



New Economy Initiative: Fiscal Breakeven for the University of Arizona Budget Request

Prepared for:
The Arizona Board of Regents
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Rounds Consulting Group, Inc. (RCG) was tasked with independently analyzing the economic and fiscal impact of the **University of Arizona's (UA)** space and medical related investment proposals. This is part of a broader effort for the Arizona Board of Regents (ABOR) to conduct an analysis of each university budget proposal and identify whether or not the state's taxpayer investment will yield a positive return on investment (ROI) within a certain number of years.

Note: The analysis of the other university budget requests will be delivered in separate documents. Also, this analysis assumes the university funding will be ongoing. This makes the results of the analysis more conservative since a larger multi-year cost will be compared with the calculated benefits. A similar approach was taken with the other university analyses.

For FY 2021, UA developed a proposal focused on investing in "New Economy" graduates in high-demand and high-wage majors directly supporting the aerospace/defense industry as well as medical related education and research. Funding will also be used to position UA to capture substantial new research and development grants from federal entities such as the Department of Defense and NASA, as well as expand partnerships with private companies such as Raytheon.

The Arizona Board of Regents' original budget request included a \$32M annual UA investment in the New Economy categories previously addressed. While the dollar values may change during the legislative session, the ROI calculation timing will remain intact at this scale of funding.

A customized economic model was developed specifically for these budget items and was processed dozens of times covering multiple economic development scenarios. The wages for the new workers will be relatively high and will escalate over time. This will produce economic and fiscal impacts at an increasing rate over time.

The model measures the direct and resulting multiplier effects produced by the proposed funding in terms of economic output, jobs, labor income, and government tax revenues. The analysis is again unique in that it considers synergy created when university and federal research and development endeavors converge, which further increases wage levels and industry development. Additional analyses were produced related to partnerships with major national defense contractors. Finally, interviews with economic development experts were conducted to confirm or refute the assumptions contained in the analysis.

The timeframe for comparison is unique to different proposals. The state has utilized a 5-year breakeven analysis on business recruitment projects, while cities and towns typically defer to 10 years for individual business location analyses. When infrastructure issues are considered, such as transportation,



communications, or longer-term workforce efforts, the breakeven goal falls within 20-40 years. “Hard” infrastructure investments, such as roads, are typically analyzed between 20-40 years, while “soft” infrastructure investments, such as education, should not exceed 20 years. In this analysis, the breakeven should occur within 20 years. If the timeframe falls under this 20-year threshold the project is considered to be a good taxpayer investment.

Key Findings

The budget request is estimated to achieve a breakeven for the state by year 7 for the combined space and medical portions of the request. This will occur if the Raytheon expansion is tied to the wind tunnel portion of the budget, and the new job impacts are included. Without consideration of the Raytheon expansion, the breakeven is 15 years, well within the 20-year goal. In each year thereafter, the positive ROI further advances. The benefits are sizeable because the budget request/investment proposal builds on the local economy’s strengths, addresses workforce shortages and opportunities in technological advancement, and forged a public/private partnership in the aerospace industry.

Breakeven Analysis – Cumulative Impacts

The university estimates that a portion of the original \$32M annual investment will be used to increase the number of aerospace/defense/engineering graduates in Arizona by approximately 325 per year and the number of health sciences graduates (including nurses, physician assistants, and physical therapists) by approximately 105 per year. These appear to be conservative numbers. A portion of the funding will also create accelerated honors programs giving students pursuing a career in certain medical programs the opportunity to reduce the total time to graduate from 8 to 7 years.

Additional benefit occurs when specialized university programs are matched with private sector activities, federal projects, and the local economy’s strengths. This results in a higher graduate retention rate as well as higher wages and levels of productivity. The UA proposal directly focuses on these efficiencies.

