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**TECHNOLOGY AND RESEARCH INITIATIVE FUND  
(TRIF)  
ANNUAL REPORT**

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**ARIZONA BOARD OF REGENTS**

**Arizona State University  
Northern Arizona University  
The University of Arizona**



**For the fiscal year ended June 30, 2005,  
as required by A.R.S. §15-1648(D).**

**September 1, 2005**



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*Executive Director*  
**Joel Sideman**

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September 1, 2005

Governor Janet Napolitano  
Senate President Ken Bennett  
Speaker of the House of Representatives James Weiers  
Arizona State Capitol  
1700 West Washington Street  
Phoenix, AZ 85007

Dear Governor Napolitano, President Bennett, and Speaker Weiers:

On behalf of the Arizona Board of Regents, Arizona State University, Northern Arizona University, and The University of Arizona, and in accordance with A.R.S. §15-1648(D), I am pleased to submit the attached annual report for the Arizona Board of Regents Technology and Research Initiative Fund (TRIF) for the fiscal year ended June 30, 2005. TRIF is continuously appropriated to the Arizona Board of Regents with Education 2000 (Proposition 301, November 2000) sales tax revenues pursuant to A.R.S. §42-5029(E)(2).

As required, ABOR has adopted rules to administer TRIF and has incorporated these rules into Board Policy 3-412.

This annual report provides budget and expenditure information on each TRIF initiative. These initiatives are consistent with statutory language calling for TRIF funds to support university research, development, and technology transfer related to the knowledge-based global economy; to expand access to baccalaureate or post-baccalaureate education for time-bound and place-bound students; to implement recommendations of the Governor's Task Force on Higher Education and the Arizona Partnership for the New Economy; and to develop programs that will prepare students to contribute in high technology industries located in Arizona.

Governor Napolitano, President Bennett, Speaker Weiers  
September 1, 2005  
Page Two

Our FY 2005 TRIF budget supported initiatives in biosciences and biotechnology, information science and technology, and access and workforce development, as well as optical sciences, water sustainability, and environmental research and development. These programs have been designed and implemented to better position Arizona as a major player in the global marketplace. Detailed business plans for each initiative have been developed and are available on the ABOR website.

Please contact me at 602-229-2505 or [jsideman@asu.edu](mailto:jsideman@asu.edu) if I can answer any questions or provide additional information about these important and exciting initiatives.

Sincerely,

Joel Sideman  
Executive Director

c: The Honorable Jan Brewer, Secretary of State  
Ms. GladysAnn Wells, Director, Arizona State Library, Archives and Public Records  
Members of the Arizona Board of Regents  
Dr. Michael Crow, President, Arizona State University  
Dr. John Haeger, President, Northern Arizona University  
Dr. Peter Likins, President, University of Arizona

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**ARIZONA BOARD OF REGENTS  
TECHNOLOGY AND RESEARCH INITIATIVE FUND (TRIF) ANNUAL REPORT**

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**For the Fiscal Year Ended June 30, 2005**

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**ARIZONA BOARD OF REGENTS**  
**TECHNOLOGY AND RESEARCH INITIATIVE FUND (TRIF)**  
**ANNUAL REPORT**

**For the fiscal year ended June 30, 2005**

**EXECUTIVE SUMMARY**

- ▶ Education 2000 (Proposition 301), passed by Arizona voters in November 2000, approved a 0.6 percent increase in the state sales tax to be dedicated to the universities, the community colleges, and K-12. Collection of the tax began on June 1, 2001.
- ▶ A.R.S. §15-1648 establishes the Technology and Research Initiative Fund (TRIF) to receive Proposition 301 revenue and gives the Arizona Board of Regents the authority to administer the fund. To date, \$198,050,229 in revenue from Proposition 301 have been received into TRIF.
- ▶ In March 2001 the Arizona Board of Regents approved a five-year TRIF budget plan for FY 2002-2006, along with guidelines for implementation of the budget. The Board annually approves a revised budget and detailed performance measures for each initiative.
- ▶ A.R.S. §15-1648(D) requires the Board to submit to the Governor and the Legislature by September 1 of each year a report to include “a description of the amount and duration of each new award distributed and a description of the purpose and goals for each award. For existing awards, the Arizona Board of Regents shall use a detailed set of performance measures to determine the overall effectiveness of each award.”
- ▶ All FY 2005 TRIF-funded initiatives, with the exception of Regents Innovation Fund projects which are responsive to emerging issues, were “existing awards,” i.e., they were continuing projects included in the five-year budget plan approved by the Regents in March 2001. Detailed business plans for each initiative have been developed by the universities and central office and are available on the Arizona Board of Regents web site at [www.abor.asu.edu](http://www.abor.asu.edu).
- ▶ The FY 2005 TRIF revenue budget totaled \$52,365,000. Total actual TRIF revenue received during FY 2005 was \$56,973,042, resulting in overrealized revenue of \$4,608,042 (8.8%).
- ▶ For purposes of this annual report, revenue consists of actual receipts into TRIF for August 2004 through June 2005 plus an estimated amount for July 2005 revenue. This estimate was required to record the June 30, 2005, year-end revenue accrual and to prepare this report on a timely basis. Actual TRIF revenue for the 12-month

period August 2004 through July 2005 was \$56,703,802, or \$4,338,802 (8.3%) over the budgeted amount. This overrealized revenue has been allocated to the universities for use on the approved TRIF projects.

- ▶ Total TRIF expenditures in FY 2005 were \$53,170,725, representing 69.8% of total revenue available (including carryforward amounts from the prior year).
- ▶ Recognizing the volatility and unpredictability of the TRIF revenue stream, the universities and central office exercised sound budgetary and financial management in the expenditure of TRIF funds throughout FY 2005.
- ▶ TRIF budget guidelines adopted by the Board call for full expenditure of FY 2005 funds by December 31, 2005. The universities and central office may then request that any unexpended funds be reallocated for the same or different use.
- ▶ Expenditure detail by university and central office and by initiative is presented in this report.
- ▶ Detailed performance measures for evaluating individual initiatives were approved by the Board, as required by statute. Performance measures and outcomes have been compiled by each university and the central office for each TRIF initiative and are included in this report.
- ▶ This report reflects the statutorily required funding for costs of Certificates of Participation (COPs) issued for the lease-purchase of buildings and associated infrastructure at ASU East and ASU West.
- ▶ This report reflects compliance with the statutory 20% limitation on use of TRIF funds for capital projects expenditures. In FY 2005, 8.3% of TRIF expenditures were used for capital projects.

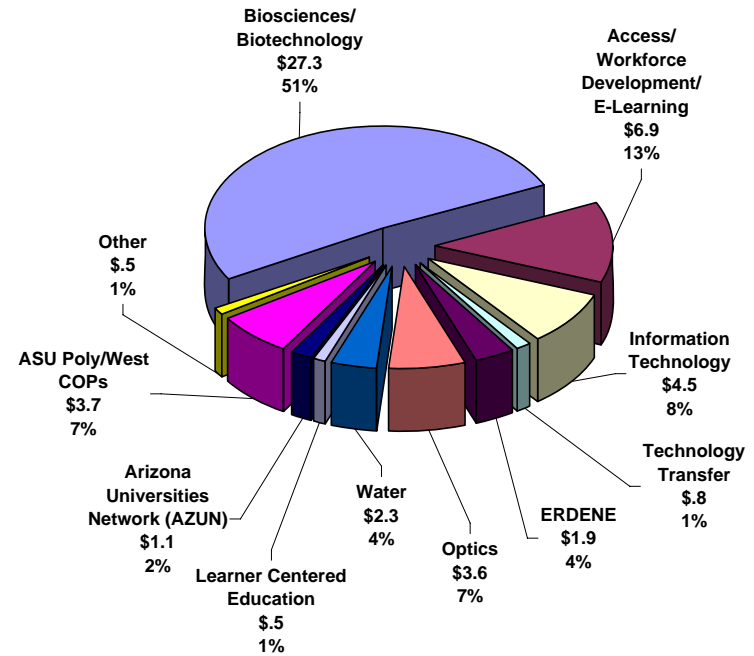
**ARIZONA UNIVERSITY SYSTEM**  
**TECHNOLOGY AND RESEARCH INITIATIVE FUND (TRIF)**  
**FY 2005 ACTUAL / FY 2006 BUDGET**  
**SYSTEM SUMMARY**

