenditures, including right-of-way,
4 during the I-11 development phase; and
- 5 • Long-term impacts resulting from production cost savings (from travel time savings and
6 vehicle operating cost savings accruing to users of the roadway network), amenity benefits
7 (from reduced emissions), and consumption reallocation (from reduced fuel expenditures)
8 during the I-11 operational phase.

9 The economic impact analysis qualitatively considers the impact on outdoor and wildlife-related
10 recreation and national parks, such as SNP. The Build Corridor Alternatives may have positive
11 or negative effects on these resources. For example, the Build Corridor Alternatives may open
12 access and make it easier for more people to visit the region and its parks. Alternatively, it could
13 deter park visits and economic contributions from outdoor enthusiasts by reducing the rural
14 character of the parks or diminishing the visitor experience of the parks.

15 As described earlier, ecotourism is an important part of the Arizona economy and the counties
16 along I-11. For example, Southwick Associates estimates that watchable wildlife recreation
17 contributed more than \$1.0 billion to the economies of Maricopa, Pinal, and Pima counties in
18 2011 (Southwick Associates Inc. 2013). I-11 has the potential to provide better access and
19 opportunities for appropriate gateway services, such as lodging, that enhance ecotourism.
20 Carefully planned, I-11 can help further the growth of outdoor tourism as an anchor of the local
21 economy.

22 The construction costs are based on current conceptual or planning level estimates. For the
23 purpose of the economic impact analysis, construction is assumed to start in 2020 and end in
24 2024, and benefits are estimated over a 20-year period from 2025 to 2044. Separate tables for
25 each time period show the short-term economic impacts of the construction expenditures (2020
26 to 2024) and the long-term economic impacts (2025 to 2044). The short-term impacts are
27 temporary and reflect the size of the construction expenditures, while the long-term impacts
28 capture changes to the transportation network. The overall analysis period was chosen to
29 provide a common comparison across alternatives and avoid extending the economic impacts
30 beyond a reasonable forecasting period.

31 Note that the sum of direct, indirect, and induced impacts (i.e., the total economic impact) is
32 reported in the following sections.

33 **3.6.4.1 No Build Alternative**

34 Under the No Build Alternative, the I-11 facility would not be built. **Table 3.6-1** (No Build
35 Economic Data by County, 2020 and 2044) provides a snapshot of the economy under the No
36 Build Alternative, using baseline forecasts from REMI. Estimates of gross regional product
37 (GRP), personal income, and employment in the start year (2020) and the end year (2044) of
38 the analysis are provided for the five counties (Maricopa, Pima, Pinal, Santa Cruz, and Yavapai)
39 included within the Study Area. Note that REMI defines employment as the number of full-time
40 and part-time jobs.

Table 3.6-1 No Build Economic Data by County, 2020 and 2044

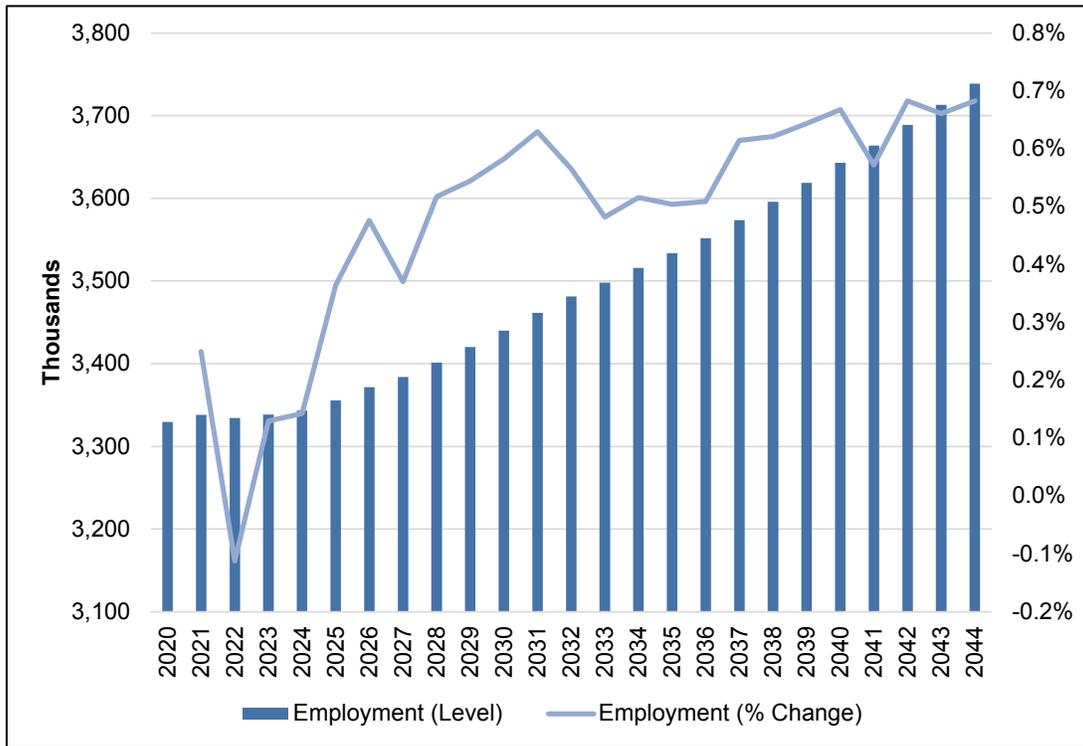
County	Year	GRP (Billions of 2016 Dollars)	Personal Income (Billions of 2016 Dollars)	Employment (Thousands of Jobs)
Yavapai	2020	\$6.9	\$8.9	100.2
	2044	\$10.4	\$13.6	105.5
	% Change	51%	53%	5%
Maricopa	2020	\$251.6	\$213.9	2,590.7
	2044	\$419.9	\$360.4	2,952.0
	% Change	67%	69%	14%
Pinal	2020	\$7.2	\$13.5	96.6
	2044	\$11.6	\$26.2	111.9
	% Change	61%	94%	16%
Pima	2020	\$45.5	\$44.4	520.9
	2044	\$68.0	\$67.7	547.4
	% Change	50%	53%	5%
Santa Cruz	2020	\$1.7	\$1.7	21.4
	2044	\$2.6	\$2.4	21.8
	% Change	53%	41%	2%

