EXECUTIVE SUMMARY

Item Name: **Request to Amend TRIF 3-Year Plan for Arizona State University**

☒ Action Item

Requested Action: Arizona State University asks the board to approve its Amendment to the institution's TRIF 3-year plan.

Background/History of Previous Board Action

Arizona law established TRIF from Proposition 301 state sales tax revenue and gives ABOR the authority to administer the fund on the universities' behalf.

To comply with the TRIF statute, the board approves a TRIF 3-year plan which provides a narrative and budget for university research and workforce development programs funded by TRIF money. The 3-year plan summarizes the program investments and predicted outcomes for FY 2022-2024. Each program proposal targets one of the five strategic research areas:

- Improving Health;
- Water, Environment and Energy Solutions;
- National Security Systems;
- Space Exploration and Optical Solutions, and
- Workforce Development.

Based on the approved university's 3-year plans, the board distributes an annual base amount of TRIF revenues to the universities under the following allocations:

- ASU: $32 million per year
- NAU: $16 million per year
- UA: $32 million per year

The universities use this base allocation to fund the research and work force programs summarized in the plans.

Discussion

In FY 2021, the board received more TRIF revenue than originally budgeted. The board is distributing some of the additional revenue received as a 6 percent inflationary adjustment to the base amount already allocated to each university. For ASU this represents about $1.9 million in additional revenue resulting in a base TRIF funding

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awarded of $33.9 million**.** This inflationary adjustment will be ongoing for the duration of the 3-year plan.

ASU revised its 3-year plan to allocate the additional $1.9 million to strategic investments for two established TRIF programs as explained in the attached amendment. Specific amendments to the plan are identified in red.

Committee Review and Recommendation

The Research and Health Sciences Committee reviewed this item at its January 27, 2022 meeting and recommended forwarding the item to the full board for approval.

Statutory/Policy Requirements

A.R.S. §15-1648 “Technology and Research Initiative Fund”

ABOR Policy 3-412 “Administration of Technology and Research Initiative Fund”

Arizona Board of Regents

Technology and Research Innovation Fund (TRIF) Program Proposal

University:	Arizona State University
TRIF Investment Area:	Improving Health
Program Name:	Biodesign Institute

Problem Statement:

Emergent global challenges in medicine, environmental sustainability and national security continue to threaten the health of our communities and our planet. The Biodesign Institute at Arizona State University is committed to solving such challenges by developing rigorous, collaborative, nature-inspired science for the benefit of all life on Earth. By leveraging TRIF investment, Biodesign improves health, ensures security, sustains the planet and provides access and workforce development opportunities.

Program Description:

As the premiere scientific research institute in one of the nation's fastest-growing research universities, the Biodesign Institute addresses an expansive array of global challenges by creating nature-inspired solutions to address society's greatest challenges in biomedical health, environmental sustainability and national security. Biodesign is poised to promote workforce and leadership development with academic and hands-on, laboratory enrichment experiences and education to advance research, technology and thought leadership in the state of Arizona, and to elevate and expand Arizona's highly skilled workforce. Voter-supported investment in university research pioneered at Biodesign allocates resources to promote access to highly skilled experts and technologies in state-of-the-art laboratories for high-impact research of societal value. In this way TRIF funding is a powerful driver of scientific excellence and enables multiple pathways to enrich the economy through higher education access for workforce development, with ASU Biodesign-specific programs in impactful areas.

What is the University's Advantage and/or Anticipated Funding Opportunities?

The ASU advantage for additional funding opportunities are many, including: 1. Expansion of COVID-19 testing success to a more generalized platform for developing new ways to rapidly diagnose and detect disease. 2. Expansion of the Neurodegenerative Disease Research Center (NDRC) under the leadership of Jeff Kordower. 3. In partnership with the ASU School for Complex Adaptive Systems, expand efforts in cybersecurity, artificial intelligence, deep learning and computational biology to reduce internet security threats and measure the impact of censorship on internet architecture. 4. Leverage TRIF funding to enable the formation of spinout companies. 5. Established the Biodesign Center for Sustainable Macromolecular Materials and Manufacturing (BCSM3) to focus on sustainable manufacturing and polymer chemistry, with goals of generation of sustainable, environmentally friendly materials. 6. Development of table-top x-ray source capable of making molecular movies.

Is there an Arizona Specific Benefit or Impact?