	<i>FY 2005</i> <i>REV BUDGET</i>	<i>FY 2005</i> <i>ACTUAL</i>	<i>FY 2006</i> <i>ORIG BUDGET</i>	<i>FY 2006</i> <i>REV BUDGET</i>
<b>REVENUE</b>				
Carryforward	\$ 19,171,550	\$ 19,171,550	\$ 3,133,126	\$ 22,749,566
TRIF Revenue	50,050,000	54,561,402	53,363,800	52,891,900
Arizona Universities Network (AZUN) Revenue	2,315,000	2,411,642	2,031,000	2,431,000
<b>TOTAL REVENUE</b>	<b><u>\$ 71,536,550</u></b>	<b><u>\$ 76,144,594</u></b>	<b><u>\$ 58,527,926</u></b>	<b><u>\$ 78,072,466</u></b>
<b>EXPENDITURES</b>				
<b>OPERATING BUDGET</b>				
Personal Services	\$ 29,007,929	\$ 23,779,172	\$ 23,072,413	\$ 34,984,500
ERE	6,616,859	5,971,234	5,028,555	8,788,197
All Other Operating	18,555,929	14,269,632	19,718,031	20,275,377
Grants/Projects	2,245,321	1,322,588	1,926,727	1,926,727
<b>TOTAL OPERATING BUDGET</b>	<b><u>\$ 56,426,038</u></b>	<b><u>\$ 45,342,625</u></b>	<b><u>\$ 49,745,726</u></b>	<b><u>\$ 65,974,801</u></b>
<b>CAPITAL BUDGET</b>				
Building Renovation	5,993,500	1,117,600	2,000,000	3,175,965
Debt Service	3,920,000	3,000,000	3,000,000	5,140,000
ASU Poly/W COPs Lease Purchase Payment	3,779,900	3,708,500	3,782,200	3,781,700
<b>TOTAL CAPITAL BUDGET</b>	<b><u>\$ 13,693,400</u></b>	<b><u>\$ 7,826,100</u></b>	<b><u>\$ 8,782,200</u></b>	<b><u>\$ 12,097,665</u></b>
<b>EXPENDITURES GRAND TOTAL</b>	<b><u>\$ 70,119,438</u></b>	<b><u>\$ 53,168,725</u></b>	<b><u>\$ 58,527,926</u></b>	<b><u>\$ 78,072,466</u></b>
<b>SUMMARY BY PROGRAM AREA</b>				
Biosciences/Biotechnology		\$ 27,289,590		\$ 34,810,584
Access/Workforce Development/E-Learning		6,898,255		10,175,273
Information Technology		4,474,739		4,481,805
Technology Transfer		762,795		1,260,048
ERDENE		1,940,724		2,607,129
Optics		3,627,920		5,269,662
Water		2,340,296		4,644,514
Learner Centered Education		462,250		820,393
Arizona Universities Network (AZUN)		1,145,996		4,962,942
ASU Polytechnic/West COPs		3,708,500		3,781,700
Capital Projects (NAU)		28,201		3,474,445
Other		489,460		1,783,971
<b>EXPENDITURES GRAND TOTAL</b>		<b><u>\$ 53,168,725</u></b>		<b><u>\$ 78,072,466</u></b>

**ARIZONA UNIVERSITY SYSTEM**  
**TECHNOLOGY AND RESEARCH INITIATIVE FUND (TRIF)**  
**FY 2005 BUDGET / ACTUAL**  
**SYSTEM SUMMARY BY PROGRAM AREA**

	<i>FY 2005 REV BUDGET</i>	<i>FY 2005 ACTUAL</i>
<b>GRAND SYSTEM SUMMARY</b>		
<b>ARIZONA STATE UNIVERSITY</b>		
Biodesign Institute at Arizona State University	\$ 25,417,200	\$ 20,260,500
ASU Polytechnic COPs	2,116,100	2,064,700
ASU West COPs	1,663,800	1,643,800
<b>Subtotal</b>	<b>29,197,100</b>	<b>23,969,000</b>
<b>NORTHERN ARIZONA UNIVERSITY</b>		
Access and Workforce Development	4,371,712	3,130,274
Biosciences/Biotechnology	968,490	763,748
E-Learning	2,818,826	1,823,843
ERDENE (Environmental)	2,274,412	1,940,724
Capital	2,046,800	28,201
University Initiatives	826,047	375,054
Arizona Universities Network (AZUN)	1,815,542	312,579
<b>Subtotal</b>	<b>15,121,829</b>	<b>8,374,422</b>
<b>UNIVERSITY OF ARIZONA</b>		
Anyplace Access for Arizonans	1,103,886	1,081,762
Workforce Development: Educator Development	989,172	862,376
BIO5 Institute	7,764,660	6,220,377
Technology Transfer Infrastructure	1,060,372	762,795
Optical Sciences & Technology	4,566,298	3,627,920
Az Center for Information Science & Technology (ACIST)	4,987,541	4,350,084
Water Sustainability Program	2,737,798	2,302,796
Venture Fund	-	-
<b>Subtotal</b>	<b>23,209,727</b>	<b>19,208,110</b>
<b>ABOR CENTRAL OFFICE</b>		
Arizona Universities Network (AZUN)	1,086,040	833,417
Regents Innovation Fund	1,504,742	785,777
<b>Subtotal</b>	<b>2,590,782</b>	<b>1,619,194</b>
<b>EXPENDITURES GRAND TOTAL</b>	<b>\$ 70,119,438</b>	<b>\$ 53,170,726</b>

**FY 2005 SYSTEM ACTUAL TRIF EXPENDITURES**  
 (\$ in millions)



<b>SUMMARY</b>	
Biosciences/Biotechnology	\$ 27,289,590
Access/Workforce Development/E-Learning	6,898,255
Information Technology	4,474,739
Technology Transfer	762,795
ERDENE	1,940,724
Optics	3,627,920
Water	2,340,296
Learner Centered Education	464,250
Arizona Universities Network (AZUN)	1,145,996
ASU Polytechnic/West COPs	3,708,500
Capital Projects (NAU)	28,201
Other	489,460
<b>EXPENDITURES GRAND TOTAL</b>	<b>\$ 53,170,726</b>

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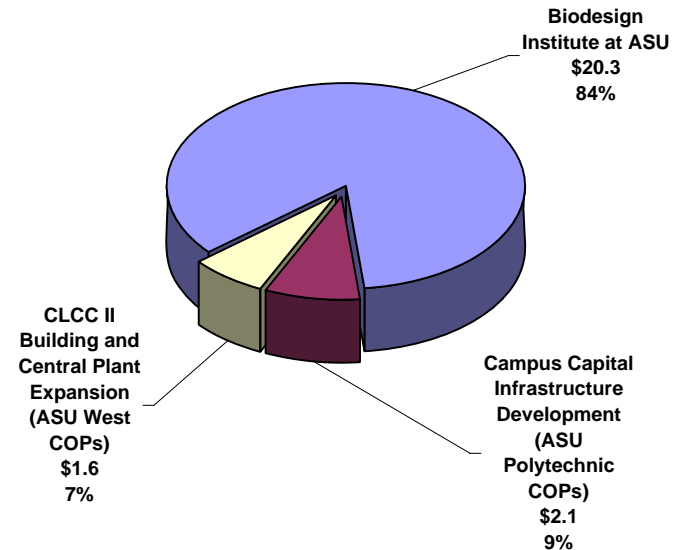
**ARIZONA STATE UNIVERSITY**  
**TECHNOLOGY AND RESEARCH INITIATIVE FUND (TRIF)**  
**FY 2005 ACTUAL / FY 2006 BUDGET**  
**SUMMARY**