SOURCE: REMI 2017.

- 1 As shown in **Table 3.6-1** (No Build Economic Data by County, 2020 and 2044), Maricopa
- 2 County is, and will remain, the largest economy in the Study Area. Its GRP is expected to
- 3 increase by 67 percent, the most of any county, over the analysis period. As a result, Maricopa
- 4 County's share of GRP for the Study Area will increase from 80 percent to 82 percent.
- 5 Employment also is projected to grow to nearly 3 million.

- 6 **Figure 3.6-1** (Baseline Employment in Study Area, 2020-2044) shows that total employment in
- 7 the Study Area is expected to increase by 12 percent from 2020 to 2044 (or 0.48 percent per
- 8 year on average). Overall, the Study Area's economy is expected to add more than
- 9 400,000 jobs.

- 10 The next sections show the economic impact of each of the three Build Corridor Alternatives.
- 11 These impacts are shown as the net change from the No Build (or baseline) forecast.



SOURCE: REMI 2017

Figure 3.6-1 Baseline Employment in Study Area, 2020-2044

1 **3.6.4.2 Purple Alternative**

2 Of the three Build Corridor Alternatives, the Purple Alternative will generate the largest
 3 economic impacts. The \$12.7 billion increase in GRP under the Purple Alternative is more than
 4 double the impact of the Orange Alternative, primarily due to initial construction costs, and this
 5 increase also is \$1.0 billion more than the impact of the Green Alternative. Similarly, the Purple
 6 Alternative’s impact on personal income (\$11.1 billion) is expected to be more than twice the
 7 impact of the Orange Alternative and \$1.1 billion greater than the impact under the Green
 8 Alternative. The employment impact in the Study Area is estimated at 138,200 job-years over
 9 the analysis period (2020-2044).

10 The Purple Alternative will positively impact the regional economy over the course of the
 11 analysis period (2020-2044). The economic impact will be the largest during the development
 12 phase (2020-2024). Construction expenditures during this phase will add \$8.9 billion to GRP,
 13 \$5.7 billion to personal income, and 106,400 job-years. **Table 3.6-2** (Net Economic Impact,
 14 2020-2024 – Purple Alternative) summarizes the economic impacts of the Purple Alternative
 15 during the development phase.

Table 3.6-2 Net Economic Impact, 2020-2024 – Purple Alternative

Impact Metrics	Purple Alternative
GRP (Billions of 2016 Dollars)	\$8.9
Personal Income (Billions of 2016 Dollars)	\$5.7
Employment (Thousands of Job-Years)	106.4

NOTE: Estimates show the net difference between the Purple Alternative and the No Build Alternative. A job-year is simply defined as one (part- or full-time) job for 1 year.

1 Although some construction-related impacts will persist into later years, the economic impacts
 2 for the remainder of the analysis period, 2025-2044, will be attributed to transportation
 3 efficiencies. These impacts are expected to be smaller than those during the development
 4 phase. This is normally the case for highway projects of this magnitude. However, unlike
 5 construction-related impacts that are short-lived (temporary), impacts attributed to transportation
 6 efficiencies reoccur annually (permanent) and will continue to accrue beyond 2044, the end year
 7 of the analysis. The impact associated with transportation efficiencies under the Purple
 8 Alternative will result in the addition of \$3.7 billion to GRP, \$5.4 billion to personal income, and
 9 31,800 job-years, as shown in **Table 3.6-3** (Net Economic Impact, 2025-2044 – Purple
 10 Alternative).