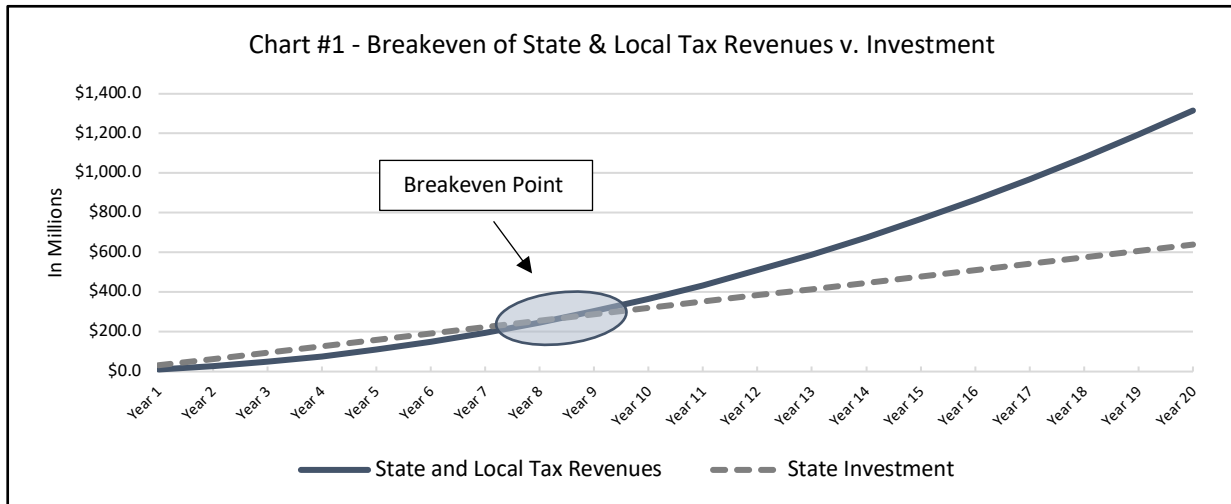
Aerospace/defense/engineering and health sciences graduate retention is estimated by RCG to advance to 65% or more when the programs are fully implemented and integrated with the state’s overall economy and economic development entities. However, this analysis uses a more conservative 60% maximum retention rate. The following table provides a summary of the total (sum of direct, indirect, and induced) jobs, wages, economic output, and tax revenues for the space and health sciences investment proposal. Over a 20-year period, an estimated \$1.3B in state and local tax revenues will be generated from the \$640M investment (\$32M a year).

Annual Figures: Economic & Fiscal Impacts – UA Investment Proposal				
	Total Jobs	Total Wages (\$ Millions)	Total Output (\$ Millions)	Total Taxes (\$ Millions)
Year 5	4,842	\$298.5	\$862.7	\$33.7
Year 10	9,205	\$570.4	\$1,650.8	\$62.9
Year 15	13,569	\$842.4	\$2,439.0	\$92.0
Year 20	17,932	\$1,114.3	\$3,227.2	\$121.1
Total – 20 Years			\$34,593.2	\$1,315.5

