

ARIZONA HIGHWAY USER REVENUE FUND
Forecasting Process & Results
FY 2019-2028



Financial Management Services
September 2018

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ARIZONA HIGHWAY USER REVENUE FUND OFFICIAL FORECAST UPDATE RISK ANALYSIS OF EXPECTED VALUES

Introduction

This document presents the forecast of expected values for the Arizona Highway User Revenue Fund for the period FY 2019-2028, as prepared by the Arizona Department of Transportation.

Background

The State of Arizona taxes motor fuels and collects a variety of fees relating to the registration and operation of motor vehicles in the state. These collections include gasoline and use fuel taxes, motor carrier fees, vehicle license taxes, motor vehicle registration fees and other miscellaneous fees. These revenues are deposited in the Arizona Highway User Revenue Fund (HURF) and are then distributed to the cities, towns and counties of the State and to the State Highway Fund, which is administered by the Department. These taxes and fees represent a source of revenues available to the state for highway related expenses.

Since 1986, the Department has estimated highway user revenues using a comprehensive regression-based econometric model. In 1989, the model was updated by Dr. Alberta Charney of the University of Arizona. The model relied on the estimates of certain “independent variables” to predict future tax revenues. Any variability between estimated and actual values could lead to variances in the tax forecast. In order to deal with this variability, the Department introduced the Risk Analysis Process (RAP) in 1992. The RAP relies upon probability analysis and the independent evaluation of the model’s variables by an expert panel of economists. This results in a series of forecasts with specified probabilities of occurrence, rather than a single or “best guess” estimate.

In 1997, Hickling Lewis Brod Inc. (HLB), working in conjunction with Dr. Dennis Hoffman of Arizona State University, developed a new forecasting model to incorporate certain economic data generated over the past ten years and evaluate the inclusion of independent variables absent from the 1989 model, to enhance the model’s forecasting accuracy. The new model also took into consideration 1997 legislation which eliminated the weight distance tax on motor carriers, increased weight and use fees for use class vehicles, and changed the point of taxation on fuel.

In September 2000 and 2003, HLB reviewed the model and updated the equations. The independent variables contained in the model in 2003 included Arizona Real Income Growth Per Capita, Population Growth, Wage & Salary Employment Growth and Fleet Fuel Efficiency.

In 2005, HDR\HLB developed a new forecasting model to incorporate additional economic data that would enhance the model's forecasting accuracy. The Arizona Real Gross Domestic Product Growth independent variable was added to the model to incorporate the impact of the Arizona economy on the commercial registration activities.

In September 2008, HDR\HLB reviewed the forecasting model and added the Arizona Real Gas Price Growth independent variable to improve the model's forecasting accuracy for changes in Arizona gasoline consumption. In September 2009, HDR\HLB reviewed the forecasting model and added the West Coast No. 2 Real Diesel Price Growth independent variable to improve the model's forecasting accuracy for changes in Arizona use fuel (diesel) consumption.

In September 2011, the income, gross domestic product, gas price and diesel price variables were converted to nominal dollars at the request of the panel members from the August 2010 RAP panel meeting. The September 2011 RAP panel recommended the Arizona nominal Gross Domestic Product independent variable be eliminated from the model. The current model includes:

1. Arizona nominal personal income
2. Arizona population
3. Arizona non-farm employment
4. Arizona fleet fuel efficiency (Not part of RAP Process)
5. Arizona nominal gas price
6. West Coast No. 2 nominal diesel price

Beginning in September 2017, the Gas Tax revenue category forecast includes the distributions of 1.6 percent of gas tax revenues to the State Lake Improvement Fund per Arizona Revised Statutes (ARS) 28-5926 and 0.55 percent of gas tax revenues to the Off-Highway Vehicle Recreation Fund per ARS 28-5927. Prior to September 2017, these gas tax revenues were not part of the RAP process and ADOT's HURF Official Forecast.

Risk Analysis Panel

The Risk Analysis Process relies heavily on the judgments of an expert panel of economic and financial participants to provide information critical to the forecasting process. In August 2018, a panel of ten economic and finance experts representing public, private, and academic sectors submitted their individual estimates of the model's independent variables and comments on the future economic outlook. The information gathered from the panelists was input into the model to produce a series of forecasts with associated probabilities of occurrence. The panelists' inputs are reflected in the attached tables at the back of this report.

Model Results

This year's panel inputs produced a mean forecast of \$17,781.3 million for the period FY 2019-2028 with a compound growth rate of 3.5 percent.

The Department's Official Forecast for FY 2019-2028 amounts to \$17,355.0 million with a compound growth rate of 3.2 percent. The Official Forecast incorporates the 50 percent confidence interval growth rates for all revenue categories except for FY 2019. The FY 2019 forecast of \$1,490.2 million was developed in July 2018 by ADOT staff using time-series techniques, historical and projected growth rates and recent legislative changes.

FY 2019 Official Forecast (Dollars in Millions)			
Fiscal	Mean	Official	Confidence
Year	Forecast	Forecast	Level
2019	\$1,499.9	\$1,490.2	50%
2020	1,567.7	1,548.0	50%
2021	1,632.0	1,604.1	50%
2022	1,692.3	1,656.7	50%
2023	1,750.5	1,708.2	50%
2024	1,808.7	1,760.5	50%
2025	1,867.3	1,813.9	50%
2026	1,926.7	1,868.1	50%
2027	1,987.2	1,923.8	50%
2028	<u>2,048.9</u>	<u>1,981.5</u>	50%
Total	\$17,781.3	\$17,355.0	
Ave. CGR	3.5%	3.2%	

For comparison purposes, the September 2017 Official Forecast and the September 2018 Official Forecast are shown below:

FY 2019-2028 Comparative Forecast (Dollars in Millions)			
Fiscal	Sep. 17	Sep. 18	
Year	Forecast /1	Forecast	Difference
2019	\$1,517.4	\$1,490.2	(\$27.2)
2020	1,572.2	1,548.0	(24.2)
2021	1,625.9	1,604.1	(21.8)
2022	1,681.1	1,656.7	(24.4)
2023	1,736.7	1,708.2	(28.5)
2024	1,793.5	1,760.5	(33.0)
2025	1,853.4	1,813.9	(39.5)
2026	1,914.9	1,868.1	(46.8)
2027	1,977.7	1,923.8	(53.9)
2028	<u>2,041.9</u>	<u>1,981.5</u>	<u>(60.4)</u>
Total	\$17,714.6	\$17,355.0	(\$359.6)
Ave. CGR	3.4%	3.2%	

Note: 1. Revised to include the distributions of 1.6 percent of gas tax revenues to the State Lake Improvement Fund and 0.55 percent of the gas tax revenues to the Off-Highway Vehicle Recreation Fund.

Summary

The Department's September 2018 Official Forecast for FY 2019-2028 totals \$17,355.0 million, a decrease of \$359.6 million from the September 2017 Official Forecast. The Risk Analysis Process panel members continue to see only modest growth for the Arizona economy going forward. The panel inputs were very similar to last year's panel inputs except for their future growth rates in Arizona gasoline and use fuel prices which were modestly lower in the short term and slightly higher in the long term. The main reason for the decrease in the September 2018 revenue forecast from the September 2017 revenue forecast is the FY 2018 revenues were 0.5 percent below forecast, which set a lower revenue base for the FY 2019 forecast and beyond.

Supplementary Information

The remaining pages of this report present supplementary information on the detailed results of the Risk Analysis Process, the Department's model and the values of the independent variables forecast by the expert panel. While the Official Forecast period is FY 2019-2028, panel inputs were requested for FY 2019-2023, 2028, 2033 and 2038. Data displayed for other than the requested years has been extrapolated.