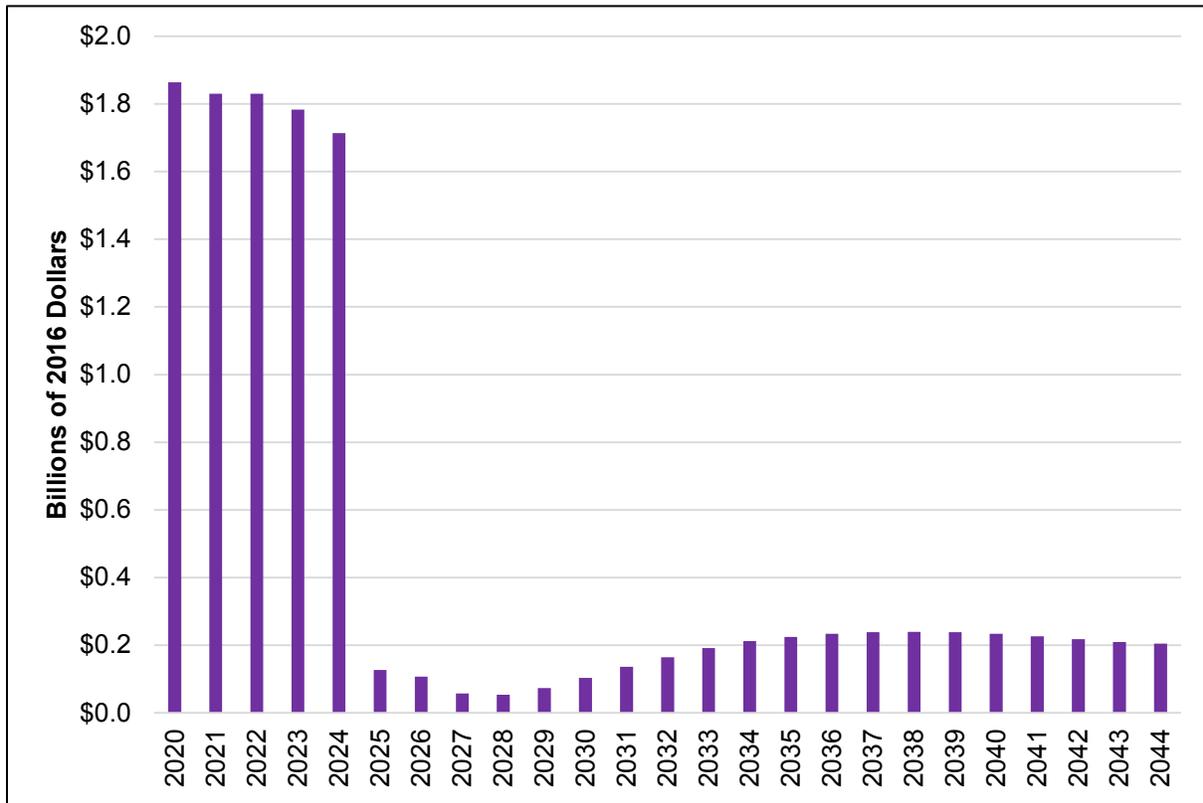
Table 3.6-3 Net Economic Impact, 2025-2044 – Purple Alternative

Impact Metrics	Purple Alternative
GRP (Billions of 2016 Dollars)	\$3.7
Personal Income (Billions of 2016 Dollars)	\$5.4
Employment (Thousands of Job-Years)	31.8

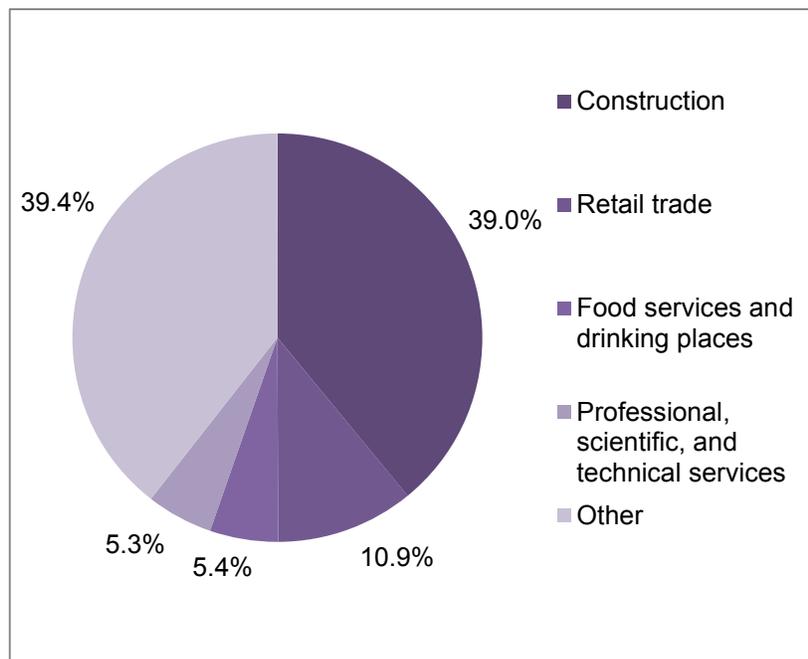
NOTE: Estimates show the net difference between the Purple Alternative and the No Build Alternative. A job-year is simply defined as one (part- or full-time) job for 1 year.

11 The GRP impact under the Purple Alternative will be larger during the first 5 years of the
 12 analysis period when construction occurs. After the construction period, the GRP impact will
 13 decrease to an average of \$173 million per year from 2025 to 2044. **Figure 3.6-2** (Net GRP
 14 Impact, 2020-2044 [Billions of 2016 Dollars] – Purple Alternative) shows the annual change in
 15 GRP under the Purple Alternative.

16 Overall, the Purple Alternative is expected to generate more than 138,000 job-years from 2020
 17 to 2044. The industries with the largest employment impact are expected to be construction;
 18 retail trade; food services and drinking places; and professional, scientific, and technical
 19 services (**Figure 3.6-3** [Employment Impact by Industry, 2020-2044 – Purple Alternative]).
 20 These four industries combined represent more than 60 percent of all jobs created in the Study
 21 Area during the analysis period. These results are consistent across all three Build Corridor
 22 Alternatives.