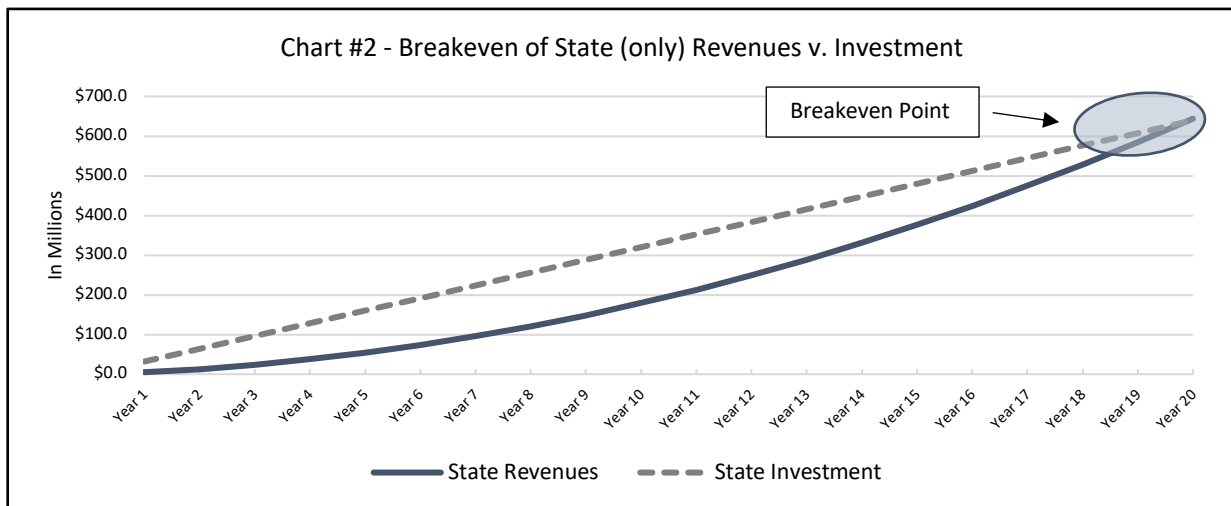


Breakeven Analysis – Individual Calculation Detail

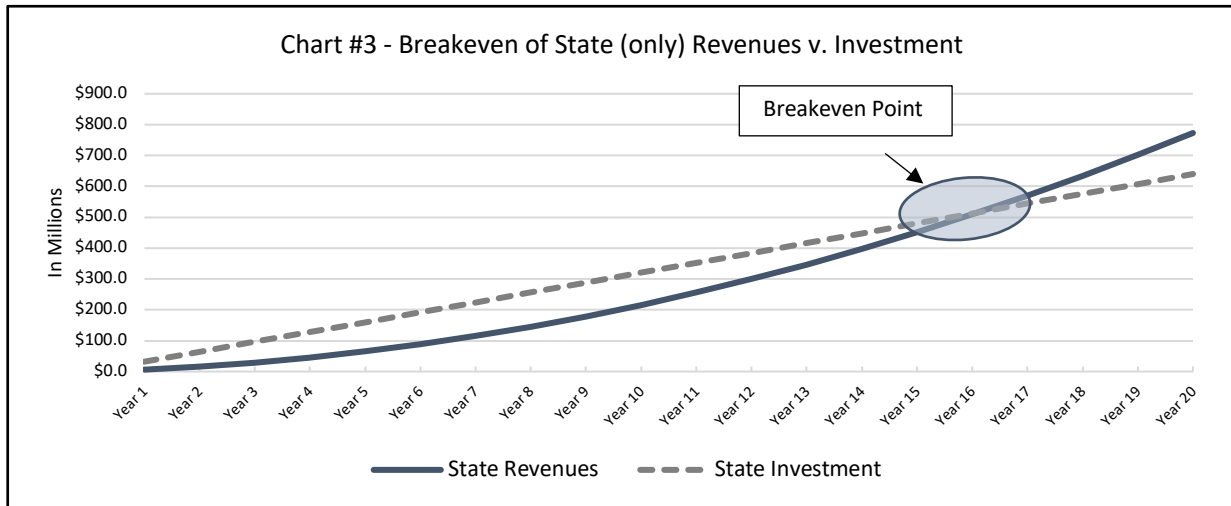
There are multiple considerations in this analysis. The initial cumulative breakeven point, as shown in Chart #1, is reached by year 9 if both state and local tax revenues are considered when analyzing the space and medical budget proposals.



A true state ROI requires the comparison of state investments with state tax revenues. When just state tax revenues are considered, and with no consideration of the full list of static and dynamic impacts, breakeven occurs in year 20 (Chart #2). *This excludes approximately 30% of the full economic benefit (related to stronger economic activity lifting other industry sectors as well as business recruitment and retention).*



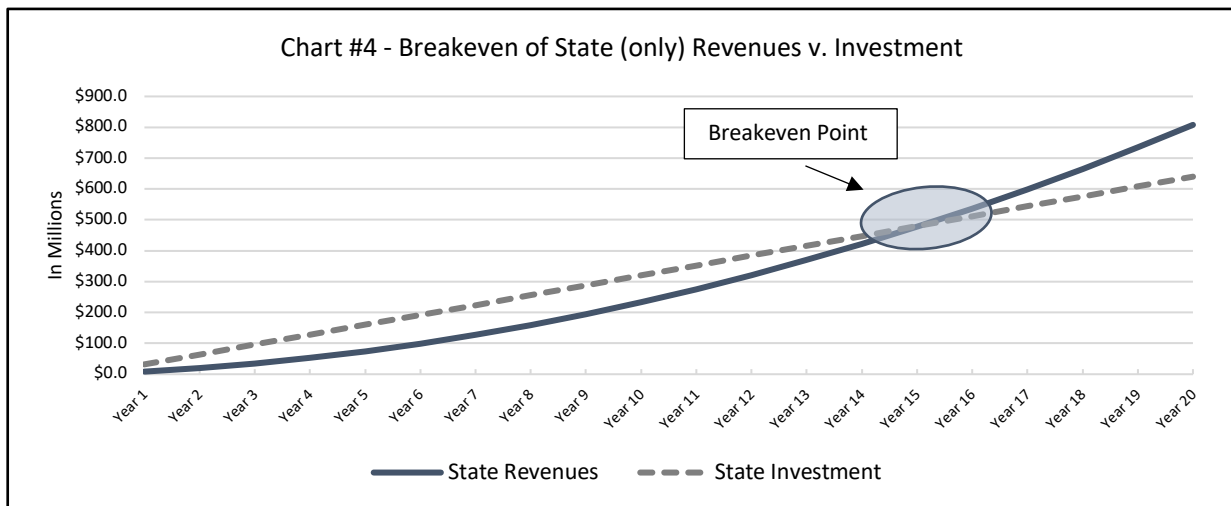
The supplementary impacts related to further innovation implementation, known as Moretti effects, are displayed in Chart #3.

