



New Economy Initiative: Fiscal Breakeven for the Northern Arizona University 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 **Northern Arizona University's (NAU)** budget request/investment proposal. This is part of a broader effort for the Arizona Board of Regents 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, NAU developed an investment proposal focused on increasing the supply of "New Economy" healthcare and cybersecurity professionals by increasing educational opportunities in high-demand and high-wage nursing, mental/behavioral health, and computer/cybersecurity disciplines. To do so, NAU originally requested state funding of \$21.6M. Funding will be used to support faculty, equipment, infrastructure and staff retention/recruitment and produce a talent pipeline in key areas of the new economy.

In order to quantify the economic impact produced by a \$21.6M annual investment and the increased production of healthcare and cybersecurity professionals in the New Economy, a customized economic model was developed specifically for this budget item. 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 unique in that it considers synergy created when university and private sector endeavors converge, which further increases wage levels and business development.

Additional analyses were produced related to innovation potential. 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 investment 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. For high ROI projects, the timeframe goal is 10 years.

Key Findings

The \$21.6M annual budget request is estimated to achieve a breakeven for the state by year 23. If local government revenues are included the breakeven is reached at year 13. Excluding local government revenues, the breakeven is outside of the 20-year window that would be considered reasonable. However, if the university can advance its graduate retention rate in the described health care fields to 80%, the breakeven point improves to year 19.

For additional perspective, the analysis was completed in reverse, meaning an estimate of ongoing appropriations is provided to yield a positive ROI for the state by year 10 (similar to scenarios for both ASU and UA). This is conditional on NAU generating the same number of estimated new workers that will be in high demand in the New Economy.

The analysis identified an appropriation of between \$10.8M and \$12.5M per year, at the reported workforce development levels, would yield a breakeven by year 10.

Breakeven Analysis – Cumulative Impacts

NAU estimates that the \$21.6M investment will increase the number of clinical psychologists, physical therapists, physician assistants, nurses, and cybersecurity professionals in Arizona by approximately 230 per year. A portion of the funding will also create partnerships with community colleges/partners to increase the number of nursing specialists by another 80 a year.

Additional benefit occurs when specialized healthcare/cybersecurity programs are matched with private sector activities and the local economy's strengths. This results in a higher graduate retention rate as well as higher wages and levels of productivity. The average long-term graduate retention rate in these New Economy fields is estimated to advance to 65% or more when the programs are fully implemented and integrated with the state's overall economy and economic development entities. This analysis uses a more conservative 60% maximum retention rate.

It is worth noting that NAU reports the retention rate for their physician assistant graduates is 84%. If just the healthcare related jobs that result from this program are analyzed with an 80% retention rate, the breakeven points in the analyses will move up by approximately 4 years.

The following table provides a summary of the total (sum of direct, indirect, and induced) jobs, wages, economic output, and tax revenues. Over the listed 30-year period, an estimated \$1.4B in state and local tax revenues will be generated from the \$647.7M investment (\$21.6M a year).