	<i>FY 2005</i> <i>REV BUDGET</i>	<i>FY 2005</i> <i>ACTUAL</i>	<i>FY 2006</i> <i>ORIG BUDGET</i>	<i>FY 2006</i> <i>REV BUDGET</i>
<b>REVENUE</b>				
Carryforward	\$ 8,733,000	\$ 8,842,729	\$ 35,900	\$ 7,056,900
TRIF Revenue	20,500,000	22,183,171	21,946,300	21,874,400
<b>TOTAL REVENUE</b>	<b>\$ 29,233,000</b>	<b>\$ 31,025,900</b>	<b>\$ 21,982,200</b>	<b>\$ 28,931,300</b>
<b>EXPENDITURES</b>				
<b>OPERATING BUDGET</b>				
Personal Services	\$ 8,697,600	\$ 9,136,400	\$ 6,528,100	\$ 11,060,100
ERE	1,843,100	2,048,700	1,346,000	2,364,100
All Other Operating	10,033,000	8,107,800	10,325,900	11,666,600
<b>TOTAL OPERATING BUDGET</b>	<b>\$ 20,573,700</b>	<b>\$ 19,292,900</b>	<b>\$ 18,200,000</b>	<b>\$ 25,090,800</b>
<b>CAPITAL BUDGET</b>				
Building Renovation	\$ 4,843,500	\$ 967,600	\$ -	\$ 58,800
Debt Service	-	-	-	-
COPs Lease Purchase Payment	3,779,900	3,708,500	3,782,200	3,781,700
<b>TOTAL CAPITAL BUDGET</b>	<b>\$ 8,623,400</b>	<b>\$ 4,676,100</b>	<b>\$ 3,782,200</b>	<b>\$ 3,840,500</b>
<b>EXPENDITURES GRAND TOTAL</b>	<b>\$ 29,197,100</b>	<b>\$ 23,969,000</b>	<b>\$ 21,982,200</b>	<b>\$ 28,931,300</b>
<b>SUMMARY BY INITIATIVE</b>				
<b>ARIZONA STATE UNIVERSITY TEMPE</b>	\$ 25,417,200	\$ 20,260,500	\$ 18,200,000	\$ 25,149,600
<b>ARIZONA STATE UNIVERSITY POLYTECHNIC</b>	2,116,100	2,064,700	2,116,600	2,116,100
<b>ARIZONA STATE UNIVERSITY WEST</b>	1,663,800	1,643,800	1,665,600	1,665,600
<b>EXPENDITURES GRAND TOTAL</b>	<b>\$ 29,197,100</b>	<b>\$ 23,969,000</b>	<b>\$ 21,982,200</b>	<b>\$ 28,931,300</b>

**ARIZONA STATE UNIVERSITY**  
**TECHNOLOGY AND RESEARCH INITIATIVE FUND (TRIF)**  
**FY 2005 BUDGET / ACTUAL**  
**SUMMARY**

	<i>FY 2005 REV BUDGET</i>	<i>FY 2005 ACTUAL</i>
<b>REVENUE</b>		
Carryforward	\$ 8,733,000	\$ 8,842,729
TRIF Revenue	20,500,000	22,183,171
<b>TOTAL REVENUE</b>	<b><u>\$ 29,233,000</u></b>	<b><u>\$ 31,025,900</u></b>
<b>EXPENDITURES</b>		
<b>OPERATING BUDGET</b>		
Personal Services	\$ 8,697,600	\$ 9,136,400
ERE	1,843,100	2,048,700
All Other Operating	10,033,000	8,107,800
<b>TOTAL OPERATING BUDGET</b>	<b><u>20,573,700</u></b>	<b><u>19,292,900</u></b>
<b>CAPITAL BUDGET</b>		
Building Renovation	4,843,500	967,600
Debt Service	-	-
COPs Lease Purchase Payment	3,779,900	3,708,500
<b>TOTAL CAPITAL BUDGET</b>	<b><u>8,623,400</u></b>	<b><u>4,676,100</u></b>
<b>EXPENDITURES GRAND TOTAL</b>	<b><u>\$ 29,197,100</u></b>	<b><u>\$ 23,969,000</u></b>
<b>SUMMARY BY INITIATIVE</b>		
Biodesign Institute at Arizona State University	\$ 25,417,200	\$ 20,260,500
Campus Capital Infrastructure Development (ASU Polytechnic C	2,116,100	2,064,700
CLCC II Building and Central Plant Expansion (ASU West COPs	1,663,800	1,643,800
<b>EXPENDITURES GRAND TOTAL</b>	<b><u>\$ 29,197,100</u></b>	<b><u>\$ 23,969,000</u></b>

**FY 2005 ASU ACTUAL TRIF EXPENDITURES**  
(\$ in millions)



**ARIZONA STATE UNIVERSITY TEMPE**  
**TECHNOLOGY AND RESEARCH INITIATIVE FUND (TRIF)**  
**FY 2005 ACTUAL / FY 2006 BUDGET**  
**BIODESIGN INSTITUTE AND CAPACITY BUILDING PROJECT INVESTMENTS**

	<i>FY 2005</i> <i>REV BUDGET</i>	<i>FY 2005</i> <i>ACTUAL</i>	<i>FY 2006</i> <i>ORIG BUDGET</i>	<i>FY 2006</i> <i>REV BUDGET</i>
<b>REVENUE</b>				
Carryforward	\$ 8,517,200	\$ 8,517,200	\$ -	\$ 6,949,600
TRIF Revenue	16,900,000	18,692,900	18,200,000	18,200,000
<b>TOTAL REVENUE</b>	<b>\$ 25,417,200</b>	<b>\$ 27,210,100</b>	<b>\$ 18,200,000</b>	<b>\$ 25,149,600</b>
<b>EXPENDITURES</b>				
<b>OPERATING BUDGET</b>				
Personal Services	\$ 8,697,600	\$ 9,136,400	\$ 6,528,100	\$ 11,060,100
ERE	1,843,100	2,048,700	1,346,000	2,364,100
All Other Operating	10,033,000	8,107,800	10,325,900	11,666,600
<b>TOTAL OPERATING BUDGET</b>	<b>\$ 20,573,700</b>	<b>\$ 19,292,900</b>	<b>\$ 18,200,000</b>	<b>\$ 25,090,800</b>
<b>CAPITAL BUDGET</b>				
Building Renovation	\$ 4,843,500	\$ 967,600	\$ -	\$ 58,800
Debt Service	-	-	-	-
COPs Lease Purchase Payment	-	-	-	-
<b>TOTAL CAPITAL BUDGET</b>	<b>\$ 4,843,500</b>	<b>\$ 967,600</b>	<b>\$ -</b>	<b>\$ 58,800</b>
<b>EXPENDITURES GRAND TOTAL</b>	<b>\$ 25,417,200</b>	<b>\$ 20,260,500</b>	<b>\$ 18,200,000</b>	<b>\$ 25,149,600</b>

Note: FY 2005 expenditures include encumbrances at 6/30/05. The FY 2006 carryforward is net of 6/30/05 encumbrances.

**INITIATIVE OVERVIEW**

ASU's TRIF funding portfolio is grouped into two main initiatives: a) the Biodesign Institute at Arizona State University and b) Capacity Building Project Investments.

The Biodesign Institute at Arizona State University is ASU's flagship initiative and is focused on use-inspired, collaborative research targeting the understanding of biological systems. The research agenda emphasizes translation (the application of discoveries to commercial uses and societal benefits) and impact (the search for innovations that will significantly improve human health and quality of life). The Biodesign Institute is integrating research in systems biology and neurobiology with advances in computing, optoelectronics, biomimetic materials and directed molecular assembly. The central theme linking these diverse fields is the comprehension of the structural and functional architectures in biological systems and identifying how these design rules can lead to the prevention and cure of diseases, overcoming the pain and limitations of injury, sustaining our environment, and securing a safer world. The Institute also provides a primary vehicle for strengthening regional research capacity, capabilities and facilities, increasing the total external funding for bioscience/biotech/biomedical research coming to Arizona.

The Biodesign Institute serves as ASU's formal link to the important regional bioscience research institutions which include: Translational Genomics Research Institute (TGen), Mayo Clinic, Barrow Neurological Institute (BNI), Banner Health, and the Carl Hayden VA Hospital. The Biodesign Institute also provides the link with the Arizona Biomedical Collaborative (ABC) and will assist in the programming of this Phoenix facility and in forging the connection between the ABC research activities with the Biodesign research programs.

**ARIZONA STATE UNIVERSITY TEMPE**  
**TECHNOLOGY AND RESEARCH INITIATIVE FUND (TRIF)**  
**FY 2005 ACTUAL / FY 2006 BUDGET**  
**BIODESIGN INSTITUTE AND CAPACITY BUILDING PROJECT INVESTMENTS**

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**INITIATIVE OVERVIEW** (continued)

The Biodesign Institute is organized into a growing number of networked research and design centers that link ASU collaborators with affiliated institutions. Centers in operation at the beginning of the fiscal year included:

- Infectious Diseases and Vaccines (IDV) – research focuses on selective pathogens, identifying vaccine antigens and using transgenic plants as low-cost, efficient production systems for orally active antigens.
- Bio-Optical Nanotechnologies (BON) – focuses on working to integrate biomolecular sciences with materials engineering and solid-state electronics to develop the next generation of biosensors, implants, pharmaceuticals, biomaterials, and nanoscale power sources.
- Single Molecule Biophysics (SMB) – focuses on examining the physical processes on which life is based using the simplest model systems at the molecular level to develop new health care tools.
- Applied NanoBioscience (ANB) – focuses on applying advances in nanoscience, molecular biology and genomics to a new generation of biological tools to understand disease at the molecular level.
- Neural Interface Design (NID) – focuses on developing novel approaches to evaluate and rehabilitate motor function disorders due to central nervous system disease or injury through neural interface and brain control technologies.
- Rehabilitation Neuroscience & Rehabilitation Engineering (RNRE) – focuses on designing and developing technologies to counteract the effects of neurological disorders, enhancing therapeutics and devices for improved health, fitness and assistance with daily activities.
- Evolutionary Functional Genomics (EFG) – focuses on examining how genes, gene families and genomes of model organisms change over time and elucidate the gene interaction networks responsible for development of a single fertilized egg cell in a complex adult animal.