HURF OFFICIAL REVENUE FORECAST
With Category Detail and Confidence Interval By Fiscal Year
(Current Dollars in Millions)

Fiscal Year Percentile	2018 Actual	2019 N/A	2020 50%	2021 50%	2022 50%	2023 50%	2024 50%	2025 50%	2026 50%	2027 50%	2028 50%
Gasoline Tax	\$527.4	\$537.9	\$545.7	\$556.1	\$565.6	\$574.1	\$583.4	\$592.1	\$600.7	\$609.5	\$618.3
Use Fuel Tax	202.1	202.3	208.8	216.9	224.5	231.6	238.2	245.0	251.7	258.4	264.8
Motor Carrier Fee	42.8	43.3	45.6	47.1	48.4	49.8	51.2	52.6	54.1	55.6	57.1
Vehicle License Tax	444.8	466.1	499.8	529.6	557.8	586.4	615.3	645.6	676.7	708.9	743.5
Registration	181.2	183.0	187.1	191.5	195.6	199.8	204.0	208.4	212.9	217.5	222.1
Other	57.5	57.6	61.0	62.9	64.8	66.5	68.4	70.2	72.0	73.9	75.7
Total	\$1,455.8	\$1,490.2	\$1,548.0	\$1,604.1	\$1,656.7	\$1,708.2	\$1,760.5	\$1,813.9	\$1,868.1	\$1,923.8	\$1,981.5

HURF TOTAL TAX REVENUE RISK ANALYSIS RESULTS
(Current Dollars in Millions)

Fiscal Year	Mean	10%	20%	30%	40%	50%	60%	70%	80%	90%
2019	\$1,499.9	\$1,701.7	\$1,627.5	\$1,574.4	\$1,531.2	\$1,490.2	\$1,451.8	\$1,412.1	\$1,367.2	\$1,310.5
2020	1,567.7	1,881.3	1,762.0	1,678.1	1,610.4	1,548.0	1,488.7	1,429.9	1,362.8	1,280.8
2021	1,632.0	2,022.5	1,870.7	1,765.1	1,681.0	1,604.1	1,531.4	1,458.6	1,378.6	1,279.9
2022	1,692.3	2,141.5	1,965.3	1,841.9	1,745.9	1,656.7	1,574.1	1,491.7	1,402.1	1,291.5
2023	1,750.5	2,249.0	2,051.3	1,914.7	1,807.5	1,708.2	1,617.9	1,527.0	1,427.7	1,307.7
2024	1,808.7	2,351.6	2,134.0	1,985.5	1,867.6	1,760.5	1,662.0	1,564.9	1,458.7	1,329.9
2025	1,867.3	2,449.0	2,214.5	2,054.0	1,928.6	1,814.0	1,708.9	1,605.4	1,492.7	1,357.3
2026	1,926.7	2,547.3	2,293.4	2,123.7	1,990.4	1,868.1	1,756.2	1,647.7	1,529.7	1,386.0
2027	1,987.2	2,640.3	2,371.5	2,194.1	2,052.6	1,923.8	1,807.0	1,692.4	1,568.2	1,418.1
2028	2,048.9	2,733.4	2,451.0	2,265.1	2,116.6	1,981.5	1,859.8	1,738.8	1,609.7	1,452.8
Total	\$17,781.3	\$22,717.7	\$20,741.2	\$19,396.7	\$18,331.9	\$17,355.0	\$16,457.7	\$15,568.4	\$14,597.3	\$13,414.5

HURF OFFICIAL REVENUE FORECAST DISTRIBUTION
(Current Dollars in Millions)

Fiscal Year	HURF	ESP/DPS/ SLIF/OHVF /1	Net HURF	DPS Parity Comp. Fund /2	ADOT 50.5%/1,3,4	Cities/Towns 27.5%/1	Cities +300K 3%/1	Counties 19%/1
2019	\$1,490.2	\$58.6	\$1,431.6	(\$3.6)	\$672.1	\$408.1	\$44.5	\$282.0
2020	1,548.0	43.3	1,504.7	(3.8)	750.4	428.2	46.7	295.9
2021	1,604.1	13.6	1,590.5	(4.0)	788.6	437.4	47.7	302.2
2022	1,656.7	13.8	1,642.9	(4.3)	814.1	451.8	49.3	312.2
2023	1,708.2	14.0	1,694.2	(4.5)	838.9	465.9	50.8	321.9
2024	1,760.5	14.2	1,746.3	(4.7)	864.2	480.2	52.4	331.8
2025	1,814.0	14.4	1,799.6	(4.9)	890.1	494.9	54.0	341.9
2026	1,868.1	14.6	1,853.6	(5.2)	916.3	509.7	55.6	352.2
2027	1,923.8	14.8	1,909.0	(5.4)	943.3	525.0	57.3	362.7
2028	1,981.5	14.9	1,966.6	(5.7)	971.3	540.8	59.0	373.7
Total	\$17,355.0	\$216.2	\$17,138.8	(\$46.0)	\$8,449.3	\$4,742.0	\$517.3	\$3,276.3

NOTES:

FY 2019 HURF estimate based on July 2018 Forecast.

FY 2020-2028 HURF estimate based on September 2018 Official Forecast.

/1.- The DPS/ESP includes \$1 million for Economic Strength Project (ESP) each year.

- FY 2019 also includes a \$654,400 appropriation to ADOT 3rd party program and operating.

- The DPS transfer in FY 2019 is \$15,509 million per JLBC Fiscal Year 2019 Appropriations Report and no transfer thereafter, which is subject to change.

- Includes distributions of 1.6 percent of gas tax revenues to the State Lake Improvement Fund (SLIF) per ARS 28-5926 and 0.55 percent of the gas tax revenues to the Off-Highway Vehicle Recreation Fund (OHVF) per ARS 28-5927 for the full forecast period. Historically, these distributions were not shown as part of the HURF because the distributions were made before the distributions to the HURF recipients.

- In addition, Laws 2017, 1st Regular Session, Chapter 312 (SB 1531) appropriated \$30 million in FY 2019 and \$60 million in FY 2020 to cities, towns and counties. A portion of these monies are distributed to the state highway fund for projects in Maricopa and Pima counties (Counties over 800,000). The distribution of SB 1531 appropriations are included in the columns ADOT 50.5%, Cities/Towns 27.5%, Cities over 300,000 3% and Counties 19%.

Per Laws 2018, 2nd Regular Session, Chapter 283 (SB 1529) the \$60 million appropriation for FY 2020 in Laws 2017, 1st Regular Session, Chapter 312, (SB 1531) is reduced to \$30 million.

/2. Per Laws 2005, Chapter 306 (SB 1119), 1.51 percent of the state highway fund share of HURF-VLT is transferred to the DPS Parity Compensation Fund.

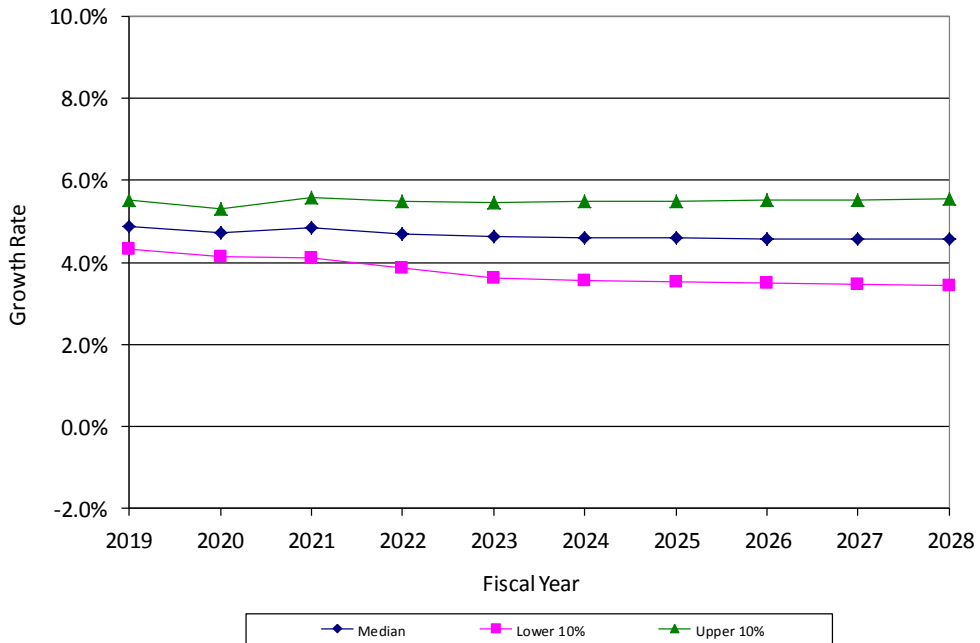
/3 Net of the DPS Parity Compensation Fund transfer and includes transfers per Laws 2011, 1st Regular Session, Chapter 28 (SB 1616) which transfers the state highway fund share of HURF VLT difference between the two-year registration and the five-year registration to the state general fund. Laws 2010, 7th Special Session, Chapter 12, (HB 2012) an amount equal to 90 percent of the fees collected under 28-4802 (A) and 60 percent of the fees collected under 28-4802 (B) shall be transferred from the state highway fund share of HURF VLT to the state general fund.