Biodesign is committed to impactful programs to improve human health and economic opportunity in Arizona. TRIF funding to the Biodesign Institute would enhance the workforce and impact health in many areas, including: 1. Through Compact X-ray free electron laser/compact X-ray light source student internships, train the next generation of X-ray machinists, technologists and physicists. 2. Through internships and fellowships in the ASU Biodesign Clinical Testing Laboratory (ABCTL), train and educate workers to seek new technologies and solutions to respond to potential infectious viruses such as COVID-19 and its various strains. 3. Develop Biodesign workforce training opportunities in semiconductor science and sustainable manufacturing as well as other key areas of economic value.

Investment Detail

	2022	2023	2024	Total
Infrastructure	4,620,982	4,620,982	4,620,982	13,862,946
Basic Research	0	0	0	0
Applied Research	2,138,000	2,138,000	2,138,000	6,414,000
Development	2,138,000	2,138,000	2,138,000	6,414,000
Total	8,896,982	8,896,982	8,896,982	26,690,946

Performance Measures

	2022	2023	2024	Total
Faculty Startup Package Expenses	0	0	0	0
Postdocs Supported	95	100	105	300
Graduate Students	415	436	458	1,309
Undergraduate Students	159	167	176	502
Sponsored Project Funding	56,867,053	59,710,405	62,695,925	179,273,383
Publications in Academic Peer-Reviewed Journals	0	0	0	0
Startups	4	4	5	13

Arizona Board of Regents

Technology and Research Innovation Fund (TRIF) Program Proposal

University:	Arizona State University
TRIF Investment Area:	Water, Energy and Environmental Systems
Program Name:	Collaborative Research Infrastructure and Core Facilities

Problem Statement:

As the state of Arizona positions itself to be a leader in the research areas targeted by TRIF, it is imperative that we maintain and enhance our core infrastructure that supports these initiatives. We have taken steps toward developing a statewide network to promote awareness of shared resources across the state. We have leveraged federal funding to the extent possible to secure advanced and highly specialized technologies. Just as important are our fundamental capabilities and personnel that form the backbone of our core infrastructure. TRIF funding is an essential component of our overall funding strategy to maintain an appropriate refresh rate of these broadly-impactful fundamental capabilities.

Program Description:

Core Facilities mission:

To facilitate the expansion and enhancement of ASU's research enterprise by providing technical and scientific services to support faculty research objectives and enable success.

Strategy:

1. Maintain state-of-the-art facilities and expert staff to support technologies and applications aligned with ASU's strategic research goals.
2. Provide effective access (physical, financial, training, workflows) and maintain customer-focused orientation.
3. Increase awareness of capabilities through marketing, communications and promotional efforts.
4. Engage industry and non-profit partners to fully leverage resources and maintain fiscal sustainability.

What is the University's Advantage and/or Anticipated Funding Opportunities?

ASU is uniquely poised to advance research and secure external funding in key areas that are enabled largely by core facilities. Given federal funding initiatives, our geographical location, and strength in advanced materials, solar, power electronics and other related areas, there is significant opportunity for expanding partnerships within the semiconductor industry as companies establish a presence in the Phoenix metro area. In addition to funding in the semiconductor space, ASU's clinical partnerships with multiple health care organizations provides a unique opportunity to competitively pursue National Institutes of Health funding through the Clinical and Translational Science Award program, including our ability to understand the nature of diseases such as COVID-19 and respond with new diagnostics, vaccines and therapeutics depends on us having the most current tools at our disposal for investigating these problems.

Is there an Arizona Specific Benefit or Impact?

By nature, core facilities train a high volume of university students, staff and faculty, as well as industry partners, and thereby contribute significantly to hands-on workforce development. Many of our student trainees move on to work in local industry as scientists and engineers, utilizing the skill sets they develop under our training programs.

Investment Detail

	2022	2023	2024	Total
Infrastructure	1,600,000	1,600,000	1,600,000	4,800,000
Basic Research	670,128	670,128	670,128	2,010,383
Applied Research	670,128	670,128	670,128	2,010,383
Development	670,128	670,128	670,128	2,010,383
Total	3,610,383	3,610,383	3,610,383	10,831,149

Performance Measures

	2022	2023	2024	Total
Faculty Startup Package Expenses	0	0	0	0
Postdocs Supported	159	167	175	501
Graduate Students	696	731	768	2,195
Undergraduate Students	332	349	366	1,047
Sponsored Project Funding	61,072,281	64,125,895	67,332,189	192,530,365
Publications in Academic Peer-Reviewed Journals	0	0	0	0
Startups	5	6	6	17