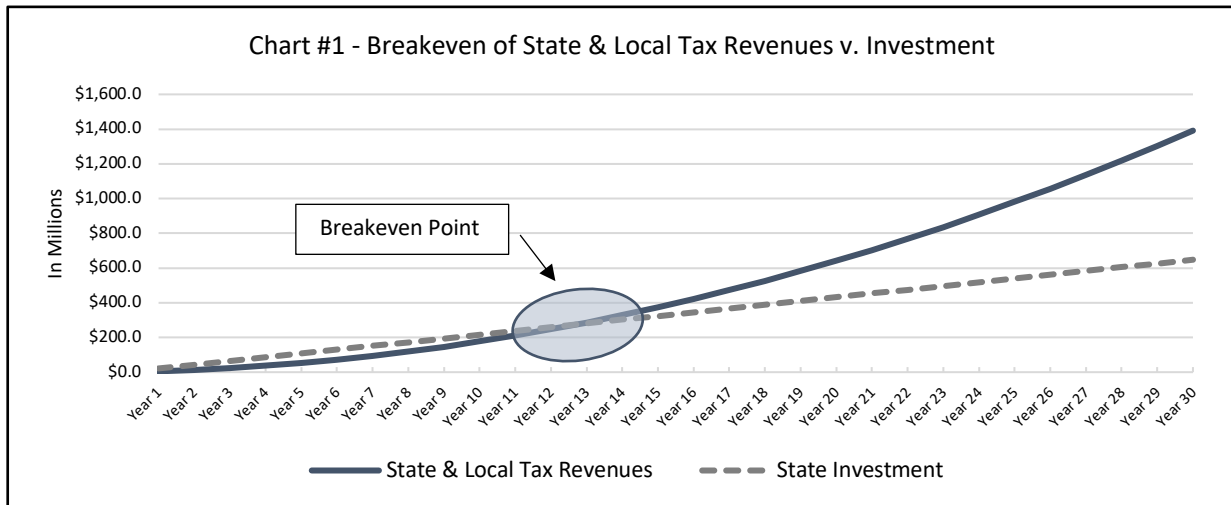


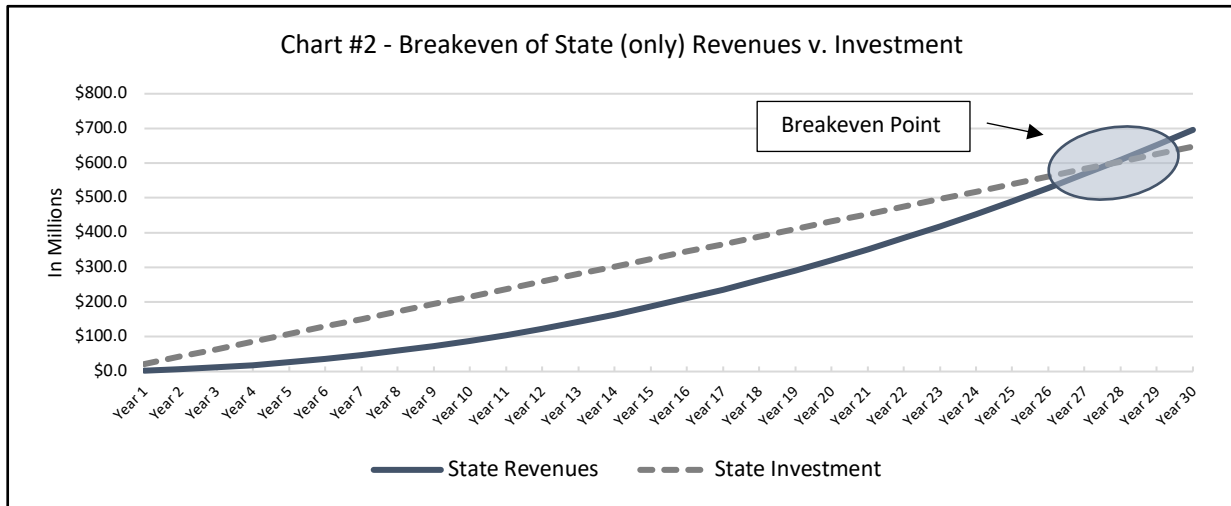
| Annual Figures: Economic & Fiscal Impacts – NAU Proposal | | | | |
|--|------------|---------------------------|----------------------------|---------------------------|
| | Total Jobs | Total Wages (\$ Millions) | Total Output (\$ Millions) | Total Taxes (\$ Millions) |
| Year 5 | 2,180 | \$149.1 | \$306.1 | \$16.3 |
| Year 10 | 4,154 | \$286.9 | \$582.5 | \$30.6 |
| Year 15 | 6,128 | \$424.8 | \$858.9 | \$44.9 |
| Year 20 | 8,102 | \$562.6 | \$1,135.3 | \$59.3 |
| Year 25 | 10,076 | \$700.5 | \$1,411.7 | \$73.6 |
| Year 30 | 12,050 | \$838.3 | \$1,688.1 | \$87.9 |
| Total – 30 Years | | | \$26,595.8 | \$1,391.3 |

Breakeven Analysis – Individual Calculation Detail

There are multiple considerations in this analysis. The initial cumulative breakeven point, as shown in Chart #1, is reached in year 13 if both state and local tax revenues are considered. This also displays why local government entities should take a greater interest in higher education proposals, specifically in those that yield a positive return to the taxpayer.

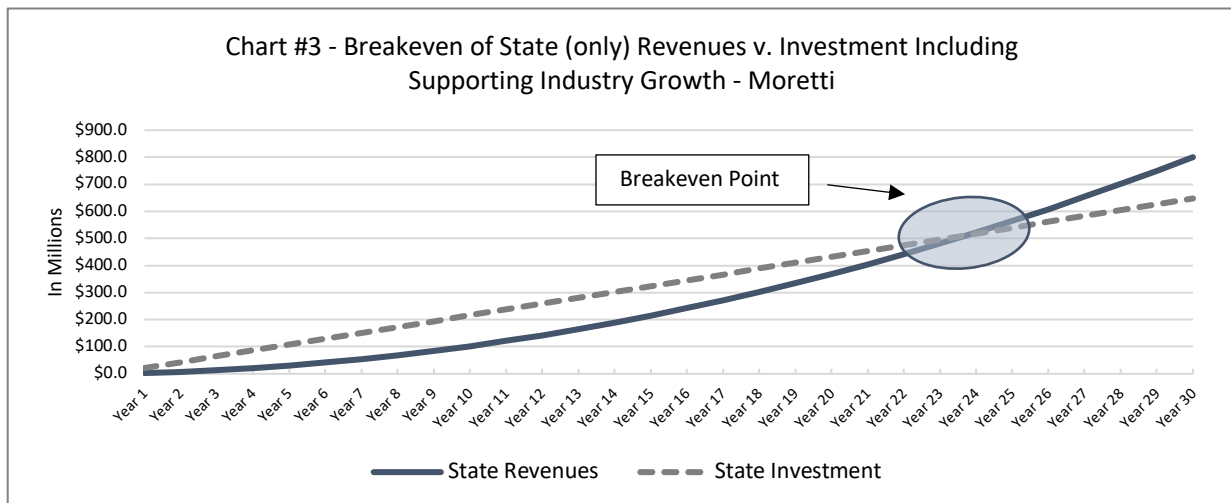
A true state ROI requires the comparison of state investments with state tax revenues. When just state tax revenues are considered, and with no consideration of the full list of dynamic impacts, the NAU breakeven occurs in year 28 (Chart #2). *This excludes approximately 20% of the full economic benefit (related to stronger economic activity lifting other industry sectors as well as business recruitment and retention).*