In FY 2005, the Center for Glycoscience and Technology (GT) was formed, evolving from the Center for Protein and Peptide Therapeutics (PPT). It focuses on developing novel drugs and treatments for a broad spectrum of diseases including stroke, heart disease, and cancer. The former center launched a spin-out company that is developing engineered proteins and peptide analogs of clinically-important biomolecules, resulting in the organizational and program changes to this center.

In FY 2005, three new centers were added through recruitment of eminent scientists:

- Center for Bioelectronics and Biosensors (BB) – (Director: Joseph Wang) – focuses on the field of nanobioelectronics, interfacing nano and biomaterials with electronic transducers with the goal of designing efficient electronic transduction of biorecognition events for the development of biosensing devices for environmental, security, and clinical monitoring.
- Center for Environmental Biotechnology (EB) – (Director: Bruce E. Rittmann) – focuses on developing microbiological systems that capture or develop renewable resources and also prevent or clean up environmental pollution.
- Center for Innovations in Medicine (IM) – (Director: Stephen A. Johnston) – focuses on drug targeting, vaccine technology, cancer treatment and pre-symptomatic diagnosis of cancer and other diseases through biosignatures to develop next-generation solutions to today's basic medical problems.

Also in FY 2005, the Cancer Research Institute (CRI) was brought under the umbrella of the Biodesign Institute to build greater synergies in ASU's cancer research. Scientists in CRI search for powerful, natural anti-cancer compounds that may already exist in our environment.

The Capacity Building Project Investments are focused primarily on: a) application of information technology as an enabler for economic growth in all areas; b) development of advanced materials for the new economy; and, c) wireless technology needs for the advancement of new technology in areas ranging from biomedical to communications to environmental applications.

The Institute for Computer Information Science and Engineering (InCISE) provides the leadership for the information technology investments. InCISE is charged with identifying opportunities for transdisciplinary research resulting from the integration of the latest developments in computer science (e.g., data acquisition, analysis, management, security, modeling, and visualization,) with other research areas. InCISE has identified synergies with researchers in cognitive, biosciences, disabilities studies, physical and social sciences, enterprise computing and linguistics. The goal is to leverage selective investments in collaborative, interdisciplinary projects to build partnerships between researchers, improve visibility with funding agencies, and produce successful larger scale collaborative proposals that would not be possible using traditional approaches emphasizing individual researchers.

**ARIZONA STATE UNIVERSITY TEMPE**  
**TECHNOLOGY AND RESEARCH INITIATIVE FUND (TRIF)**  
**FY 2005 ACTUAL / FY 2006 BUDGET**  
**BIODESIGN INSTITUTE AND CAPACITY BUILDING PROJECT INVESTMENTS**

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**INITIATIVE OVERVIEW** (continued)

InCISE was formed as a confederation of five core research groups funded for 3 to 5 years: the Center for Cognitive Ubiquitous Computing (CUbiC); Intelligent Information Integration (ET-I3); Information Assurance (IA); the Partnership for Research in Spatial Modeling (PRISM); and, the Software Factory (SF). It also includes three affiliated research groups: the Center for Research in Arts, Media and Engineering (AME); the Center for Advanced Business through Information Technology (CABIT); and, the Consortium for Embedded and Internetworking Technologies (CEINT). InCISE is housed in the Brickyard, a 130,000 square foot academic and research space, providing the facilities and environment for ASU to build top-ranked, world-class programs.

In the advanced materials capacity building project initiative, ASU is working to integrate research in physical, molecular, materials, and biological sciences with engineering to produce revolutionary nanoengineered devices including, for example, molecular electronics based sensors and nanomagnetic memory devices. Examples include novel microelectronic (low power, high power, high temperature, and/or high frequency), microfluidic, and bio devices integrated into microsystems for high-value-added applications in the information technologies, health care, threat detection, transportation, processing, and manufacturing industries. In addition, the development of novel flexible displays and polymer-based electronics is a feature of this initiative.

The wireless technology capacity building project initiative, Wireless Integrated Nano Technology (WINTech)/ConnectionOne) is focused on research and development related to wireless systems, integrated circuits (IC) and their applications. The center offers diverse expertise to develop a fully integrated complete end-to-end system in the next generation of wireless and remote control/sensing applications in the biosciences, telecommunications, and remote sensing industries. WINTech has established strong ties with government and industrial funding agencies (NSF, DARPA, ONR, and AFRL), while ConnectionOne is a National Science Foundation Industry/University Cooperative center with strong industry ties. Currently, ConnectionOne has over 18 industrial members.

To complement the Biodesign and Capacity Building Project Initiatives, and to help bring all ASU discoveries to the new economy, investments continue to support technology venturing. Arizona Technology Enterprises (AzTE), ASU's technology venturing company, was formed in July 2003 to take a more "market-oriented" approach to technology transfer. AzTE is a separate 501(c)(3) company staffed with industry professionals with expertise in technology licensing, product development and venture capital. The organization focuses on starting new companies and licensing and building technology alliances based on ASU technology. AzTE also facilitates relationships between ASU and industry for new technology development. The key design elements of AzTE include: active technology and idea harvesting; innovation screening; portfolio marketing and management; comprehensive commercialization partnership creation; and, entrepreneurial training, assistance, and mentorship for faculty engaged in start-up activities.

**FY 2005 GOALS/OBJECTIVES**

***Biodesign Institute at Arizona State University***

The following goals were adopted by the Biodesign Institute for FY2005:

- Increase the governmental and private funding of research connected with the Institute and its associated Research and Design Centers by about 25% annually.
- Complete, occupy, and efficiently use the Biodesign Institute facilities, including the new Biodesign Institute Buildings A and B, and the Cancer Research Institute Building. (Completed Phase I, Building A, December 2004; Complete Phase II, Building B, by January 2006.)
- Increase the rate of intellectual property development and technology transfer from Institute associated research programs by 20% annually (doubling every 4 years) as measured by invention disclosures, patents applied for and issued, start-up companies, and licenses signed.

The Institute set out to accomplish these goals through the following:

- Organize the Biodesign Institute into a growing number of networked Research and Design Centers.
- Identify and pursue major (>\$1 Million), collaborative federal research grant opportunities.
- Establish and strengthen partnerships with industry, institutions, and foundations. Become a proactive partner with the U of A and NAU in the Arizona Biomedical Collaborative and expand collaborations with TGen, Mayo Clinic, BNI and Banner Health.

**ARIZONA STATE UNIVERSITY TEMPE**  
**TECHNOLOGY AND RESEARCH INITIATIVE FUND (TRIF)**  
**FY 2005 ACTUAL / FY 2006 BUDGET**  
**BIODESIGN INSTITUTE AND CAPACITY BUILDING PROJECT INVESTMENTS**

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**FY 2005 GOALS/OBJECTIVES (continued)**

- Hire new ASU faculty in strategic areas of targeted opportunity. Hire senior faculty members to ensure early funding success and junior faculty members who will receive mentoring by a first-class group of successful role models.
- Hire research staff in research programs and core facilities that complement the strategic thrusts of the Institute and improve our probabilities for funding in critical areas.
- Utilize the capital funding appropriation authorized by the Arizona legislature to construct building B of the Biodesign research complex. Have facility ready for occupancy by January 2006.
- Maintain a close, collaborative connection with Arizona Technology Enterprises (AzTE) and their managers for Health Sciences and Information Technologies to promote Biodesign intellectual property development and marketing.
- Maintain a close connection with the MacroTechnology Works (MTW) at ASU. MTW is a new organizational mechanism that will enable marketable science, starting with collaboration and moving through the necessary steps of conceptualization and testing, prototype production, etc., leading to a refined manufacturing-ready product.

***Capacity Building Project Investments (CBPI's)***

Goals for the CBPI's include:

- Identify opportunities where recent IT developments can enable the successful growth of novel transdisciplinary areas.
- Enhance interdisciplinary collaborative research in nanotechnology and advanced materials between departments and across colleges.
- Strengthen WINTech/ConnectionOne in three key areas: Radio & Wireless Integrated Circuits; MEMS & Bio-MEMS & Bio-Electronics; and, Alternative Energy Systems/Systems.
- Identify research partnerships and pursue opportunities with high potential that lead to large-scale funding.