/4. Per Laws 2018, Chapter 276 (SB 1520), \$42.365 million of state highway fund share of HURF-VLT is transferred to the state general fund in FY 2019.

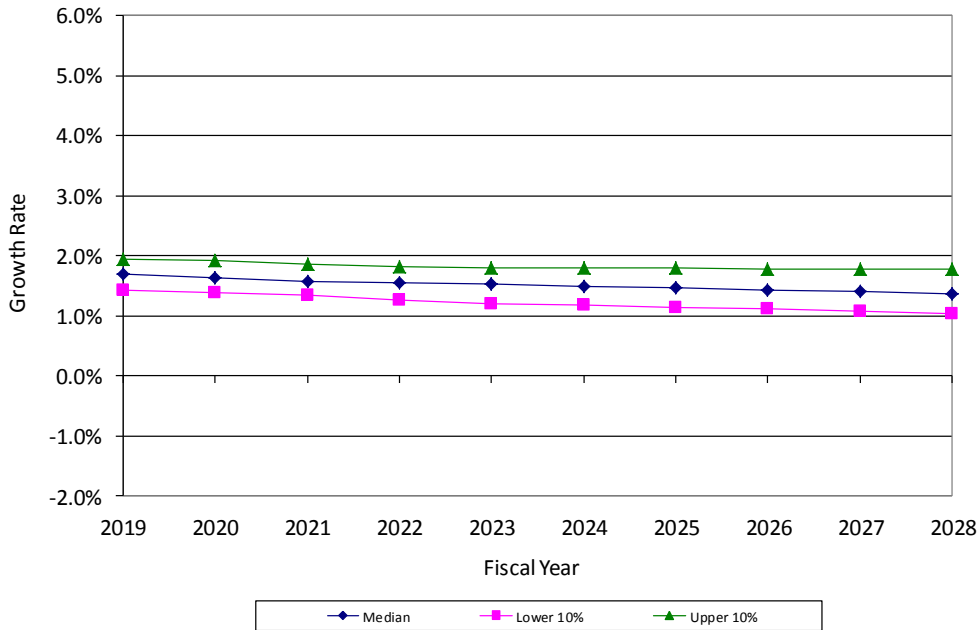
PANELIST DATA VALUES

	AZ Nominal Income Growth	Arizona Population Growth	Arizona Non-Farm Employ. Growth	AZ Nominal Gas Price Growth	West Coast Nominal Diesel Price Growth
FY 2019					
Median	4.89%	1.69%	2.53%	1.14%	0.82%
Lower 10%	4.31%	1.43%	2.13%	-6.48%	-6.83%
Upper 10%	5.52%	1.95%	2.85%	9.26%	8.25%
FY 2020					
Median	4.74%	1.63%	2.45%	2.19%	1.65%
Lower 10%	4.14%	1.38%	1.89%	-6.23%	-6.23%
Upper 10%	5.31%	1.92%	2.87%	9.51%	9.41%
FY 2021					
Median	4.86%	1.58%	2.34%	2.99%	3.06%
Lower 10%	4.11%	1.33%	1.72%	-3.56%	-3.64%
Upper 10%	5.59%	1.86%	2.78%	10.65%	11.42%
FY 2022					
Median	4.70%	1.54%	2.11%	3.04%	3.09%
Lower 10%	3.87%	1.26%	1.28%	-4.67%	-4.27%
Upper 10%	5.50%	1.82%	2.72%	11.58%	12.12%
FY 2023					
Median	4.62%	1.53%	2.01%	3.35%	3.18%
Lower 10%	3.61%	1.21%	1.22%	-3.67%	-4.27%
Upper 10%	5.46%	1.80%	2.68%	10.89%	11.96%
FY 2028					
Median	4.56%	1.37%	1.91%	2.80%	2.43%
Lower 10%	3.45%	1.04%	1.05%	-5.23%	-6.58%
Upper 10%	5.55%	1.77%	2.73%	11.16%	12.28%
FY 2033					
Median	4.46%	1.32%	1.79%	2.67%	2.29%
Lower 10%	2.96%	0.92%	0.88%	-5.94%	-7.36%
Upper 10%	5.69%*	1.77%	2.91%	11.35%	12.49%
FY 2038					
Median	4.34%	1.19%	1.74%	2.67%	2.29%
Lower 10%	2.52%	0.72%	0.66%	-6.58%	-8.07%
Upper 10%	5.83%	1.79%	2.98%	11.34%	13.03%