**Figure 3.6-2 Net GRP Impact, 2020-2044
(Billions of 2016 Dollars) – Purple Alternative**



**Figure 3.6-3 Employment Impact by Industry, 2020-2044 –
Purple Alternative**



1 The employment impact is summarized below by county:

- 2 • **Maricopa County:** Expected to have the largest increase in employment (105,000 job-
- 3 years) compared with the other counties, representing approximately three-quarters of the
- 4 total employment impact in the Study Area under the Purple Alternative.
- 5 • **Pima County:** Employment impact is estimated at 21,700 job-years from 2020 through
- 6 2044.
- 7 • **Pinal County:** Employment impact is estimated at 6,800 job-years from 2020 through 2044,
- 8 representing approximately 5 percent of the total employment impact in the Study Area
- 9 under the Purple Alternative.
- 10 • **Santa Cruz County:** Likely to have a small employment impact of 800 job-years from 2020
- 11 to 2044.
- 12 • **Yavapai County:** Employment impact is expected to result in 4,000 job-years added from
- 13 2020 to 2044.

14 **3.6.4.3 Green Alternative**

15 As is the case with the Purple Alternative, the economic impact due to construction
16 expenditures will be larger than the economic impact due to transportation efficiencies. During
17 the development phase, construction expenditures are expected to contribute a cumulative
18 \$8.7 billion to GRP or a cumulative \$5.6 billion to personal income in the Study Area. In
19 addition, the Green Alternative will generate more than 104,000 job-years (or nearly 21,000 jobs
20 per year) during the development phase. **Table 3.6-4** (Net Economic Impact, 2020-2024 –
21 Green Alternative) summarizes the economic impacts of the Green Alternative during the
22 development phase.

Table 3.6-4 Net Economic Impact, 2020-2024 – Green Alternative

Impact Metrics	Green Alternative
GRP (Billions of 2016 Dollars)	\$8.7
Personal Income (Billions of 2016 Dollars)	\$5.6
Employment (Thousands of Job-Years)	104.5

NOTE: Estimates show the net difference between the Green Alternative and the No Build Alternative. A job-year is simply defined as one (part- or full-time) job for 1 year.

23 During the remainder of the analysis period (2025-2044), economic impacts due to
24 transportation efficiencies are expected to be significantly smaller. Transportation efficiencies
25 are expected to generate \$2.9 billion in GRP or \$4.4 billion in personal income through 2044.
26 Note that the personal income impact is expected to be larger than the GRP impact because it
27 accounts for the net decrease in consumer spending from fuel cost savings. The Green
28 Alternative also is expected to generate nearly 26,000 job-years (or 5,000 jobs per year) during
29 the operational phase. **Table 3.6-5** (Net Economic Impact, 2025-2044 – Green Alternative)
30 summarizes the economic impacts of the Green Alternative during the operational phase.



Table 3.6-5 Net Economic Impact, 2025-2044 – Green Alternative

Impact Metrics	Green Alternative
GRP (Billions of 2016 Dollars)	\$2.9
Personal Income (Billions of 2016 Dollars)	\$4.4
Employment (Thousands of Job-Years)	25.9

NOTE: Estimates show the net difference between the Green Alternative and the No Build Alternative. A job-year is simply defined as one (part- or full-time) job for 1 year.

1 Overall, the Green Alternative is expected to contribute \$11.7 billion to the GRP or \$10.0 billion
 2 to personal income, and generate more than 130,000 job-years from 2020 to 2044. **Figure 3.6-4**
 3 (Net GRP Impact, 2020-2044 [Billions of 2016 Dollars] – Green Alternative) shows the change
 4 in GRP under the Green Alternative on an annual basis. As with the Purple Alternative, the
 5 economic impact due to construction during the first 5 years is expected to be larger than the
 6 economic impact due to transportation efficiencies. After the construction period, the GRP
 7 impact will decrease to \$147 million annually from 2025 to 2044 under the Green Alternative.