***Technology Transfer/Technology Venturing***

- Establish operational objectives for the organization, as well as processes for IP evaluation and management, a focused communication and marketing strategy, and forms and policies for the organization.
- Begin building relationships with industry (local and national), and with major Arizona research institutions.

**ARIZONA STATE UNIVERSITY TEMPE**  
**TECHNOLOGY AND RESEARCH INITIATIVE FUND (TRIF)**  
**FY 2005 ACTUAL / FY 2006 BUDGET**

**BIODESIGN INSTITUTE AND CAPACITY BUILDING PROJECT INVESTMENTS**

<b>PERFORMANCE MEASURES/DELIVERABLES</b>	<b>FY 2002 Actual</b>	<b>FY 2003 Actual</b>	<b>FY 2004 Actual</b>	<b>FY 2005 Proposed</b>	<b>FY 2005 Actual</b>	<b>FY 2006 Revised</b>
<b>Return on Investment</b>						
1. External funding: new federal awards	\$10.86M	\$7.34 M	\$21.34 M	\$29.00 M	\$31.18 M	\$37.40 M
2. and donations	\$1.06M	\$1.29 M	\$5.75 M	\$5.53 M	\$4.70 M	\$5.60 M
3. Value of new startups to ASU	\$51 K	\$92 K	\$1.40 M	\$2.20 M	\$2.53 M	\$3.00 M
4. New products in marketplace	5	3	5	8	10	10
5. Value of new products to ASU	\$421 K	\$400 K	\$1.40 M	\$2.20 M	\$2.53 M	\$3.00 M
<b>Work Force/Access Contributions</b>						
1. Increase in number of teachers who graduate with math/science certification	9	0	7	25	(14)	8
2. New post-doctoral students in pipeline	5	48	44	32	64	37
3. New post-doctoral students entering workforce	0	19	24	24	32	26
4. New graduate students in pipeline	29	120	106	101	121	112
5. Graduate students earning degrees and Undergraduate students with research experience	39	33	67	67	63	74
6. Growth in CS/CSE Graduates	-21	84	139	139	177	170
7. Growth in CS/CSE Graduates	-21	10	37	40	53	50
<b>Curriculum Innovations</b>						
1. Tier 1 Introduction to Information Technology for all students - Completed FY 2002	Completed					
2. Tier 2 package of 3 courses	Partially		Partially		Partially	
3. Tier 3 concentration for BIS degree		Partially	Partially		Partially	
4. BS Applied Computing (ASU West) Begins Fall 2005	Approved					X
5. High school students completing software	88	227	200	75		N/A
6. Internships w/ industry	32	88	136	128	71	75
7. New courses introduced (Bio, Info, Nano)	4	6	16	18	13	24
<b>Technology Transfer</b>						
1. New software packages distributed	0	6	10	15	2	N/A
2. Form industry-university nationwide research		In Progress	4	2	2	2
3. Create research road map in collaboration with industry	In Progress	Completed	4	4	1	4
4. Invention disclosures	97	91	98	120	166	144
5. Patent applications	108	106	128	140	168	154
6. Patents	11	17	18	20	41	20
7. Startup companies	3	3	4	4	4	4
8. Fund proof of concept grants to faculty	6	6	5	14	9	11
9. Business plans written	2	6	9	10	8	11
10. Technology transfer portal inquiries from industry	1	13	15	15	20	15
11. Licenses/options signed (technologies adopted by industry)	9	20	24	28	28	32

**ARIZONA STATE UNIVERSITY TEMPE**  
**TECHNOLOGY AND RESEARCH INITIATIVE FUND (TRIF)**  
**FY 2005 ACTUAL / FY 2006 BUDGET**

**BIODESIGN INSTITUTE AND CAPACITY BUILDING PROJECT INVESTMENTS**

<b>Partnerships</b>						
1. New research collaborations with industry and national laboratories	9	13	19	19	14	26
<b>Economic Development</b>						
Companies identifying ASU as a factor for	2 large	0 large	1 large	1 large	7 large	4 large
1. relocating or expanding in AZ		2 small	3 small	3 small	3 small	4 small

**FY 2005 RESULTS AND ACCOMPLISHMENTS**

***Biodesign Institute at Arizona State University***

- New federal awards and industrial contracts for Biodesign in FY 2005 were \$7.4M and \$1.3M respectively.
  - In FY 2005 there were 54 multi-investigator proposals that requested total awards of more than \$1M submitted by Biodesign researchers. 16 of the proposals requested >\$3M. Eight of the proposals are collaborations with one or more research institutions outside of ASU.
  - Significant grant awards recently received include: a \$14.8 million award to Dr. Roy Curtiss to fight pneumonia in the developing world; a \$1 million award to Dr. Bertram Jacobs for smallpox virus defense; and, a \$2 million award to Drs. Ranu Jung and James Abbas for a Magnetic Resonance Imaging facility for animal research.
  - Three internationally recognized scientists were recruited to lead new research centers: Dr. Joseph Wang; Dr. Stephen A. Johnston; and, Dr. Bruce Rittmann -- Dr Rittmann is a member of the National Academy of Engineering. Other Biodesign Institute related hires include 5 senior faculty, 6 junior faculty, and 13 research faculty. Over 149 faculty and staff researchers are now affiliated with the Biodesign Institute.
  - Dr. George Poste, the Director for the Institute, was named 2004 Scientist of the Year by R&D Magazine.
  - Important support offices were established and management positions filled within the institute including: Chief Operations Officer; Director of Strategy and Research Alliances; Director of Communications; Director of Development; and, Director of Government and Industry Liaison.
  - Phase I, Building A of the Biodesign Institute was ready for occupancy December 2004 and eight centers and the Biodesign administration moved into the building. Phase II, Building B is under construction and scheduled for occupancy in January 2006. The Research Support Services #5 animal facility was occupied in January 2005. Capital commitments are in place for the construction of the Arizona Biomedical Collaborative building adjacent to TGen at the downtown Phoenix Bioscience Center.
- In FY 2005, six new patents were issued in the biomedical/biosciences. Biodesign Institute researchers filed 10 new patent applications, 22 provisional patents, and 34 new invention disclosures. Nanobiomics, a Biodesign company spin-out from last year, was recognized as the Arizona start-up company of the Year by the Arizona BioIndustry Association.

***Capacity Building Project Investments***

- Over \$36M in collaborative research proposals were facilitated by InCISE in FY 2005. Awards of almost \$5M were received. These proposals covered topics ranging from information security to the development of devices for the blind, artificial intelligence/learning, brain imaging, and visualization.
- ASU's Center for Cognitive Ubiquitous Computing (CUbIC) was named Innovator of the Year for Academia for its iCARE research project at the Governor's Celebration of Innovation Awards held at the Arizona Biltmore.

**ARIZONA STATE UNIVERSITY TEMPE**  
**TECHNOLOGY AND RESEARCH INITIATIVE FUND (TRIF)**  
**FY 2005 ACTUAL / FY 2006 BUDGET**  
**BIODESIGN INSTITUTE AND CAPACITY BUILDING PROJECT INVESTMENTS**

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**FY 2005 RESULTS AND ACCOMPLISHMENTS** (continued)

