

Financial Management Services

October 26, 2021

State Transportation Board Study Session

Revenue Forecasting Process

Prepared by: Kristine Ward, CFO

Topics to cover:

- Fund sources
- Background of the ADOT forecasting process
- Who is involved in the process
- Inputs to & outputs from the process
- Historic accuracy of the process
- Benefits of the ADOT forecasting process




Sources of Funding for the Highway Program

- ✓ • Highway User Revenue Fund/ State Highway Fund
- ✓ • Regional Area Road Fund/ Freeway Funds
- Federal Funds (Formula Funding)
- Other Funding: Grants, Appropriations, Private Funding
- ✓ = Forecasted in the Risk Analysis Process (RAP)

Background: Risk Analysis Process (RAP)

- RAP is the process ADOT uses to forecast revenues
- Originally developed in the 1980's with UoA and ASU
- Annual process
- Involves economists, transportation experts, and consultants
- Model is based on a number of variables found to correlate with the major components of HURF & RARF revenues
- Results in a 20 year forecast, focused primarily on 2-10 year timeframe

2021 RAP Panel Participants

- Maricopa Association of Governments (MAG), Transportation Professional
- City of Peoria, prior JLBC, Fiscal Specialist
- JLBC, Fiscal Specialist
- Previous State Treasurer's Office, Financial Professional 
- Office of Economic Opportunity, Economist
- Vision-Econ, Economist 
- Elliot Pollack Company, Economist 
- ASU, Economist, also contracted by the Governor's Budget Office
- HDR, Economist – Contracted to develop & run forecasting model for ADOT