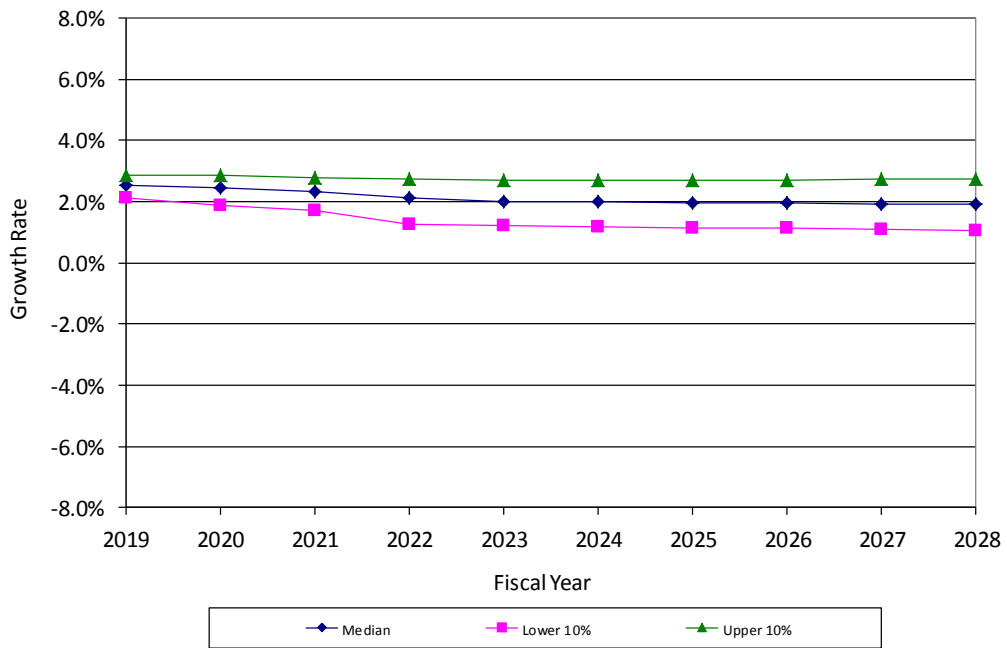
Arizona Nominal Personal Income Growth



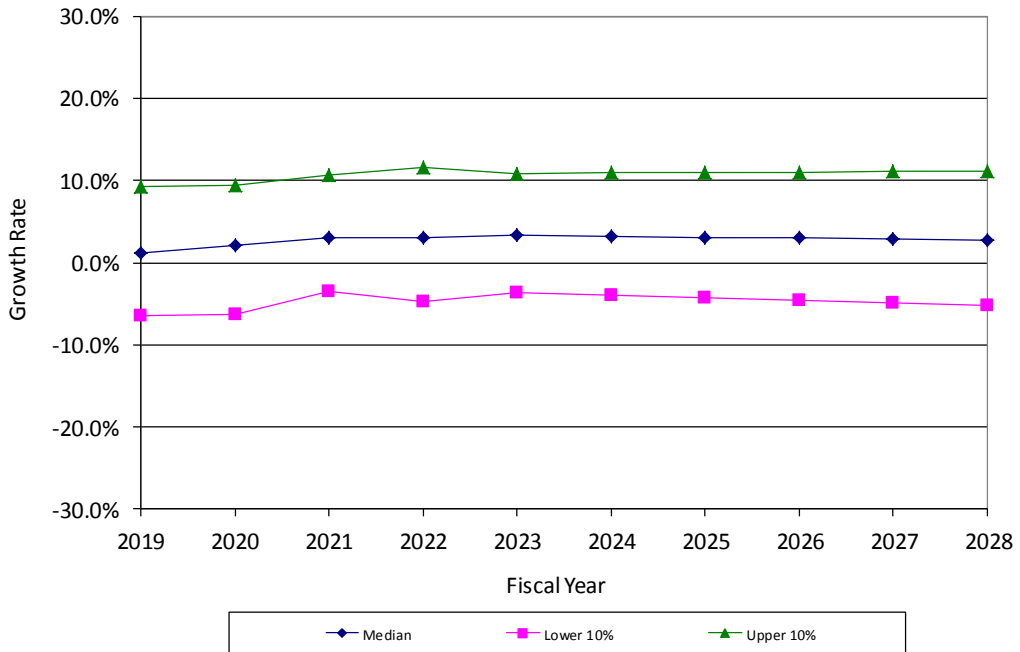
Arizona Population Growth



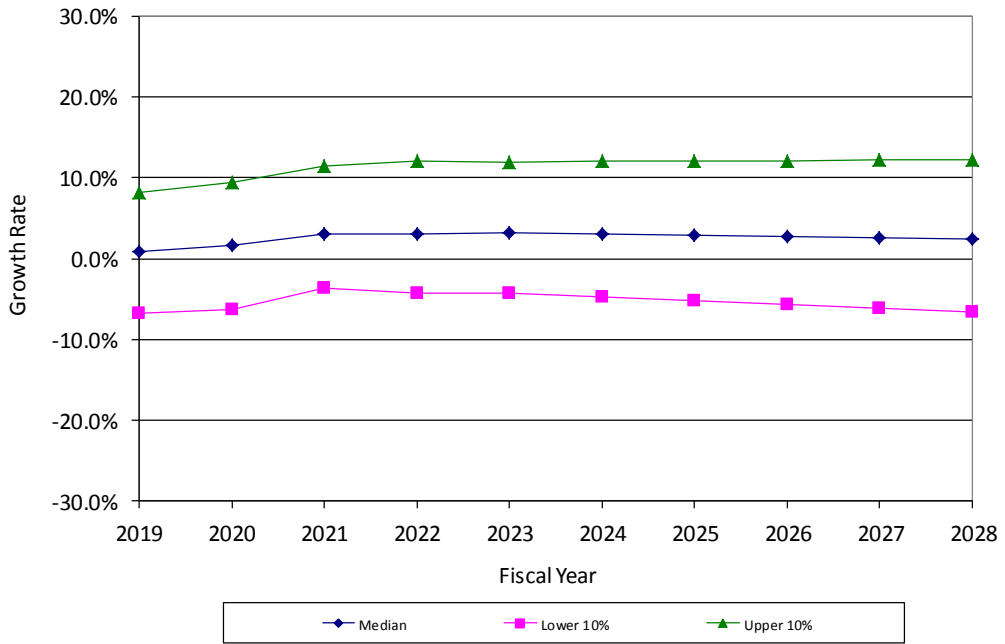
Arizona Non-Farm Employment Growth



Arizona Nominal Gas Price Growth



West Coast No. 2 Nominal Diesel Price Growth



Arizona Nominal Personal Income Growth

	2019	2020	2021	2022	2023	2028	2033	2038	
Panelist 1									
Median	4.2%	3.3%	4.8%	3.9%	4.0%	4.0%	4.0%	4.0%	
Lower 10%	3.5%	2.6%	4.1%	3.2%	3.3%	3.3%	3.3%	3.3%	
Upper 10%	5.4%	4.5%	6.0%	5.1%	5.2%	5.2%	5.2%	5.2%	
Panelist 2									
Median	4.9%	4.9%	4.9%	4.8%	4.8%	4.8%	4.7%	4.5%	
Lower 10%	4.4%	4.4%	4.3%	4.2%	4.0%	3.8%	3.2%	1.8%	
Upper 10%	5.3%	5.3%	5.5%	5.8%	5.9%	6.2%	6.5%	6.7%	
Panelist 3									
Median	5.0%	5.0%	4.9%	4.9%	4.9%	4.8%	4.5%	4.5%	
Lower 10%	4.5%	4.5%	4.5%	4.0%	4.0%	4.0%	3.5%	3.5%	
Upper 10%	5.5%	5.5%	5.3%	5.3%	5.2%	5.0%	5.0%	5.0%	
Panelist 4									
Median	5.0%	5.1%	4.9%	4.9%	4.9%	4.7%	4.5%	4.4%	
Lower 10%	4.4%	4.5%	4.0%	3.9%	3.9%	3.5%	2.6%	1.9%	
Upper 10%	5.3%	5.4%	5.8%	5.9%	5.9%	5.9%	5.8%	5.8%	
Panelist 5									
Median	4.6%	4.7%	4.7%	4.8%	4.8%	4.7%	4.6%	4.4%	
Lower 10%	4.2%	4.3%	3.7%	3.8%	3.8%	3.5%	2.7%	1.9%	
Upper 10%	5.0%	5.1%	5.7%	5.8%	5.8%	5.9%	6.5%	6.9%	
Panelist 6									
Median	5.0%	5.0%	5.0%	4.8%	4.8%	4.6%	5.0%	4.7%	
Lower 10%	4.0%	4.0%	4.0%	3.5%	2.0%	2.0%	2.0%	2.0%	
Upper 10%	5.4%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	
Panelist 7									
Median	5.1%	5.2%	5.3%	5.2%	5.2%	5.0%	4.8%	4.7%	
Lower 10%	4.7%	4.8%	4.3%	4.2%	4.2%	3.8%	2.9%	2.2%	
Upper 10%	5.5%	5.6%	6.3%	6.2%	6.2%	6.2%	6.7%	7.2%	
Panelist 8									
Median	4.0%	3.5%	4.0%	3.7%	3.5%	3.8%	3.5%	3.5%	
Lower 10%	3.8%	3.0%	3.5%	3.3%	3.0%	3.1%	2.9%	2.8%	
Upper 10%	5.8%	4.0%	4.2%	4.0%	4.0%	4.1%	4.0%	4.1%	
Panelist 9									
Median	5.7%	5.5%	5.0%	5.0%	4.5%	4.5%	4.5%	4.5%	
Lower 10%	5.2%	5.0%	4.5%	4.5%	4.0%	4.0%	4.0%	4.0%	
Upper 10%	6.2%	6.0%	5.5%	5.5%	5.0%	5.0%	5.0%	5.0%	
Panelist 10									
Median	5.4%	5.2%	5.1%	5.0%	4.8%	4.7%	4.5%	4.2%	
Lower 10%	4.4%	4.3%	4.1%	4.0%	3.8%	3.5%	2.5%	1.8%	
Upper 10%	5.8%	5.7%	5.6%	5.5%	5.5%	6.0%	6.2%	6.4%	

All data in the above table are percentage growth rates.