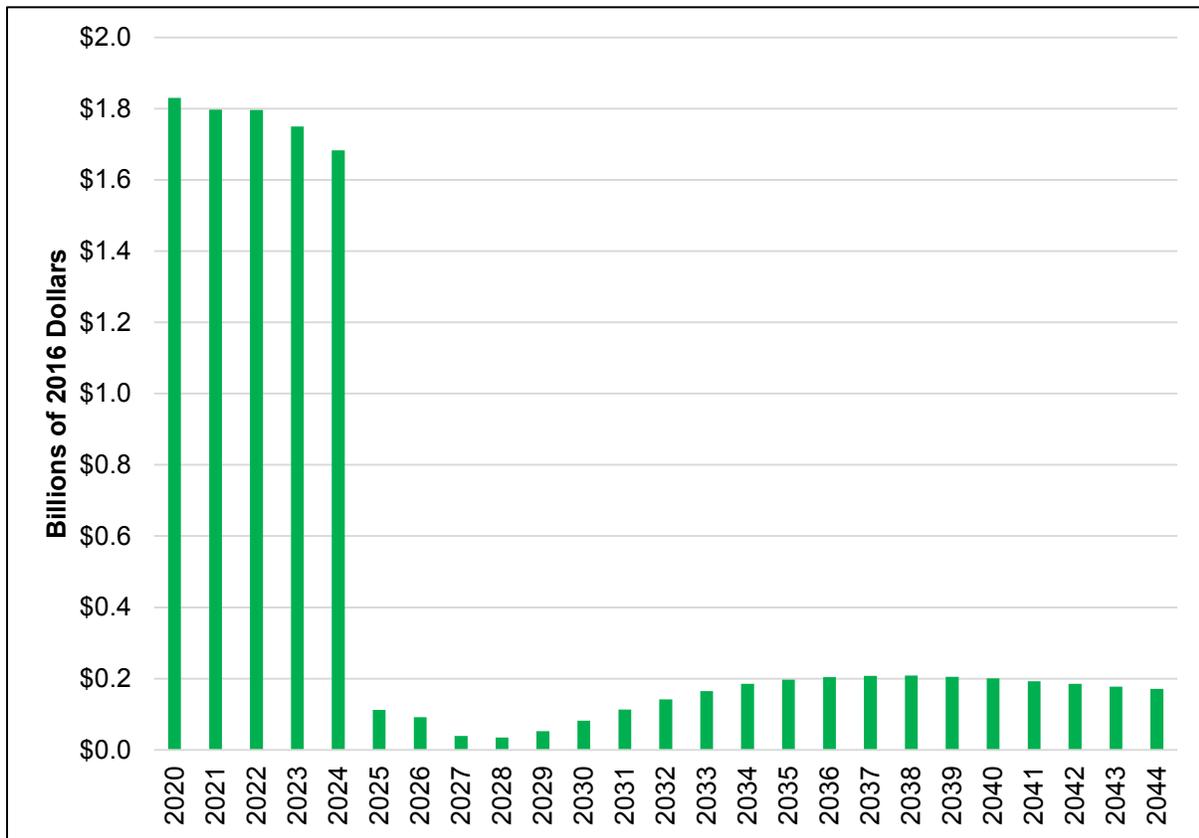


Figure 3.6-4 Net GRP Impact, 2020-2044 (Billions of 2016 Dollars) – Green Alternative

1 The industries with the largest employment impact are expected to be construction; retail trade;
 2 food services and drinking places; and professional, scientific, and technical services, as shown
 3 on **Figure 3.6-5** (Employment Impact by Industry, 2020-2044 – Green Alternative). These four
 4 industries combined represent more than 60 percent of all jobs created in the Study Area over
 5 the analysis period.

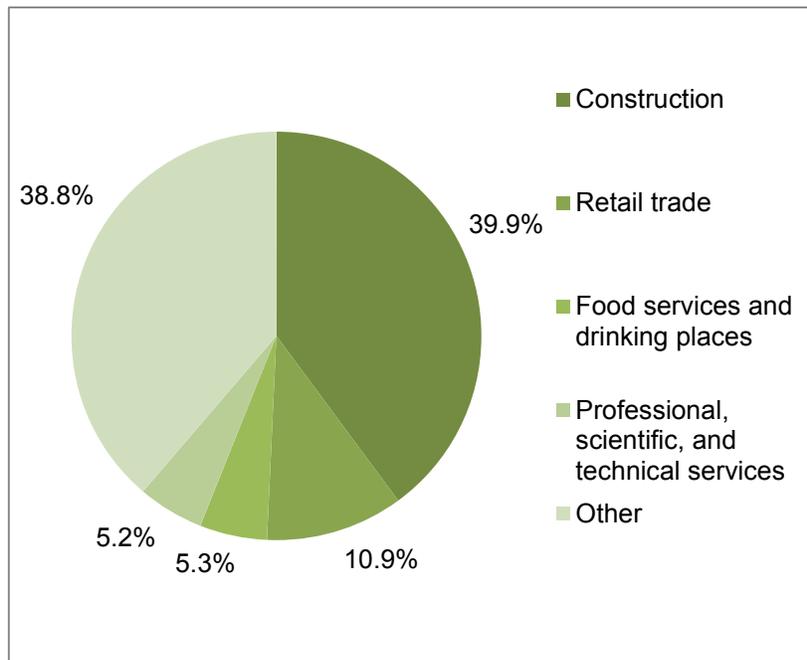


Figure 3.6-5 Employment Impact by Industry, 2020-2044 – Green Alternative

- 6 The employment impact under the Green Alternative is summarized below by county:
- 7 • **Maricopa County:** This county is expected to experience the vast majority of economic
 8 impacts. The cumulative employment impact over the analysis period (2020-2044) is
 9 estimated at 98.9 thousand job-years (or 76 percent of the total employment impact) under
 10 the Green Alternative.
 - 11 • **Pima County:** This county will experience the second largest employment impact, with
 12 20,700 job-years (or 16 percent of the total employment impact) from 2020 to 2044.
 - 13 • **Pinal County:** The employment impact in this county is expected to be relatively smaller,
 14 with just 6,400 job-years generated over the analysis period. Pinal County is expected to be
 15 an emerging economy in the Study Area, one with strong employment growth opportunities.
 - 16 • **Santa Cruz County:** This county, which is the smallest in Arizona, is expected to
 17 experience significantly smaller economic impacts, which are estimated at only 700 job-
 18 years from 2020 to 2044.
 - 19 • **Yavapai County:** This county is expected to experience relatively smaller economic impacts
 20 and the cumulative employment impact is estimated at 3,700 job-years.