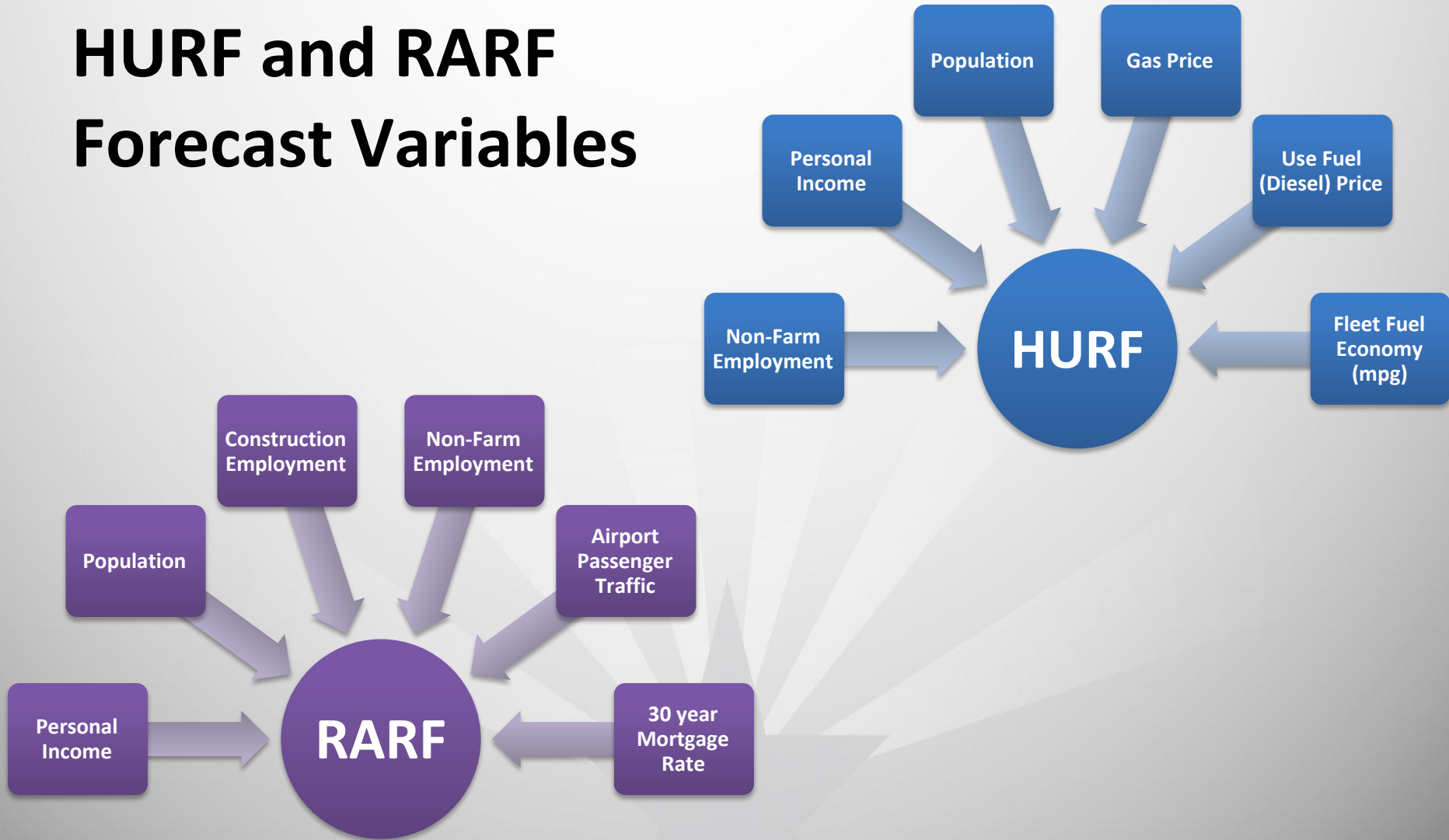
- ASU Western Blue Chip Panelists

RAP Participants: Consultants

- HDR is a global company offering a wide variety of services, including economic, financial and statistical analysis.
- HDR updates the HURF and RARF forecasting models.
- Using the forecasts provided by the panel, HDR performs a Monte Carlo simulation and provides revenue estimates associated with various probabilities that the forecast will be realized.
- The primary HDR economist we have worked with is an applied economist with extensive experience in state government revenue forecasting.



HURF and RARF Forecast Variables



Sample of RAP Panelist Forecast (Inputs)

ARIZONA NOMINAL PERSONAL INCOME GROWTH									
		2021	2022	2023	2024	2025	2030	2035	2040
Panelist 1									
	Median	1.0%	4.5%	4.6%	4.7%	4.8%	4.6%	4.5%	4.2%
Panelist 2									
	Median	0.7%	3.5%	4.5%	4.5%	4.5%	4.5%	4.0%	4.0%
Panelist 3									
	Median	3.0%	4.5%	5.0%	5.0%	5.0%	5.0%	4.5%	4.5%
Panelist 4									
	Median	0.5%	4.3%	4.8%	4.8%	4.6%	4.4%	4.3%	4.2%
Panelist 5									
	Median	0.6%	4.2%	6.2%	5.5%	4.5%	4.5%	4.0%	3.5%
Panelist 6									
	Median	2.0%	5.0%	4.9%	4.9%	4.8%	4.6%	4.5%	4.3%
Panelist 7									
	Median	0.5%	3.0%	5.0%	5.5%	5.0%	4.5%	4.5%	4.5%
Panelist 8									
	Median	0.6%	4.0%	4.5%	4.8%	4.8%	4.6%	4.5%	4.2%
Panelist 9									
	Median	4.9%	5.0%	5.0%	5.0%	4.9%	4.6%	4.5%	4.3%