Arizona Population Growth

	2019	2020	2021	2022	2023	2028	2033	2038
Panelist 1								
Median	1.6%	1.6%	1.6%	1.6%	1.6%	1.6%	1.6%	1.6%
Lower 10%	1.1%	1.1%	1.1%	1.1%	1.1%	1.1%	1.1%	1.1%
Upper 10%	2.2%	2.2%	2.2%	2.0%	2.0%	2.0%	2.0%	2.0%
Panelist 2								
Median	1.6%	1.5%	1.5%	1.5%	1.5%	1.4%	1.4%	1.3%
Lower 10%	1.4%	1.3%	1.3%	1.3%	1.2%	1.1%	0.9%	0.6%
Upper 10%	1.9%	1.9%	1.8%	1.8%	1.8%	1.8%	1.7%	2.0%
Panelist 3								
Median	1.7%	1.7%	1.6%	1.6%	1.6%	1.5%	1.5%	1.5%
Lower 10%	1.5%	1.5%	1.4%	1.4%	1.4%	1.3%	1.2%	1.2%
Upper 10%	1.9%	1.9%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
Panelist 4								
Median	1.9%	1.9%	2.0%	1.9%	1.8%	1.7%	1.2%	1.0%
Lower 10%	1.6%	1.6%	1.7%	1.7%	1.5%	1.4%	1.0%	0.8%
Upper 10%	2.0%	2.0%	2.1%	2.1%	2.0%	1.9%	1.5%	1.3%
Panelist 5								
Median	1.8%	1.7%	1.7%	1.6%	1.6%	1.4%	1.3%	1.1%
Lower 10%	1.6%	1.5%	1.5%	1.4%	1.4%	1.1%	0.8%	0.4%
Upper 10%	2.0%	1.9%	1.9%	1.8%	1.8%	1.7%	1.8%	1.8%
Panelist 6								
Median	1.7%	1.6%	1.5%	1.5%	1.5%	0.8%	1.0%	0.5%
Lower 10%	1.3%	1.3%	1.3%	1.0%	0.8%	0.2%	0.2%	0.2%
Upper 10%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
Panelist 7								
Median	1.7%	1.7%	1.6%	1.6%	1.6%	1.4%	1.4%	1.2%
Lower 10%	1.5%	1.5%	1.4%	1.4%	1.4%	1.1%	0.9%	0.5%
Upper 10%	1.9%	1.9%	1.8%	1.8%	1.8%	1.7%	1.9%	1.9%
Panelist 8								
Median	1.5%	1.2%	1.0%	0.9%	0.9%	0.9%	0.9%	0.9%
Lower 10%	1.3%	1.0%	0.8%	0.5%	0.6%	0.7%	0.8%	0.5%
Upper 10%	1.7%	1.5%	1.1%	1.0%	1.0%	1.0%	1.2%	1.3%
Panelist 9								
Median	1.8%	1.8%	1.7%	1.7%	1.7%	1.6%	1.6%	1.6%
Lower 10%	1.6%	1.6%	1.5%	1.5%	1.5%	1.4%	1.4%	1.4%
Upper 10%	2.0%	2.0%	1.9%	1.9%	1.9%	1.8%	1.8%	1.8%
Panelist 10								
Median	1.6%	1.6%	1.6%	1.5%	1.5%	1.4%	1.3%	1.2%
Lower 10%	1.4%	1.4%	1.3%	1.3%	1.2%	1.1%	0.9%	0.5%
Upper 10%	1.9%	1.9%	1.8%	1.8%	1.7%	1.8%	1.8%	1.8%

All data in the above table are percentage growth rates.

Arizona Non-Farm Employment Growth

	2019	2020	2021	2022	2023	2028	2033	2038	
Panelist 1									
Median	2.4%	1.9%	1.9%	0.9%	0.9%	0.9%	0.9%	0.9%	
Lower 10%	2.2%	1.7%	1.7%	0.7%	0.7%	0.7%	0.7%	0.7%	
Upper 10%	3.4%	2.9%	2.9%	1.9%	1.9%	1.9%	1.9%	1.9%	
Panelist 2									
Median	2.5%	2.5%	2.2%	2.0%	2.0%	1.9%	1.8%	1.8%	
Lower 10%	2.2%	2.1%	1.7%	0.8%	0.7%	0.7%	0.4%	0.2%	
Upper 10%	2.7%	2.8%	2.6%	2.9%	3.0%	3.4%	3.5%	3.7%	
Panelist 3									
Median	2.5%	2.5%	2.5%	2.3%	2.2%	2.2%	2.2%	2.0%	
Lower 10%	2.0%	2.0%	2.0%	2.0%	1.9%	1.9%	1.8%	1.5%	
Upper 10%	3.0%	3.0%	3.0%	2.8%	2.7%	2.6%	2.5%	2.5%	
Panelist 4									
Median	2.7%	2.8%	2.8%	2.6%	2.5%	2.2%	2.0%	1.8%	
Lower 10%	2.1%	2.0%	1.6%	1.2%	1.0%	0.8%	0.5%	0.3%	
Upper 10%	3.0%	3.0%	3.0%	3.0%	2.8%	2.9%	2.9%	2.9%	
Panelist 5									
Median	2.5%	2.5%	2.6%	2.6%	2.5%	2.2%	2.2%	2.1%	
Lower 10%	2.3%	2.1%	2.0%	1.6%	1.5%	0.9%	0.7%	0.3%	
Upper 10%	2.7%	3.0%	3.0%	3.3%	3.5%	3.5%	3.7%	3.9%	
Panelist 6									
Median	2.6%	2.6%	2.0%	2.0%	1.5%	1.5%	1.0%	1.0%	
Lower 10%	2.0%	1.5%	1.5%	1.5%	0.5%	0.5%	0.3%	0.3%	
Upper 10%	2.7%	2.9%	2.5%	2.5%	2.0%	2.0%	3.6%	3.6%	
Panelist 7									
Median	2.5%	2.4%	2.4%	2.2%	2.1%	1.8%	1.5%	1.5%	
Lower 10%	2.3%	1.9%	1.9%	1.2%	1.1%	0.5%	0.0%	-0.3%	
Upper 10%	2.7%	2.9%	2.9%	3.2%	3.1%	3.1%	3.0%	3.3%	
Panelist 8									
Median	2.4%	2.5%	2.6%	2.5%	2.6%	2.6%	2.5%	2.5%	
Lower 10%	1.5%	1.3%	1.0%	1.0%	2.2%	2.2%	2.1%	1.8%	
Upper 10%	2.7%	2.8%	2.8%	2.7%	2.9%	2.9%	3.0%	3.0%	
Panelist 9									
Median	2.7%	2.5%	2.3%	2.2%	2.1%	2.0%	2.0%	2.0%	
Lower 10%	2.5%	2.3%	2.1%	2.0%	1.9%	1.8%	1.8%	1.8%	
Upper 10%	2.9%	2.7%	2.5%	2.4%	2.3%	2.2%	2.2%	2.2%	
Panelist 10									
Median	2.5%	2.3%	2.1%	1.8%	1.7%	1.8%	1.8%	1.8%	
Lower 10%	2.2%	2.0%	1.6%	0.8%	0.7%	0.5%	0.5%	0.0%	
Upper 10%	2.7%	2.7%	2.6%	2.5%	2.6%	2.8%	2.8%	2.8%	

All data in the above table are percentage growth rates.