1 **3.6.4.4 Orange Alternative**

2 The Orange Alternative will result in the smallest economic impact of the three alternatives. It is
3 expected to add \$5.7 billion to GRP (about two-thirds of the dollar impact under the Green
4 Alternative), \$4.8 billion to personal income, and more than 62,000 job-years in the Study Area
5 over the analysis period.

6 As with the Purple and Green Alternatives, the majority of the economic impact under the
7 Orange Alternative is expected to be due to construction expenditures during the years 2020-
8 2024. **Table 3.6-6** (Net Economic Impact, 2020-2024 – Orange Alternative), which summarizes
9 the economic impact under the Orange Alternative, shows that the contributions to GRP and
10 personal income are estimated at \$3.9 billion and \$2.5 billion, respectively. Construction
11 expenditures also are expected to generate 46,800 job-years under the Orange Alternative.

Table 3.6-6 Net Economic Impact, 2020-2024 – Orange Alternative

Impact Metrics	Orange Alternative
GRP (Billions of 2016 Dollars)	\$3.9
Personal Income (Billions of 2016 Dollars)	\$2.5
Employment (Thousands of Job-Years)	46.8

NOTE: Estimates show the net difference between the Orange Alternative and the No Build Alternative. A job-year is simply defined as one (part- or full-time) job for 1 year.

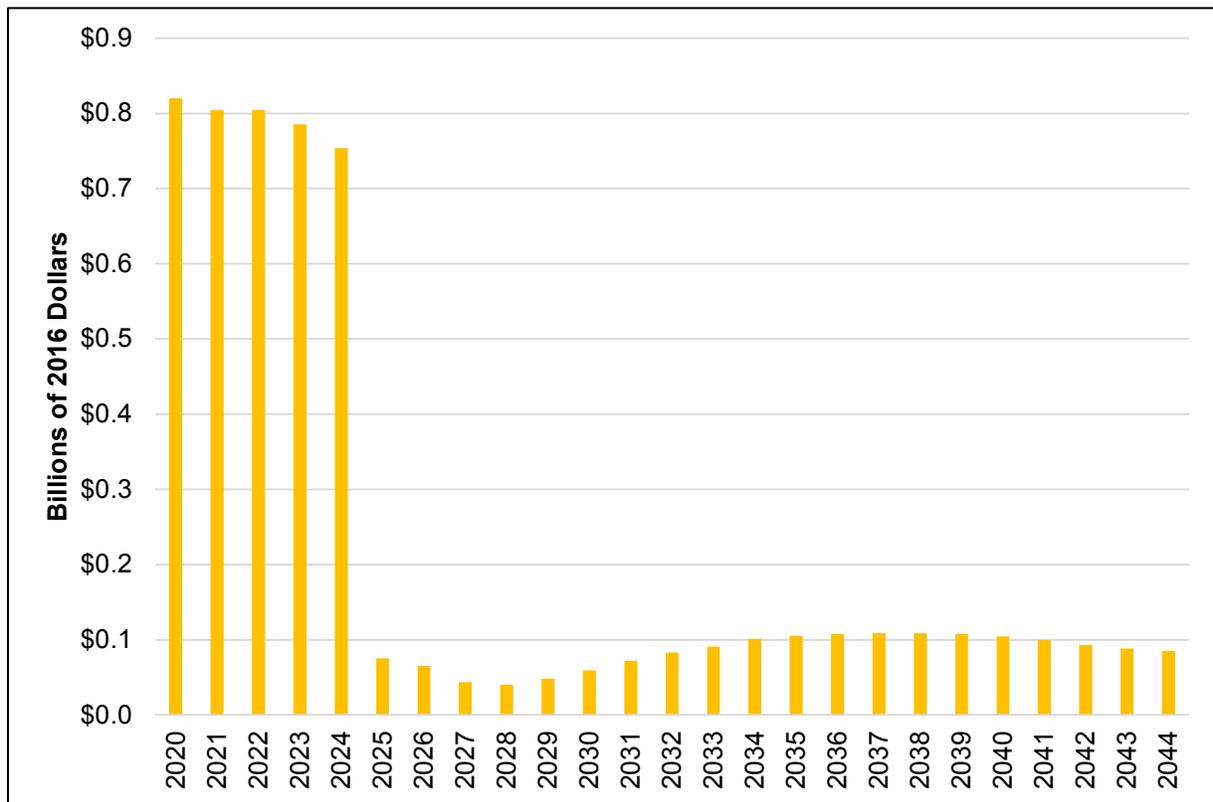
12 The economic impact associated with transportation efficiencies in the remainder of the analysis
13 period is much less for GRP and employment, but is comparable for personal income. It is
14 expected that GRP will increase by \$1.8 billion and employment by 15,400 job-years from 2025
15 through 2044. The impact to personal income is estimated at \$2.3 billion, as shown in
16 **Table 3.6-7** (Net Economic Impact, 2025-2044 – Orange Alternative).

Table 3.6-7 Net Economic Impact, 2025-2044 – Orange Alternative

Impact Metrics	Orange Alternative
GRP (Billions of 2016 Dollars)	\$1.8
Personal income (Billions of 2016 Dollars)	\$2.3
Employment (Thousands of Job-Years)	15.4

NOTE: Estimates show the net difference between the Orange Alternative and the No Build Alternative. A job-year is simply defined as one (part- or full-time) job for 1 year.