RAP Panel & HDR Simulation Results

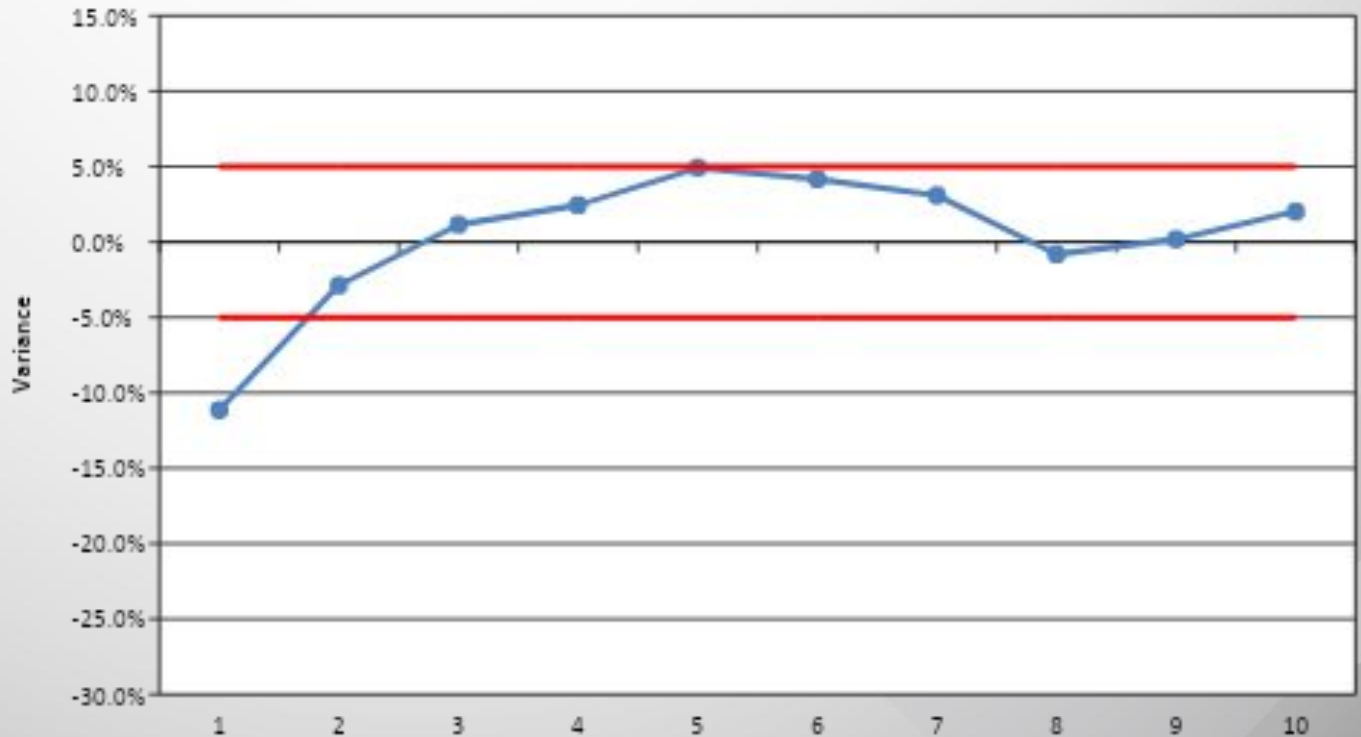
- Panelist inputs are provided to contractor (HDR)
- Monte Carlo Simulation is run generating revenue forecasts for various probabilities over a 20 year period

2009 Panel		2010 Panel		2011 Panel	
FISCAL YEAR	HURF FORECAST	FISCAL YEAR	HURF FORECAST	FISCAL YEAR	HURF FORECAST
2010	1,247.800				
2011	1,264.575	2011	1,205.500		
2012	1,298.038	2012	1,220.678	2012	1,216.300
2013	1,346.465	2013	1,250.574	2013	1,241.863
2014	1,398.369	2014	1,293.506	2014	1,274.885
2015	1,458.038	2015	1,343.495	2015	1,314.753
2016	1,516.535	2016	1,397.481	2016	1,360.382
2017	1,575.874	2017	1,451.976	2017	1,408.732
2018	1,642.348	2018	1,508.242	2018	1,457.221
2019	1,710.769	2019	1,565.104	2019	1,502.932
2020	1,780.095	2020	1,624.935	2020	1,556.022
2021	1,852.877	2021	1,688.716	2021	1,605.218
2022	1,933.912	2022	1,750.477	2022	1,655.295
2023	2,013.302	2023	1,820.955	2023	1,707.850
2024	2,094.683	2024	1,888.584	2024	1,757.328
2025	2,182.422	2025	1,954.678	2025	1,809.780
2026	2,282.213	2026	2,024.736	2026	1,863.069

Forecasting Accuracy: Highway User Revenue Fund (HURF) Variance from Previous Forecasts For Fiscal Year 2019

- The FY 2010 RAP Panel forecast for FY 2019 only varied from actuals by 2.9%.

- Between 2010 and 2018, RAP Panel forecasts for 2019 have been within $\pm 5\%$ of the actual FY 2019 revenues.