Arizona Nominal Gas Price Growth

	2019	2020	2021	2022	2023	2028	2033	2038	
Panelist 1									
Median	4.5%	6.6%	4.9%	4.4%	5.0%	5.0%	5.0%	5.0%	
Lower 10%	-0.5%	1.6%	0.0%	-0.1%	0.0%	0.0%	0.0%	0.0%	
Upper 10%	14.5%	16.6%	12.9%	12.4%	10.0%	10.0%	10.0%	10.0%	
Panelist 2									
Median	2.5%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	
Lower 10%	-6.0%	-7.0%	-3.0%	-3.5%	-4.0%	-4.0%	-4.5%	-5.0%	
Upper 10%	10.0%	11.0%	12.0%	15.0%	16.0%	17.0%	18.0%	20.0%	
Panelist 3									
Median	2.0%	2.0%	2.0%	2.0%	3.0%	3.0%	3.0%	3.0%	
Lower 10%	-5.0%	-5.0%	-5.0%	-5.0%	0.0%	0.0%	0.0%	0.0%	
Upper 10%	6.0%	6.0%	6.0%	8.0%	10.0%	10.0%	10.0%	10.0%	
Panelist 4									
Median	1.4%	1.8%	3.5%	3.5%	3.6%	2.9%	2.1%	2.1%	
Lower 10%	-6.7%	-6.3%	0.5%	-1.8%	-2.9%	-6.7%	-9.4%	-11.3%	
Upper 10%	9.5%	9.9%	15.0%	15.0%	13.0%	12.0%	11.0%	10.0%	
Panelist 5									
Median	1.0%	2.0%	4.0%	4.0%	4.0%	3.0%	3.0%	3.0%	
Lower 10%	-8.0%	-7.0%	-4.0%	-4.0%	-4.0%	-7.0%	-9.0%	-11.0%	
Upper 10%	10.0%	9.0%	12.0%	12.0%	12.0%	13.0%	15.0%	17.0%	
Panelist 6									
Median	0.0%	1.0%	2.0%	2.0%	3.4%	2.1%	2.1%	2.1%	
Lower 10%	-0.5%	-0.5%	-0.5%	-4.0%	-4.0%	-7.0%	-7.0%	-7.0%	
Upper 10%	2.0%	2.0%	4.0%	6.0%	8.0%	8.0%	6.0%	6.0%	
Panelist 7									
Median	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	
Lower 10%	-5.6%	-5.6%	-5.6%	-5.4%	-5.4%	-7.1%	-9.0%	-10.9%	
Upper 10%	10.6%	10.6%	10.6%	10.4%	10.4%	12.1%	14.0%	15.9%	
Panelist 8									
Median	1.0%	2.0%	2.0%	3.0%	3.0%	3.0%	3.0%	3.0%	
Lower 10%	-15.0%	-20.0%	-10.0%	-15.0%	-10.0%	-10.0%	-10.0%	-10.0%	
Upper 10%	20.0%	15.0%	12.0%	15.0%	10.0%	10.0%	10.0%	5.0%	
Panelist 9									
Median	-5.0%	0.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	
Lower 10%	-10.0%	-5.0%	-3.0%	-3.0%	-3.0%	-3.0%	-3.0%	-3.0%	
Upper 10%	0.0%	5.0%	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%	
Panelist 10									
Median	1.5%	2.0%	5.0%	5.0%	5.0%	2.5%	2.0%	2.0%	
Lower 10%	-7.5%	-7.5%	-5.0%	-5.0%	-3.5%	-7.5%	-7.5%	-7.5%	
Upper 10%	10.0%	10.0%	15.0%	15.0%	12.5%	12.5%	12.5%	12.5%	

All data in the above table are percentage growth rates.

West Coast No. 2 Nominal Gas Price Growth

	2019	2020	2021	2022	2023	2028	2033	2038
Panelist 1								
Median	-	-	-	-	-	-	-	-
Lower 10%	-	-	-	-	-	-	-	-
Upper 10%	-	-	-	-	-	-	-	-
Panelist 2								
Median	2.5%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
Lower 10%	-6.0%	-7.0%	-3.0%	-3.5%	-4.0%	-4.0%	-4.5%	-5.0%
Upper 10%	10.0%	11.0%	12.0%	15.0%	16.0%	17.0%	18.0%	20.0%
Panelist 3								
Median	1.5%	1.5%	1.5%	1.8%	2.0%	2.0%	2.0%	2.0%
Lower 10%	-5.0%	-5.0%	-5.0%	-5.0%	0.0%	0.0%	0.0%	0.0%
Upper 10%	10.0%	10.0%	10.0%	12.0%	12.0%	12.0%	12.0%	12.0%
Panelist 4								
Median	1.4%	1.8%	3.5%	3.5%	3.6%	2.9%	2.1%	2.1%
Lower 10%	-6.7%	-6.3%	0.5%	-1.8%	-2.9%	-6.7%	-9.4%	-11.3%
Upper 10%	9.5%	9.9%	15.0%	15.0%	13.0%	12.0%	11.0%	10.0%
Panelist 5								
Median	1.0%	2.0%	4.0%	4.0%	4.0%	3.0%	3.0%	3.0%
Lower 10%	-8.0%	-7.0%	-4.0%	-4.0%	-4.0%	-7.0%	-9.0%	-11.0%
Upper 10%	10.0%	9.0%	12.0%	12.0%	12.0%	13.0%	15.0%	17.0%
Panelist 6								
Median	0.0%	1.0%	2.0%	2.0%	3.5%	2.0%	2.0%	2.0%
Lower 10%	-0.5%	-0.5%	-0.5%	-4.0%	-4.0%	-7.0%	-7.0%	-7.0%
Upper 10%	2.0%	2.0%	4.0%	6.0%	8.0%	8.0%	6.0%	6.0%
Panelist 7								
Median	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%
Lower 10%	-7.8%	-7.8%	-7.8%	-7.1%	-7.1%	-9.0%	-10.9%	-12.8%
Upper 10%	12.8%	12.8%	12.8%	12.1%	12.1%	14.0%	15.9%	17.8%
Panelist 8								
Median	2.0%	2.0%	5.0%	5.0%	4.0%	3.0%	3.0%	3.0%
Lower 10%	-10.0%	-10.0%	-5.0%	-5.0%	-10.0%	-15.0%	-15.0%	-15.0%
Upper 10%	10.0%	15.0%	15.0%	15.0%	15.0%	15.0%	15.0%	15.0%
Panelist 9								
Median	-5.0%	0.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
Lower 10%	-10.0%	-5.0%	-3.0%	-3.0%	-3.0%	-3.0%	-3.0%	-3.0%
Upper 10%	0.0%	5.0%	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%
Panelist 10								
Median	1.5%	2.0%	5.0%	5.0%	5.0%	2.5%	2.0%	2.0%
Lower 10%	-7.5%	-7.5%	-5.0%	-5.0%	-3.5%	-7.5%	-7.5%	-7.5%
Upper 10%	10.0%	10.0%	15.0%	15.0%	12.5%	12.5%	12.5%	12.5%

All data in the above table are percentage growth rates.

**HISTORICAL DATA
ARIZONA NOMINAL PERSONAL INCOME GROWTH
(Annual Percent Change)**

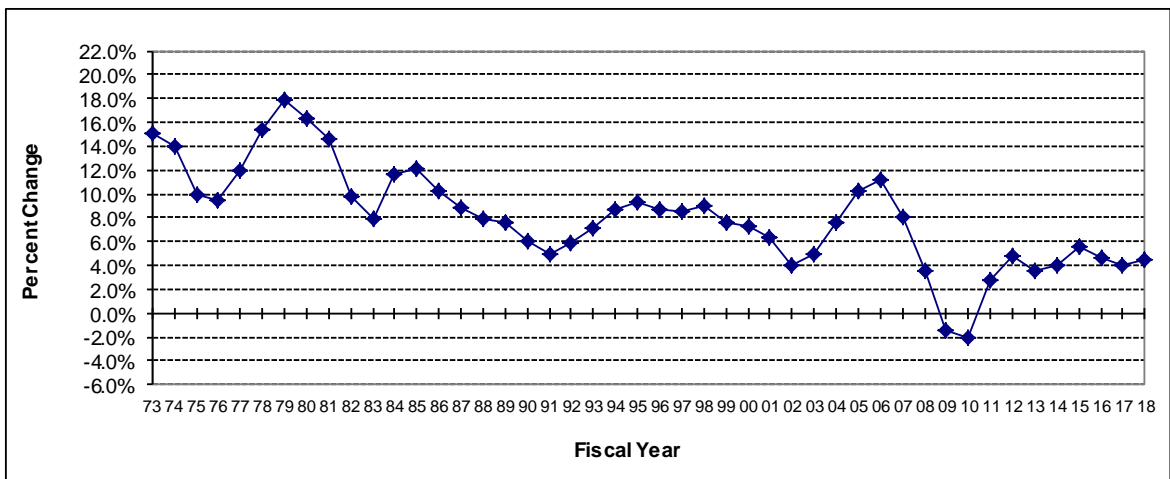
HISTORICAL DATA BY FISCAL YEAR (July 1 through June 30)

1970		1980	16.4%	1990	6.1%	2000	7.4%	2010	-2.1%
1971		1981	14.7%	1991	4.9%	2001	6.4%	2011	2.7%
1972		1982	9.8%	1992	5.9%	2002	4.0%	2012	4.8%
1973	15.1%	1983	7.9%	1993	7.2%	2003	4.9%	2013	3.5%
1974	14.0%	1984	11.7%	1994	8.7%	2004	7.6%	2014	4.1%
1975	10.0%	1985	12.1%	1995	9.3%	2005	10.3%	2015	5.6%
1976	9.5%	1986	10.3%	1996	8.6%	2006	11.1%	2016	4.6%
1977	11.9%	1987	8.8%	1997	8.5%	2007	8.0%	2017	4.0%
1978	15.3%	1988	7.9%	1998	9.0%	2008	3.5%	2018 *	4.5%
1979	17.8%	1989	7.6%	1999	7.6%	2009	-1.4%	2019	

BEA for FY 1973-2017, Western Blue Chip, June 2018 for FY 2018 and FY 2019, and ADOT staff for FY 2020-38.