- The Consortium for Embedded Systems funded coursework and collaborated with the Fulton School of Engineering Center for Professional Development to deliver the first online Executive Masters in Embedded Systems degree program. The first course cycle was launched in March 2004 and continued throughout FY 2005.
- Programmable Metallization Cell (PMC) memory inventions were licensed via ASU spin-out Axon Technologies Corp. to Infineon Technologies, who are pushing ahead with commercialization efforts. In addition, briefings on PMC-related work were delivered at NEC, Sony, and Toshiba, with additional strong interest expressed by Elpida and Hitachi.
- An NIH R01 grant for the development of sensors used to detect biomarkers in whole blood was received. NASA provided additional funding for using the sensor to determine progress in wound healing.
- ASU and LBNL submitted a \$15 million NIH P01 center grant for protein dynamics in technology.
- MacroTechnology Works (MTW) was formed to leverage ASU's investment in the \$45M/5-year Army Flexible Display Center grant and facility. MTW will provide a vehicle to take new discoveries rapidly to the prototype production phase and will work closely with each of ASU's TRIF initiatives.
- Hired five new faculty to bring the total core number of WINTech faculty to 12. This increase in faculty was accompanied by an increase in research proposals of 300% from \$5M in FY03 to over \$15M in FY05. There were corresponding increases in funded research and center expenditures by 250% from \$2M in FY03 to over \$5M in FY05.
- Connection One Industrial Membership grew from six company members in 2003 to 18 industrial members in 2005.
- The wireless communication initiative received over \$3.5M in federal grants and over \$2.5M in equipment and CAD donations from companies.
- A state of the art wireless design and testing facility was completed and used to design and test six new integrated circuits for the funding agencies.
- CRESMET (Center for Research on Education in Science, Mathematics, Engineering and Technology) became the nation's second highest grant-winner in NSF's Education and Human Resources funding programs - second only to the University of Wisconsin-Madison.
- Through its NSF awards, CRESMET is engaged in three long-term projects: Project Pathways, a Math and Science Partnership conducted with high schools in four regional school districts; the Teacher Professional Continuum, a research investigation into the teaching of pre-calculus mathematics; and, the Rational Number Project, a longitudinal study of children's emerging understanding of number concepts.
- This year CRESMET also launched a new alternative certification program called SCISM - Summer Certification Institute in Secondary Mathematics. SCISM prepares academically strong math majors to earn a secondary teaching certificate while completing their B.S. degrees. CRESMET secured \$86,000 in funding from the Boeing Company to support the program's development. Recruiting teachers with strong mathematics backgrounds is an urgent goal in both Arizona and the nation.

***Technology Transfer/Technology Development***

- Closed 28 technology deals and started 4 new companies.
- Hired world-class management team and Board of Directors.
- Established operating and IP policies.
- Filed 120 invention disclosures and 140 patent filings - received 20 patents.
- Funded 14 proof-of-concept grants.

**ARIZONA STATE UNIVERSITY POLYTECHNIC**  
**TECHNOLOGY AND RESEARCH INITIATIVE FUND (TRIF)**  
**FY 2005 ACTUAL / FY 2006 BUDGET**  
**Campus Capital Infrastructure Development**

	<i>FY 2005 REV BUDGET</i>	<i>FY 2005 ACTUAL</i>	<i>FY 2006 ORIG BUDGET</i>	<i>FY 2006 REV BUDGET</i>
<b>REVENUE</b>				
Carryforward	\$ 95,700	\$ 95,700	\$ (20,400)	\$ 31,000
TRIF Revenue	2,000,000	2,000,000	2,137,000	2,085,100
<b>TOTAL REVENUE</b>	<b>\$ 2,095,700</b>	<b>\$ 2,095,700</b>	<b>\$ 2,116,600</b>	<b>\$ 2,116,100</b>
<b>EXPENDITURES</b>				
<b>OPERATING BUDGET</b>				
Personal Services				
ERE				
All Other Operating				
<b>TOTAL OPERATING BUDGET</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>
<b>CAPITAL BUDGET</b>				
Building Renovation				
Debt Service				
COPs Lease Purchase Payment	2,116,100	2,064,700	2,116,600	2,116,100
<b>TOTAL CAPITAL BUDGET</b>	<b>\$ 2,116,100</b>	<b>\$ 2,064,700</b>	<b>\$ 2,116,600</b>	<b>\$ 2,116,100</b>
<b>EXPENDITURES GRAND TOTAL</b>	<b>\$ 2,116,100</b>	<b>\$ 2,064,700</b>	<b>\$ 2,116,600</b>	<b>\$ 2,116,100</b>

Note: ASU East's name was changed to ASU Polytechnic (ASUP) effective July 1, 2005.

**INITIATIVE OVERVIEW**

The ASU Polytechnic Proposition 301 initiative funds \$27.5 million of Certificates of Participation (COPs) for infrastructure development, including multiple building renovations, campus infrastructure improvements and a new campus student union. The building renovations prepared academic space, including classrooms, faculty and staff offices, and student support services to meet anticipated growth. The infrastructure improvements continued the transition of the former Williams Air Force Base to an attractive university campus. The major projects included campus street and roadway improvements, new campus malls, lighting and emergency telephones, and campus landscape improvements.

The COPs were issued in June, 2002. Scheduled payments run through 2021. Approximately \$26.8 million (98%) of the COPs was committed to building renovation and campus infrastructure projects at ASU Polytechnic. Completed projects include the Administration Building, the Simulator Building renovations, the renovation of Wanner and Sutton Halls, as well as the North and South Pedestrian Malls. Both the new Union Building and the Agribusiness Center renovation projects were completed in August 2004 and were fully operational for the fall semester. ASU Polytechnic completed all TRIF funded capital improvement projects by June 2005.

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**ARIZONA STATE UNIVERSITY WEST**  
**TECHNOLOGY AND RESEARCH INITIATIVE FUND (TRIF)**  
**FY 2005 ACTUAL / FY 2006 BUDGET**

**Classroom Laboratory / Computer Classroom II Building and Central Plant Expansion**

	<i>FY 2005 ACTUAL</i>	<i>FY 2005 ACTUAL</i>	<i>FY 2006 ORIG BUDGET</i>	<i>FY 2006 REV BUDGET</i>
<b>REVENUE</b>				
Carryforward	\$ 120,100	\$ 120,100	\$ 56,300	\$ 76,300
TRIF Revenue	1,600,000	1,600,000	1,609,300	1,589,300
<b>TOTAL REVENUE</b>	<b>\$ 1,720,100</b>	<b>\$ 1,720,100</b>	<b>\$ 1,665,600</b>	<b>\$ 1,665,600</b>
<b>EXPENDITURES</b>				
<b>OPERATING BUDGET</b>				
Personal Services				
ERE				
All Other Operating				
<b>TOTAL OPERATING BUDGET</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>
<b>CAPITAL BUDGET</b>				
Building Renovation				
Debt Service				
COPs Lease Purchase Payment	\$ 1,663,800	\$ 1,643,800	\$ 1,665,600	\$ 1,665,600
<b>TOTAL CAPITAL BUDGET</b>	<b>1,663,800</b>	<b>1,643,800</b>	<b>1,665,600</b>	<b>1,665,600</b>
<b>EXPENDITURES GRAND TOTAL</b>	<b>\$ 1,663,800</b>	<b>\$ 1,643,800</b>	<b>\$ 1,665,600</b>	<b>\$ 1,665,600</b>

**INITIATIVE OVERVIEW**

The ASU West Proposition 301 initiative funds \$21.6 million of Certificates of Participation (COPs) for two campus improvement projects, a 104,400 gross square foot (GSF) Laboratory/Computer Classroom Building (CLCC II) and a Central Plant expansion. The CLCC II building includes approximately 42,000 net assignable square footage (NASF) of instructional space with a 150 seat lecture hall, two 80 seat classrooms, ten 60 seat classrooms, two 40 seat computer classrooms, five science labs and one computer lab. The Central Plant expansion added 4,800 GSF for a new 1,000 ton chiller, a thermal storage tank, and utility line extensions required to service the CLCC II building.

The COPs were issued in June, 2002. Scheduled payments run through 2021. Construction on the projects was complete for the Spring 2004 semester.

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**NORTHERN ARIZONA UNIVERSITY**  
 TECHNOLOGY AND RESEARCH INITIATIVE FUND (TRIF)  
 FY 2005 ACTUAL/FY 2006 BUDGET