17 The GRP impact under the Orange Alternative will follow a trend that is similar to that of the
18 Green Alternative. The impact is expected to be large during construction in the first 5 years, but
19 is expected to decrease significantly to an annual economic impact of \$84 million from 2025 to
20 2044. **Figure 3.6-6** (Net GRP Impact, 2020-2044 [Billions of 2016 Dollars] – Orange Alternative)
21 shows the GRP impact under the Orange Alternative on an annual basis.



**Figure 3.6-6 Net GRP Impact, 2020-2044
(Billions of 2016 Dollars) – Orange Alternative**

1 Overall, the Orange Alternative is expected to generate more than 62,000 job-years from 2020
 2 to 2044. Construction, retail trade, food services and drinking places, and professional,
 3 scientific, and technical services are expected to be the industries with the largest employment
 4 impact, as shown on **Figure 3.6-7** (Employment Impact by Industry, 2020-2044 – Orange
 5 Alternative). These four industries combined represent about 60 percent of all jobs created in
 6 the Study Area over the analysis period.

7 The employment impact under the Orange Alternative is summarized below by county:

- 8 • **Maricopa County:** As with the Green Alternative, Maricopa County is expected to
 9 experience the largest employment impact, with 47,300 job-years expected to be created
 10 over the analysis period. Maricopa County accounts for more than 75 percent of the total
 11 employment impact in the Study Area under the Orange Alternative.
- 12 • **Pima County:** The employment impact is estimated at 9,800 job-years over the period
 13 2020-2044.
- 14 • **Pinal County:** Employment is expected to increase by 3,000 job-years as a result of
 15 construction expenditures and transportation efficiencies.
- 16 • **Santa Cruz County:** This county is expected to experience the smallest employment impact
 17 in the Study Area, with just 400 job-years created.
- 18 • **Yavapai County:** The cumulative employment impact is estimated at 1,800 job-years.

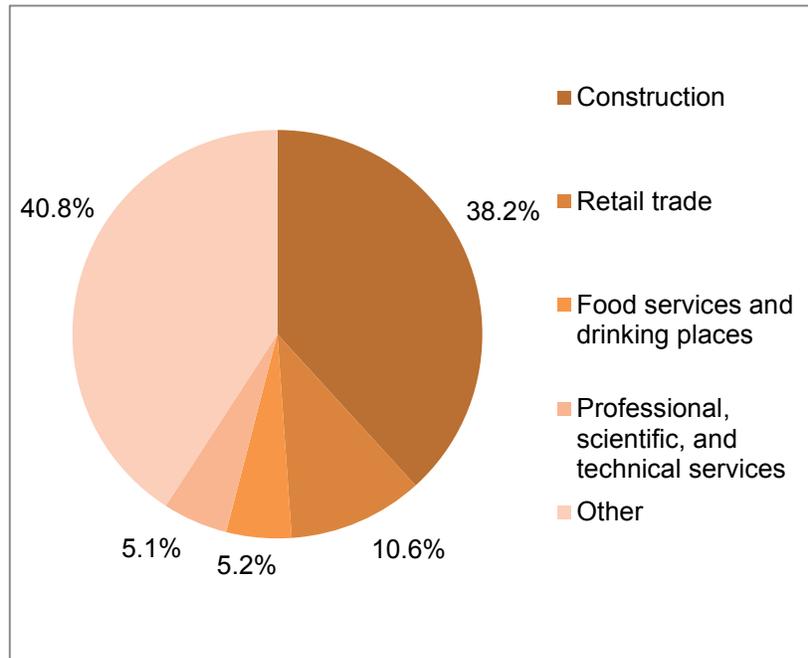


Figure 3.6-7 Employment Impact by Industry, 2020-2044 – Orange Alternative

1 **3.6.4.5 Summary**

2 **Table 3.6-8** (Summary of Potential Impacts to Economic Indicators) summarizes the economic
 3 analysis results for the three Build Corridor Alternatives. The table shows the net change from
 4 the No Build Alternative (or baseline) for each alternative.

5 The Build Corridor Alternatives may have positive or negative effects on ecotourism. For
 6 example, the Build Corridor Alternatives may open access and facilitate more people visiting
 7 parks and other outdoor recreation destinations. Then again, the alternatives could deter park
 8 visits and economic contributions from outdoor enthusiasts by reducing the rural character of
 9 parks or diminishing the visitor experience. I-11 has the potential to provide better access and
 10 opportunities for appropriate gateway services, such as lodging, that enhance ecotourism. The
 11 Build Corridor Alternatives can help further the growth of outdoor tourism as an anchor of the
 12 local economy.



Table 3.6-8 Summary of Potential Impacts to Economic Indicators

	Corridor Alternatives			
	No Build*	Purple	Green	Orange
GRP (\$ Billions)	N/A	\$8.9	\$8.7	\$3.9
Personal Income (\$ Billions)	N/A	\$5.7	\$5.6	\$2.5
Employment (Thousands of Job-Years)	N/A	106.4	104.5	46.8
GRP (\$ Billions)	N/A	\$3.7	\$2.9	\$1.8
Personal Income (\$ Billions)	N/A	\$5.4	\$4.4	\$2.3
Employment (Thousands of Job-Years)	N/A	31.8	25.9	15.4
GRP(\$ Billions)	N/A	\$12.7	\$11.7	\$5.7
Personal Income (\$ Billions)	N/A	\$11.1	\$10.0	\$4.8
Employment (Thousands of Job-Years)	N/A	138.2	130.4	62.3
Construction	N/A	39.0%	39.9%	38.2%
Retail Trade	N/A	10.9%	10.9%	10.6%
Food Services and Drinking Places	N/A	5.4%	5.3%	5.2%
Professional, Scientific, and Technical Services	N/A	5.3%	5.2%	5.1%
Yavapai County (Thousands of Job-Years)	N/A	4.0	3.7	1.8
Maricopa County (Thousands of Job-Years)	N/A	105.0	98.9	47.3
Pinal County (Thousands of Job-Years)	N/A	6.8	6.4	3.0
Pima County (Thousands of Job-Years)	N/A	21.7	20.7	9.8
Santa Cruz County (Thousands of Job-Years)	N/A	0.8	0.7	0.4