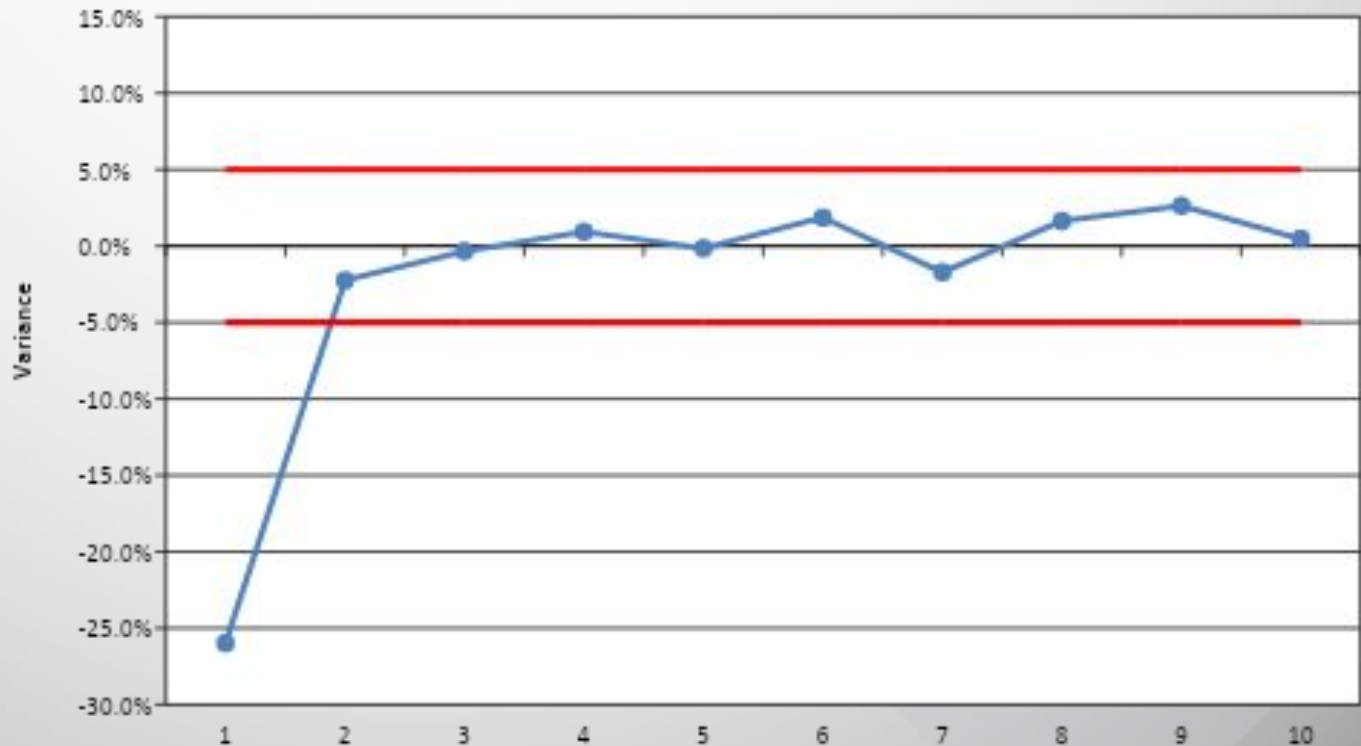
FY 2019 Forecast (\$ in millions)
◆ Variance

FY 2019 Actual: \$1,520 million

Forecasting Accuracy: Regional Area Road Fund (RARF) Variance from Previous Forecasts For Fiscal Year 2019

- The FY 2010 RAP Panel forecast for FY 2019 only varied from actuals by 2.2%.

- Between 2010 and 2018, RAP Panel forecasts for 2019 have been within $\pm 3\%$ of the actual FY 2019 revenues.



FY 2019 Forecast (\$ in millions)
● Variance

FY 2019 Actual: \$468.6 million

Benefits of the RAP Process

- Involves multiple experts in transportation & revenue forecasting
- Uses well-known and accepted statistical methods
- Provides objective, data-based, accurate results
- Is recognized by bond rating agencies as stable and effective

Questions