FY 2018* Projected.

HISTORICAL DATA - GRAPHED



HISTORICAL DATA - ANALYSIS

Period	Historical		Mean	Std. Dev.	80% Range	
	Min.	Max.			Lower	Upper
5 Years	4.0%	5.6%	4.6%	0.7%	4.0%	5.2%
10 Years	-2.1%	5.6%	3.0%	2.7%	-1.5%	4.9%
Full Period	-2.1%	17.8%	8.0%	4.2%	3.8%	14.3%

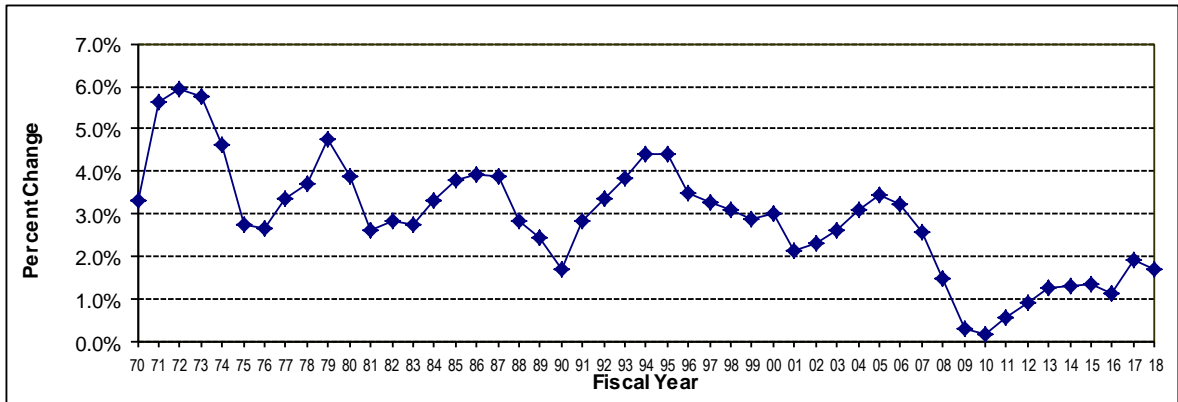
HISTORICAL DATA ARIZONA POPULATION GROWTH (Annual Percent Change)

HISTORICAL DATA BY FISCAL YEAR (July 1 through June 30)

1970	3.3%	1980	3.9%	1990	1.7%	2000	3.0%	2010	0.2%
1971	5.6%	1981	2.6%	1991	2.8%	2001	2.2%	2011	0.6%
1972	5.9%	1982	2.8%	1992	3.4%	2002	2.3%	2012	0.9%
1973	5.8%	1983	2.7%	1993	3.8%	2003	2.6%	2013	1.3%
1974	4.6%	1984	3.3%	1994	4.4%	2004	3.1%	2014	1.3%
1975	2.8%	1985	3.8%	1995	4.4%	2005	3.5%	2015	1.4%
1976	2.7%	1986	3.9%	1996	3.5%	2006	3.2%	2016	1.1%
1977	3.4%	1987	3.9%	1997	3.3%	2007	2.6%	2017	1.9%
1978	3.7%	1988	2.9%	1998	3.1%	2008	1.5%	2018 *	1.7%
1979	4.8%	1989	2.5%	1999	2.9%	2009	0.3%	2019	

Census Bureau FY 1970-2000. FY 2001-2038 from AZ Office of Economic Opportunity. The growth rates from the December 11, 2015 OEO Population Projections were used for FY 2018 and beyond. * FY 2018 Projected.

HISTORICAL DATA - GRAPHED



HISTORICAL DATA - ANALYSIS

Period	Historical		Mean	Std. Dev.	80% Range	
	Min.	Max.			Lower	Upper
5 Years	1.1%	1.9%	1.5%	0.3%	1.2%	1.8%
10 Years	0.2%	1.9%	1.1%	0.6%	0.3%	1.7%
Full Period	0.2%	5.9%	2.9%	1.3%	1.2%	4.5%

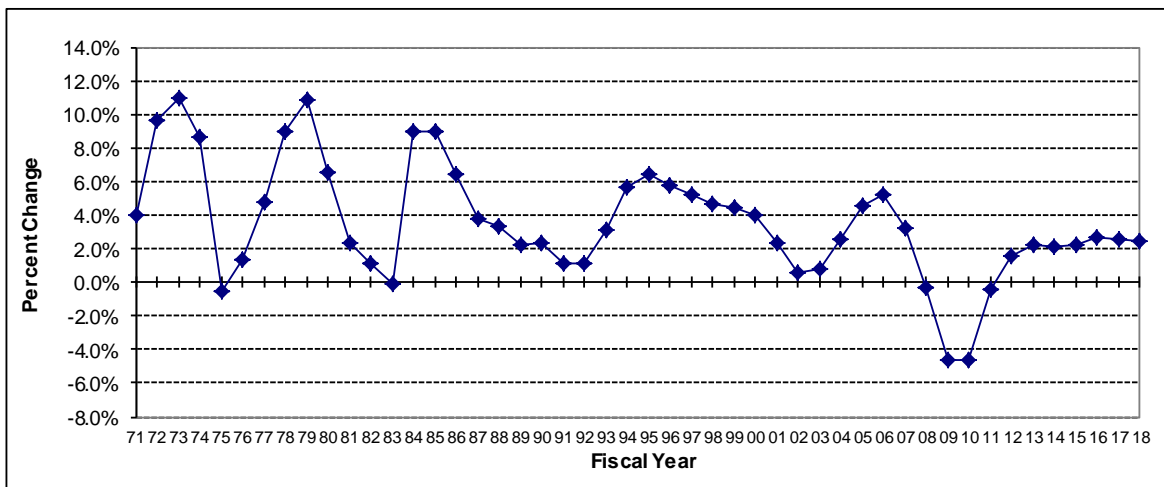
HISTORICAL DATA ARIZONA TOTAL NON-FARM EMPLOYMENT GROWTH (Annual Percent Change)

HISTORICAL DATA BY FISCAL YEAR (July 1 through June 30)

1970		1980	6.6%	1990	2.3%	2000	4.0%	2010	-4.7%
1971	4.0%	1981	2.3%	1991	1.1%	2001	2.3%	2011	-0.4%
1972	9.6%	1982	1.1%	1992	1.1%	2002	0.5%	2012	1.6%
1973	10.9%	1983	0.0%	1993	3.1%	2003	0.7%	2013	2.2%
1974	8.6%	1984	9.0%	1994	5.7%	2004	2.6%	2014	2.1%
1975	-0.5%	1985	8.9%	1995	6.4%	2005	4.6%	2015	2.3%
1976	1.4%	1986	6.4%	1996	5.7%	2006	5.2%	2016	2.7%
1977	4.8%	1987	3.7%	1997	5.2%	2007	3.2%	2017	2.6%
1978	9.0%	1988	3.3%	1998	4.7%	2008	-0.3%	2018 *	2.4%
1979	10.9%	1989	2.2%	1999	4.4%	2009	-4.7%	2019	

Bureau of Labor Statistics for FY 1971-2017, UA Economic and Business Research Center, June 2018 Quarterly Forecast for 2018*-2022 and ADOT staff estimates for FY 2023-2038.