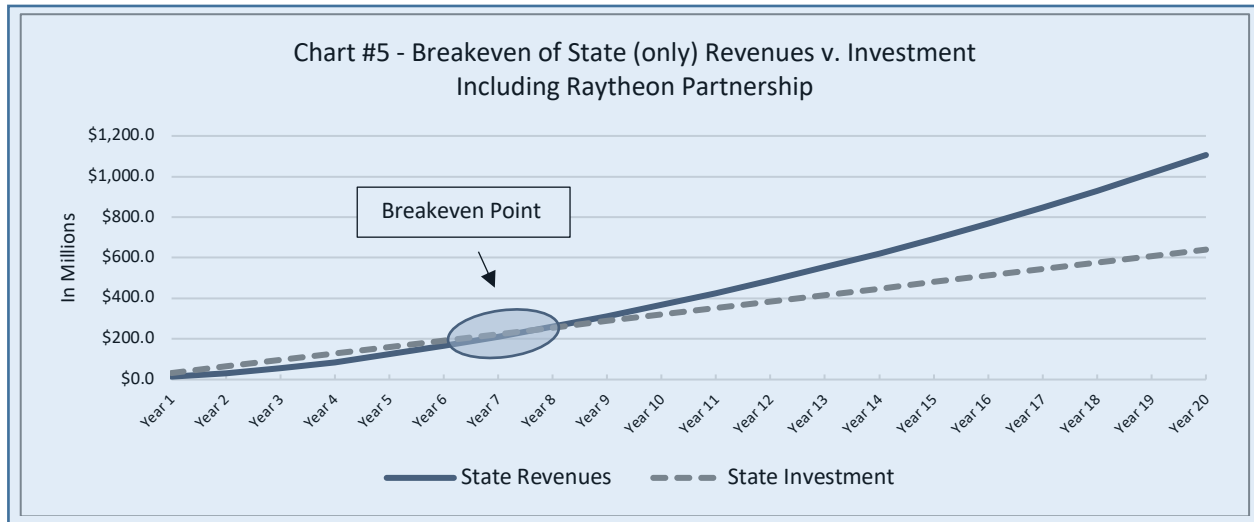


Additionally, the impacts related to capturing federal space exploration projects, medical research and development funding, defense research grants, and expanding partnerships with local businesses (Chart #4) are provided. *Breakeven in this scenario occurs in the latter part of year 15.*

Furthermore, the UA has already formed a partnership with Raytheon, a leader in defense research and development. The impacts related to this joint venture are displayed in Chart #5.

Chart #5 represents the most complete economic analysis of ROI including direct, indirect and induced impacts, and the dynamic benefits that are realized under these conditions. The breakeven occurs during the latter part of year 7. As a reminder, the goal was for breakeven to occur within 20 years.





Sensitivity Analyses – Identifying Estimation Error Risk

Because uncertainty exists related to capturing federal research grants and expanding defense contractor partnerships, very conservative assumptions were used to identify a higher level of confidence. Even if the UA space and medical initiatives capture roughly 1/3rd of the speculative grants and partnerships, a breakeven for the state is reached by year 9 versus 7.

Note: These values are only applicable if private sector demand for the aerospace/defense/engineering and medical/healthcare jobs increase in proportion. At the present time workforce shortages in these fields exist. However, the university will still need to further develop its ties with the private sector and various government entities for the full potential to be realized.

The university also needs to be very aggressive in its student recruitment efforts and in keeping the program up-to-date with a changing global marketplace. Policymakers should consider these points as they review the budget request. The university should be asked to provide a clear description of how it plans on maximizing the ROI for the taxpayer.

Conclusions and Recommendation

This independent analysis identifies that UA's space and medical initiatives will yield a benefit to the state's taxpayers in a short period of time, and the extra funds that will arise as a result of the program enhancement can later be used for other economy-boosting projects. The benefits will accumulate rapidly if the university continues to assess how the space and medical programs will blend with changing New Economy demands.

It is recommended that the university's space and medical initiative budget request be seriously considered, but with sufficient explanation of how the efforts will blend with the state's recent economic momentum, and in full consideration of providing taxpayers with a positive return on their investment.

Additional Considerations

The ABOR New Economy initiative will be yielding stronger connections with economic development efforts than originally anticipated. For example, the newly formed partnership with Raytheon is an



example of best practices in public policy and will yield a significant return on the taxpayer investment. Consider the following projects:

Wind Tunnel - It is recommended the estimated \$4M for the Raytheon/UA wind tunnel agreement not fully count against the UA budget request since it is effectively a highly productive and high ROI economic development project. Otherwise, the university would be penalized for the development of a new standard in high tech partnering. Even if the Raytheon related benefits are counted separately, the UA budget proposal would still yield a positive ROI by year 15.

Immunology Cluster - Additional benefits can also be calculated related to proposed efforts to develop an immunology economic hub in the state. While this proposal has only been a small part of the overall budget discussion, the economic returns, if implemented, would be very large.

The state should consider a more aggressive budget agreement on this topic. If required, a separate analysis of this potential can be later requested.