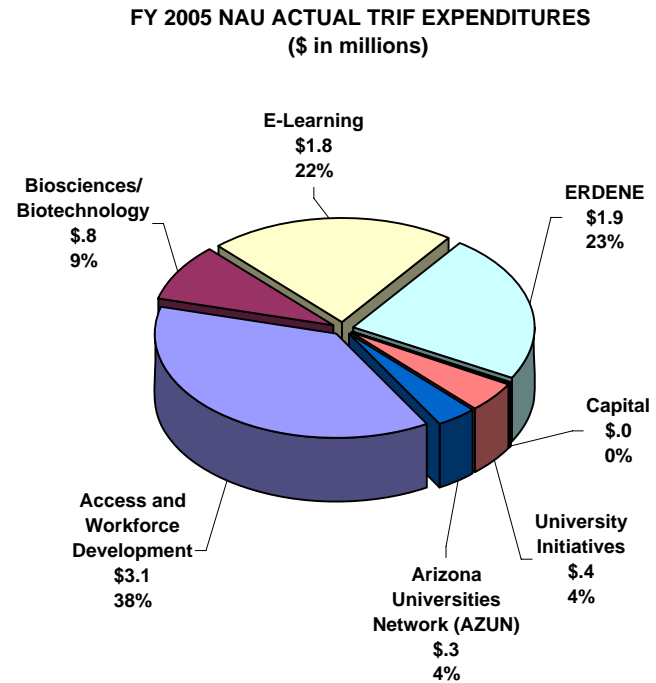
**SUMMARY**

	<u>FY 2005 REV BUDGET</u>	<u>FY 2005 ACTUAL</u>	<u>FY 2006 ORIG BUDGET</u>	<u>FY 2006 REV BUDGET</u>
<b>REVENUE</b>				
Carry Forward	\$ 4,308,522	\$ 4,308,522	\$ 1,349,282	\$ 6,527,900
TRIF Revenue	9,350,000	10,281,221	9,817,500	9,817,500
<b>Total Revenue</b>	<u>\$ 13,658,522</u>	<u>\$ 14,589,743</u>	<u>\$ 11,166,782</u>	<u>\$ 16,345,400</u>
<b>EXPENDITURES</b>				
<b>OPERATING BUDGET</b>				
Personal Services	\$ 7,235,507	\$ 5,300,624	\$ 5,033,866	\$ 8,706,645
ERE	1,760,540	1,431,497	1,073,801	2,274,961
All Other Operating	2,390,240	1,329,723	3,059,115	2,246,629
<b>TOTAL OPERATING BUDGET</b>	<u>\$ 11,386,287</u>	<u>\$ 8,061,843</u>	<u>\$ 9,166,782</u>	<u>\$ 13,228,235</u>
<b>CAPITAL BUDGET</b>				
Building Renovation	\$ 1,000,000	\$ -	\$ 2,000,000	\$ 3,117,165
Debt Service	920,000	-	-	-
COP's Lease Purchase Payment	-	-	-	-
<b>TOTAL CAPITAL BUDGET</b>	<u>\$ 1,920,000</u>	<u>\$ -</u>	<u>\$ 2,000,000</u>	<u>\$ 3,117,165</u>
<b>EXPENDITURES GRAND TOTAL</b>	<u>\$ 13,306,287</u>	<u>\$ 8,061,843</u>	<u>\$ 11,166,782</u>	<u>\$ 16,345,400</u>
<b>AZUN</b>	<u>\$ 1,815,542</u>	<u>\$ 312,579</u>	<u>\$ 3,059,979</u>	<u>\$ 4,562,942</u>
<b>SUMMARY BY INITIATIVE</b>				
Access and Workforce Development	4,371,712	3,130,274	2,905,637	4,422,684
Bioscience/Biotechnology	968,490	763,748	806,400	1,087,633
E-Learning	2,818,826	1,823,843	2,268,000	3,478,110
ERDENE (Environmental)	2,274,412	1,940,724	2,076,480	2,607,129
Capital	2,046,800	28,201	2,357,282	3,474,445
University Initiatives	826,047	375,054	752,983	1,275,399
<b>EXPENDITURES GRAND TOTAL</b>	<u>\$ 13,306,287</u>	<u>\$ 8,061,843</u>	<u>\$ 11,166,782</u>	<u>\$ 16,345,400</u>

\*Note: FY 2005 revenue/expense reported prior to official fiscal year close

**NORTHERN ARIZONA UNIVERSITY**  
**TECHNOLOGY AND RESEARCH INITIATIVE FUND (TRIF)**  
**FY 2005 BUDGET / ACTUAL**  
**SUMMARY**

	<i>FY 2005</i> <i>REV BUDGET</i>	<i>FY 2005</i> <i>ACTUAL</i>
<b>REVENUE</b>		
Carry Forward	\$ 4,308,522	\$ 4,308,522
TRIF Revenue	9,350,000	10,281,221
<b>TOTAL REVENUE</b>	<b><u>\$ 13,658,522</u></b>	<b><u>\$ 14,589,743</u></b>
<b>EXPENDITURES</b>		
<b>OPERATING BUDGET</b>		
Personal Services	\$ 7,235,507	\$ 5,300,624
ERE	1,760,540	1,431,497
All Other Operating	2,390,240	1,329,723
<b>TOTAL OPERATING BUDGET</b>	<b><u>11,386,287</u></b>	<b><u>8,061,843</u></b>
<b>CAPITAL BUDGET</b>		
Building Renovation	1,000,000	-
Debt Service	920,000	-
COPs Lease Purchase Payment	-	-
<b>TOTAL CAPITAL BUDGET</b>	<b><u>1,920,000</u></b>	<b><u>-</u></b>
<b>EXPENDITURES GRAND TOTAL</b>	<b><u>\$ 13,306,287</u></b>	<b><u>\$ 8,061,843</u></b>
<b>Arizona Universities Network (AZUN)</b>	<b><u>\$ 1,815,542</u></b>	<b><u>\$ 312,579</u></b>
<b>SUMMARY BY INITIATIVE</b>		
Access and Workforce Development	\$ 4,371,712	\$ 3,130,274
Biosciences/Biotechnology	968,490	763,748
E-Learning	2,818,826	1,823,843
ERDENE (Environmental)	2,274,412	1,940,724
Capital	2,046,800	28,201
University Initiatives	826,047	375,054
Arizona Universities Network (AZUN)	1,815,542	312,579
<b>EXPENDITURES GRAND TOTAL</b>	<b><u>\$ 15,121,829</u></b>	<b><u>\$ 8,374,422</u></b>



**NORTHERN ARIZONA UNIVERSITY**  
 TECHNOLOGY AND RESEARCH INITIATIVE FUND (TRIF)  
 FY 2005 ACTUAL/FY 2006 BUDGET  
**ACCESS/WORKFORCE DEVELOPMENT**

	<u>FY 2005 REV BUDGET</u>	<u>FY 2005 ACTUAL</u>	<u>FY 2006 ORIG BUDGET</u>	<u>FY 2006 REV BUDGET</u>
<b>REVENUE</b>				
Carry Forward	\$ 1,604,439	\$ 1,604,439	\$ -	\$ 1,517,047
TRIF Revenue	2,767,273	3,042,882	2,905,637	2,905,637
<b>Total Revenue</b>	<u>\$ 4,371,712</u>	<u>\$ 4,647,321</u>	<u>\$ 2,905,637</u>	<u>\$ 4,422,684</u>
<b>EXPENDITURES</b>				
<b>OPERATING BUDGET</b>				
Personal Services	\$ 2,889,754	\$ 1,965,921	\$ 1,254,000	\$ 2,930,000
ERE	793,254	519,716	260,252	635,200
All Other Operating	688,704	644,637	1,391,385	857,484
<b>TOTAL OPERATING BUDGET</b>	<u>\$ 4,371,712</u>	<u>\$ 3,130,274</u>	<u>\$ 2,905,637</u>	<u>\$ 4,422,684</u>
<b>CAPITAL BUDGET</b>				
Building Renovation	-	-	-	-
Debt Service	-	-	-	-
COP's Lease Purchase Payment	-	-	-	-
<b>TOTAL CAPITAL BUDGET</b>	<u>\$ -</u>	<u>\$ -</u>	<u>\$ -</u>	<u>\$ -</u>
<b>EXPENDITURES GRAND TOTAL</b>	<u>\$ 4,371,712</u>	<u>\$ 3,130,274</u>	<u>\$ 2,905,637</u>	<u>\$ 4,422,684</u>

\*Note: FY 2005 revenue/expense reported prior to official fiscal year close

**NORTHERN ARIZONA UNIVERSITY**  
 TECHNOLOGY AND RESEARCH INITIATIVE FUND (TRIF)  
 FY 2005 ACTUAL/FY 2006 BUDGET  
**ACCESS/WORKFORCE DEVELOPMENT**

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**INITIATIVE OVERVIEW**

This initiative represents a major step forward in Northern Arizona University's ability to provide education services to Arizona citizens who are time or place-bound.

Additional funding support of NAU's Extended Programs/Distance Learning System is an investment in the New Economy that directly supports the identified needs of the Governor's Task Force on Education, the Arizona Partnership for a New Economy, and the ABOR guidelines. This initiative will:

1. Address the teacher shortage: emphasizes on alternative certification and preparation of mathematics and science teachers
2. Provide engineers with advanced training to support business and industry
3. Increase the number of advance-trained nurses/other health professionals to maintain quality of life
4. Educate information technology professionals to serve the new economy needs of the state
5. Prepare post-baccalaureate business/non-profit managers to be leaders in existing/new businesses
6. Build the support infrastructure for future development of degree/certificates responsive to the needs of the new economy.

**FY 2005 GOALS/OBJECTIVES AND RESULTS/ACCOMPLISHMENTS**

**I. Programs**

**Goals/Objectives**

The program strategy for years three through five (FY2004 through FY2006) was to:

1. Evaluate programs, discontinue the unsuccessful programs and continue successful programs, and seek modest increases in enrollment.
2. Use incremental funding to increase student capacity in existing non-TRIF funded programs.