* The No Build is marked as N/A (not applicable) because the estimates show the estimated difference between the Build Corridor Alternatives and the No Build Alternative. The current economic growth trends would be expected to continue under the No Build Alternative.



1 **Table 3.6-9** (Indirect and Cumulative Economic Effects) summarizes the indirect economic
2 effects and cumulative economic effects for the No Build and the three Build Corridor
3 Alternatives. Note that the economic effects are the same for the Purple, Green, and Orange
4 Alternatives.

5 **3.6.5 Potential Mitigation Strategies**

6 I-11 is intended to mitigate transportation needs and issues while supporting improved regional
7 mobility for people, goods, and homeland security. Economic development organizations and
8 governmental agencies would be able to employ a variety of tactics to bolster economic
9 development by leveraging I-11. These strategies could include:

- 10 • Revising county comprehensive and municipal general plans, zoning ordinances, and
11 capital improvement programs to support the corridor;
- 12 • Reducing the risk of uncoordinated development and uncertainty by determining the location
13 of the corridor;
- 14 • Adopting financing tools and strategies targeted to increase investment and job creation
15 along the corridor;
- 16 • Implementing business attraction strategies and efforts to target desirable economic sector
17 development along the corridor;
- 18 • Preparing for and funding infrastructure improvements to planned industrial and business
19 parks along the corridor;
- 20 • Ensuring the presence of workforce housing by adopting plans and policies to preserve and
21 increase affordable housing in the region;
- 22 • Adopting zoning strategies that support and encourage recreation compatibility and wildlife
23 connectivity to support the mitigation in the Tier 1 Record of Decision; and
- 24 • Strategically locating traffic interchanges to provide good transportation access and
25 sufficient distance from environmentally sensitive destinations.

26 **3.6.6 Future Tier 2 Analysis**

27 A future Tier 2 assessment would address the spacing and number of existing and future
28 system interchanges along the transportation corridor. Use of an updated travel demand model
29 delineating population and employment projections combined with an assessment of
30 planned/entitled private developments would help determine the locations most suitable for
31 ensuring transportation system safety and mobility. More detailed information on the alignment
32 during the Tier 2 assessment would enable further analysis of impacts related to businesses,
33 including loss of access. The Tier 2 EIS also can take advantage of the recently released
34 Outdoor Recreation Satellite Accounts. These new satellite accounts developed by the Bureau
35 of Economic Analysis would facilitate the translation of data gathered through tracker surveys
36 into impacts on outdoor recreation and the overall regional economy. The surveys could collect
37 information on visitor spending, on attractions that generate tourist visits, and on how the I-11
38 alternatives might affect tourists' decisions.

Table 3.6-9 Indirect and Cumulative Economic Effects

Resource	No Build Alternative	Purple Alternative	Green Alternative	Orange Alternative
Economic Effects				
Indirect Effects	<p>Programmed transportation improvements plus projected population and employment growth could:</p> <ul style="list-style-type: none"> Result in high levels of congestion in the I-10 and I-19 corridors that would hinder business growth. 	<p>Land development induced by I-11 could:</p> <ul style="list-style-type: none"> Improve access to existing employment centers (and tourist attractions), thereby promoting their growth. Attract new businesses to the corridor, thereby providing new employment opportunities. Generate large travel-time savings for both passenger car and truck drivers. Increase business productivity by lowering shipping and logistic costs. Cause adverse effects to existing businesses in the corridor during construction (i.e., commercial displacements and limited access to businesses). Decrease property tax revenues from land acquired for right-of-way. Provide better access, resulting in greater use of parks and outdoor recreation areas as well as opportunities for appropriate gateway services to support ecotourism, such as lodging. 	<p>Similar to the Purple Alternative.</p>	<p>Similar to the Purple Alternative.</p>

Table 3.6-9 Indirect and Cumulative Economic Effects (Continued)

Resource	No Build Alternative	Purple Alternative	Green Alternative	Orange Alternative
Economic Effects				
		<ul style="list-style-type: none"> Diminish user experiences in parks and outdoor recreation areas by drawing additional visitors and reducing hunting, fishing, and bird-watching opportunities. 		
Cumulative Effects	Past, present, and reasonably foreseeable projects could: <ul style="list-style-type: none"> Lead to incremental economic losses and fewer economic opportunities due to increased levels of congestion. 	Past, present, and reasonably foreseeable projects could: <ul style="list-style-type: none"> Stimulate economic growth in Arizona by means of the economic multiplier (i.e., the increase in supplier spending and employee spending across all sectors of the economy). 	Similar to the Purple Alternative.	Similar to the Purple Alternative.



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