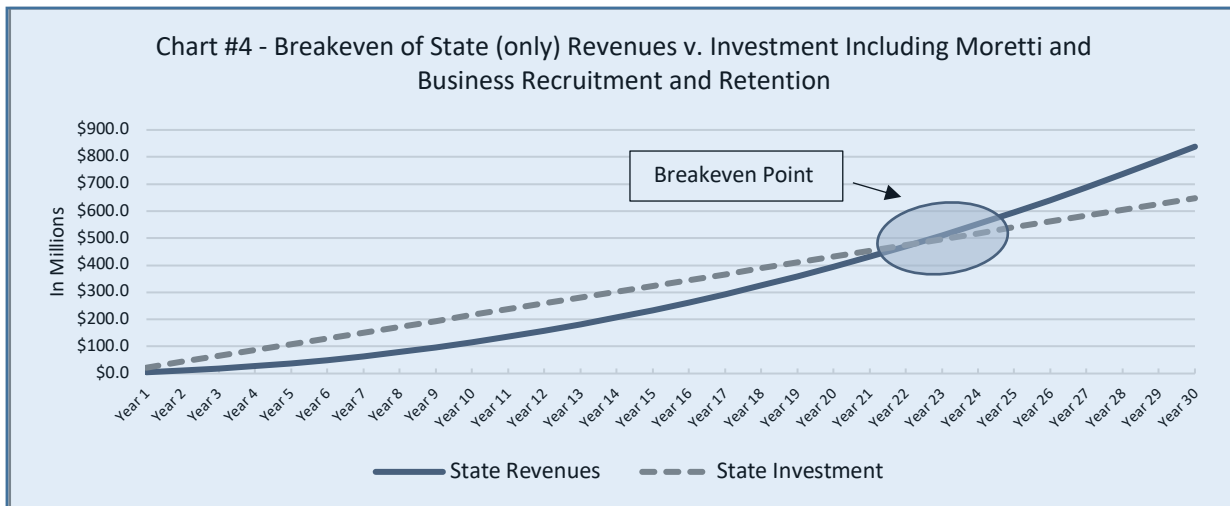




The additional impacts related to further innovation implementation, known as Moretti effects (Chart #3), and growth in economic development recruitment and retention (Chart #4) are also displayed.

Chart #4 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 year 23. However, with a higher retention rate for healthcare field graduates, the breakeven point advances to year 19.





Additional Considerations

Grants: There will exist opportunities for economic benefit beyond this analysis. For example, investments in NAU’s healthcare/cybersecurity programs will likely increase the university’s ability to attract external grants. For perspective, each \$100M in grants will yield another \$1.2M in state tax collections. Therefore, \$200M in grants would advance the breakeven point to within 20 years. Similarly, \$600M in grants would advance the breakeven point to within 15 years. These grant levels are relatively high and may not be reasonable.

Retention: As previously noted, a 60% state retention rate of specialized New Economy graduates was used in this analysis. If the retention rate increases by as little as 5%, for a total of 65%, another \$39.5M in state tax revenue would be collected over the 23-year period. *This would advance the breakeven date by two years, placing it near the lower threshold (20 years) for a positive ROI.*

Healthcare Worker Shortages: Previous work conducted by RCG in 2019 identified that the state’s current healthcare worker shortage is an important economic consideration. This is also a problem across the nation as a whole. In general, *the ability of rural communities to more fully recover from the Great Recession will be dependent on their ability to maintain adequate hospital facilities as well as a sufficient number of healthcare professionals.*

In each analysis that was conducted it was identified that workforce development efforts in the healthcare fields consistently yields a positive return on investment. This is because the workforce training addresses significant gaps between supply and demand, yields higher wage jobs, and improves a region’s economic base. Therefore, detailed economic analyses identify that the NAU healthcare component of the request will yield similar results as long as funding is provided at a defensible level.

Sensitivity Analysis – Identifying Estimation Error Risk

The analysis included various exercises that strengthen and weaken the key economic inputs to identify a level of confidence within the modeling. For example, both lower and higher graduate figures were analyzed, along with varying levels of retention, wages, and impact on the overall economy. The resulting impacts were similar in each model run.



Conclusion and Recommendation

This independent analysis identifies that NAU's original budget request of \$21.6M for its healthcare/cybersecurity programs will provide taxpayers with a positive return on their investment by year 23 (19 years under the higher retention rate example), when the full economic benefits are considered.

If a breakeven point is desired within 10 years (and the university's aforementioned workforce production remains constant), an investment proposal of between \$10.8M and \$12.5M should instead be considered.