HISTORICAL DATA - GRAPHED



HISTORICAL DATA - ANALYSIS

Period	Historical		Mean	Std. Dev.	80% Range	
	Min.	Max.			Lower	Upper
5 Years	2.1%	2.7%	2.4%	0.2%	2.2%	2.6%
10 Years	-4.7%	2.7%	0.6%	2.9%	-4.7%	2.6%
Full Period	-4.7%	10.9%	3.6%	3.4%	-0.1%	8.9%

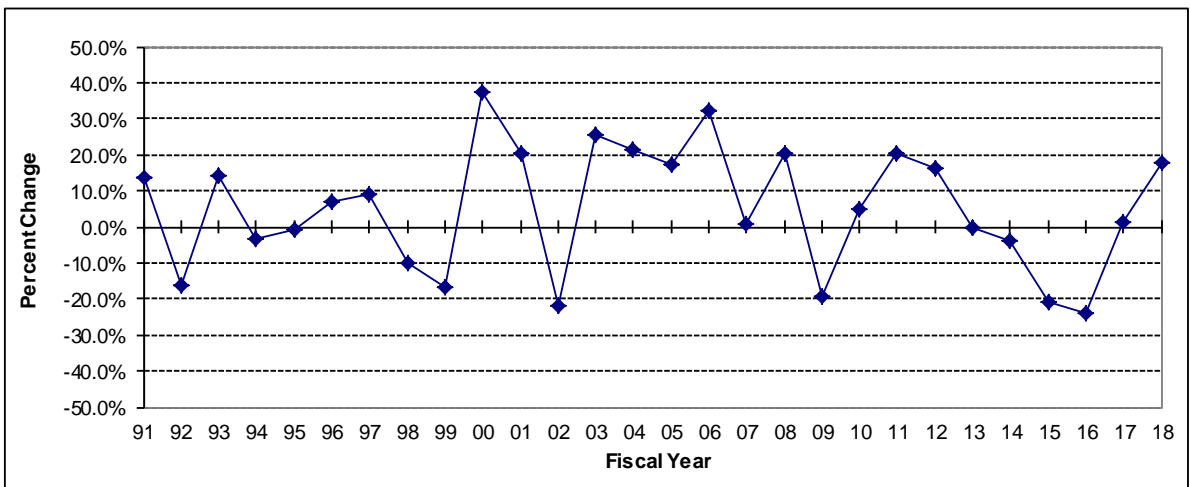
**HISTORICAL DATA
ARIZONA NOMINAL GAS PRICE GROWTH
(Annual Percent Change)**

HISTORICAL DATA BY FISCAL YEAR (July 1 through June 30)

1970	1980	1990	2000	37.2%	2010	4.7%		
1971	1981	1991	13.8%	2001	20.2%	2011	20.1%	
1972	1982	1992	-16.0%	2002	-21.9%	2012	16.1%	
1973	1983	1993	14.2%	2003	25.4%	2013	-0.5%	
1974	1984	1994	-3.3%	2004	21.6%	2014	-3.9%	
1975	1985	-0.3%	1995	-0.5%	2005	17.4%	2015	-20.9%
1976	1986	-9.2%	1996	7.2%	2006	32.1%	2016	-23.9%
1977	1987	-25.2%	1997	9.0%	2007	0.5%	2017	1.4%
1978	1988	-10.3%	1998	-10.3%	2008	20.2%	2018	18.0%
1979	1989	-16.8%	1999	-16.8%	2009	-19.3%	2019	

U.S. Department of Energy (EIA Administration) for FY 1985-2011, AAA Arizona for FY 2012-2018 and Global Insight, 1st Quarter 2018, Trend Forecast report for FY 2019-38.

HISTORICAL DATA - GRAPHED



HISTORICAL DATA - ANALYSIS

Period	Historical		Mean	Std. Dev.	80% Range	
	Min.	Max.			Lower	Upper
5 Years	-23.9%	18.0%	-5.8%	17.2%	-22.7%	11.4%
10 Years	-23.9%	20.1%	-0.8%	16.3%	-21.2%	18.2%
Full Period	-23.9%	37.2%	5.1%	17.2%	-19.7%	22.7%

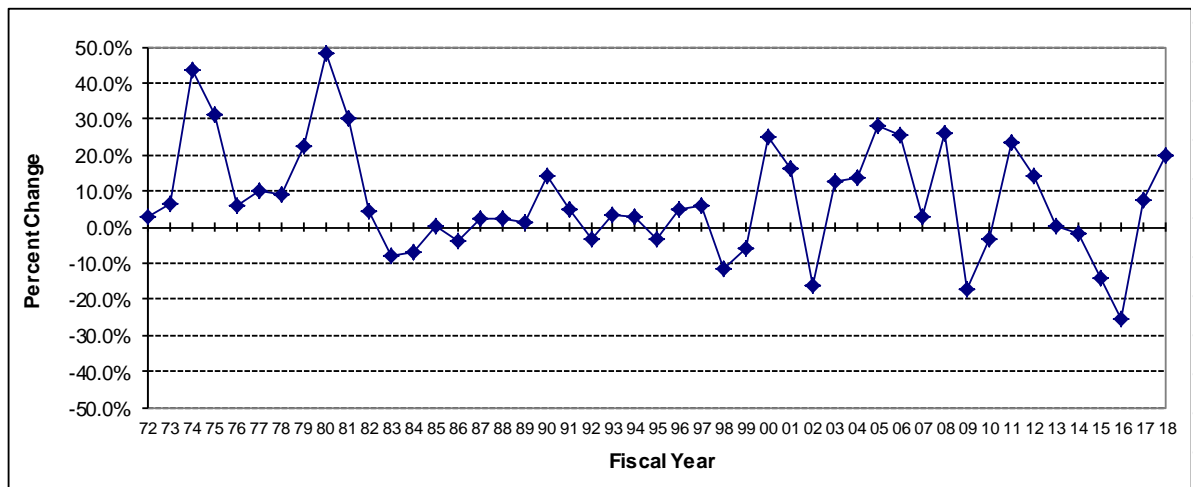
**HISTORICAL DATA
WEST COAST NO. 2 NOMINAL DIESEL PRICE GROWTH
(Annual Percent Change)**

HISTORICAL DATA BY FISCAL YEAR (July 1 through June 30)

1970		1980	48.1%	1990	14.2%	2000	25.0%	2010	-3.4%
1971		1981	30.2%	1991	4.6%	2001	16.4%	2011	23.5%
1972	2.7%	1982	4.3%	1992	-3.2%	2002	-16.4%	2012	14.2%
1973	6.4%	1983	-8.0%	1993	3.1%	2003	12.4%	2013	0.0%
1974	43.3%	1984	-6.8%	1994	2.7%	2004	13.6%	2014	-2.0%
1975	31.4%	1985	0.1%	1995	-3.4%	2005	27.8%	2015	-14.1%
1976	5.8%	1986	-4.0%	1996	4.9%	2006	25.5%	2016	-25.3%
1977	10.0%	1987	2.1%	1997	5.8%	2007	2.7%	2017	7.5%
1978	9.1%	1988	2.3%	1998	-11.8%	2008	25.8%	2018	19.7%
1979	22.4%	1989	1.2%	1999	-5.9%	2009	-17.2%	2019	

U.S. Department of Energy (EIA Administration) for FY 1972-2018 and Global Insight, 1st Quarter 2018, Trend Forecast report for FY 2019-38.

HISTORICAL DATA - GRAPHED



HISTORICAL DATA - ANALYSIS

Period	Historical		Mean	Std. Dev.	80% Range	
	Min.	Max.			Lower	Upper
5 Years	-25.3%	19.7%	-2.9%	17.6%	-20.8%	14.8%
10 Years	-25.3%	23.5%	0.3%	16.1%	-18.0%	20.1%
Full Period	-25.3%	48.1%	7.4%	15.4%	-9.5%	26.6%