**Results/Accomplishments**

NAU has maintained and in many cases expanded the number of students in programs, added a few new programs, and added new students in existing programs. We are very pleased with the progress.

**NORTHERN ARIZONA UNIVERSITY**  
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FY 2005 ACTUAL/FY 2006 BUDGET  
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**A. Education**

**Goals/Objectives**

1. Master of Education in Elementary/Secondary Education with Certification -- Incremental enrollment sought through additional cohorts.
2. Master of Education in Educational Technology -- Incremental enrollment sought.
3. English as a Second Language Endorsement -- Convert program to the web. Incremental enrollment sought.
4. Science/Math education -- Develop new marketing strategies to reach more teachers in Arizona and the Southwest. Incremental enrollment sought.
5. Education Foundations courses -- Increase number of web-based sections offered. Incremental enrollment sought.
6. Bachelor of Science in Elementary Education -- Incremental enrollment sought through additional cohorts.
7. Bachelor of Science/Master of Education in Career and Technical Education -- Incremental enrollment sought.

**Results/Accomplishments**

1. Master of Education in Elementary/Secondary Education with Certification -- Activity in year four included: four elementary education cohorts in Tucson; four elementary education and two secondary education cohorts in Phoenix; and one elementary education cohort in Yuma (20-25 students each cohort). Four additional elementary education cohorts are scheduled to begin in Phoenix in Summer 2005 along with an additional elementary cohort in Yuma in Fall 2005. A secondary education cohort of 18 students from the Phoenix area graduated in FY 2005.
2. Master of Education in Educational Technology and Certificate Program -- A total of 75 students received degrees. Both of these programs are offered entirely on the Web with a combined enrollment of 178 students.
3. English as a Second Language Endorsement -- All courses have been converted to the Web. Program enrollment increased by 21 students to a total of 57.
4. Science/Math education -- Enrollments continued to be small despite targeted marketing strategies that included e-marketing to science teachers, program fliers mailed to science teachers in Phoenix area high schools, and attending the state science teacher conference to market the courses. The decision was made in Fall 2004 to discontinue the program with the last round of classes offered in Spring 2005.
5. Education Foundations courses -- Increased number of sections offered from seven in FY 2004 to twelve in FY 2005. Enrollment of 229 students
6. Bachelor of Science in Elementary Education -- Three cohorts in Tucson with a cohort recruited in Phoenix for Fall 2005. Total of 105 students enrolled. Hired second faculty member.
7. Bachelor of Science and Master of Education in Career and Technical Education -- These were new TRIF programs for 2004, with the master's degree entirely on the Web and the bachelor's degree delivered primarily face-to-face in Phoenix and Tucson. The master's degree had an enrollment of 33 students and the bachelor's degree had 83 students. Ten students have received degrees. Three bachelor's cohorts are scheduled to begin in the Phoenix area during Summer 2005.

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TECHNOLOGY AND RESEARCH INITIATIVE FUND (TRIF)  
FY 2005 ACTUAL/FY 2006 BUDGET  
**ACCESS/WORKFORCE DEVELOPMENT**

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**B. Health Professions**

**Goals/Objectives**

1. Accelerated Bachelor of Science in Nursing; Registered-Nurse to Bachelor of Science in Nursing -- Seek incremental student enrollment.
2. Master in Nursing -- Incremental enrollment sought.
3. Bachelor of Science in Dental Hygiene -- Expand program. Incremental enrollment sought.
4. Bachelor of Applied Science in Health Promotion; Bachelor of Science in Health Promotion -- Incremental enrollment sought.

**Results/Accomplishments**

1. Accelerated Bachelor of Science in Nursing -- Thirty-four students were active in the plan in FY 2005, an increase of twenty-one students.
2. Registered Nurse to Bachelor of Science in Nursing -- Entire curriculum except for clinical experiences is delivered on-line. The number of students in the plan increased by 41.
3. Master of Nursing -- The number of students in the plan increased from 21 to 28. A search for a full-time faculty member is in progress to help grow the program.
4. Bachelor of Science in Dental Hygiene -- Enrollment declined slightly from 131 to 126 students. Seventeen students graduated. This program has national interest and enrollment.
5. Bachelor of Applied Science in Health Sciences and Bachelor of Science in Health Sciences -- Enrollment expanded from 132 students to 175. Students came from 18 different states, two military facilities, and one national country (Canada). The number of degrees awarded has increased each year: two in FY 2003, six in FY 2004, and sixteen in FY 2005. The program name has changed from Health Promotion to Health Sciences as part of college restructuring.

**C. Business and Public Service**

**Goals/Objectives**

1. Master of Administration -- Incremental enrollment sought.
2. Bachelor of Applied Science in Computer Technology -- Incremental enrollment sought.
3. Bachelor of Arts in Liberal Studies in Public Agency Service/Bachelor of Applied Science in Public Agency Service, and support courses for all BAILS/BAS -- Develop and teach Web courses. Incremental enrollment sought.
4. Culinary Arts for Managers Certificate -- Finish development and offer certificate.
5. Graphical Information Systems (GIS) post-baccalaureate certificate and workshops -- Incremental enrollment sought.

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**ACCESS/WORKFORCE DEVELOPMENT**

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**Results/Accomplishments**

1. Master of Administration -- Number of admitted students grew from 34 to 181 in the newly named Master of Administration program. An additional 41 students are in the Master of Science in Management program, which has been replaced by the Master of Administration to meet AACSB accreditation requirements. There are six emphasis areas: Educational Leadership; Professional Writing; Project Management; Public Management; Health Promotion; and a Custom Emphasis Option. A half-time director position was established and filled. Exploration is underway to look at revising certain emphases to better meet student interests.
2. Bachelor of Applied Science in Computer Technology -- Program designed as a follow-up to community college degree in Computer Technology. Main focus has been on establishing articulation agreements with community colleges. Enrollment for this program was 28 students. Eight students graduated.
3. Bachelor of Arts in Liberal Studies in Public Agency Service/Bachelor of Applied Science in Public Agency Service, and support courses for all BAILS/BAS and liberal studies students -- Enrollment in required courses in specialization, emphasis, and core areas increased by 88 students to a total of 174 students. Most students are adult, part-time students. Degrees have been awarded to 37 students since the creation of the program.
4. Culinary Arts for Managers Certificate -- The certificate was not offered during AY 04/05 due to university restructuring and internal reallocation of school resources. A commercial website (<http://az-hospitality.org>) has been purchased to allow future marketing of the degree in both VHS and DVD format. Marketing approach will focus on delivery of training materials through distance education platforms to offer the product to any interested party.
5. Graphical Information Systems (GIS) post-baccalaureate certificate -- Enrollment has increased by 7 students from FY 2004 to a total of 23. Six certificates have been awarded since Spring 2002.

**II. Infrastructure**

**Goals/Objectives**

- A. Student Services -- Meet demand for toll-free phone and web access for students. Continue to advise students at a distance, incrementally add staff as needed to meet demand.
- B. Technical Infrastructure -- Maintain high-bandwidth Internet connections and modems in rural sites. Complete the addition of three new digital ITV classrooms (West Maricopa, Tucson, Globe/Miami).
- C. Faculty support -- Develop and teach web courses with a combination of TRIF and Distance Learning Services stipends.
- D. Develop marketing materials; place print, radio and cable TV advertising in statewide and local media; and, utilize electronic Internet advertising such as e-mail postcards and Web site banners.

**NORTHERN ARIZONA UNIVERSITY**  
TECHNOLOGY AND RESEARCH INITIATIVE FUND (TRIF)  
FY 2005 ACTUAL/FY 2006 BUDGET  
**ACCESS/WORKFORCE DEVELOPMENT**

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**Results/Accomplishments**

A. Student Services -- toll-free phone and web access for students provided follow-up to assist with admission, enrollment, payment, and other NAU processes. Implemented on-line chat. Advisors hired to work with students at a distance. On-site assistance available at 30 offices around the state. Prospective students are called and offered assistance completing the application materials and/or put in touch with an academic advisor.

B. Technical Infrastructure -- Internet bandwidth met high-bandwidth demands of students through an increase in bandwidth from 60 MB to 90 MB. Internet 2 connectivity was maintained to support national exchange of instructional and research data. Modem pools were maintained in rural areas to better serve students. Citrix server enabled complex software to be accessed by over 3,881 students with limited computer power. Successful implementation of the all-digital ITV System, including the addition of three digital ITV classrooms at the East Maricopa, West Maricopa and Globe/Miami campuses. A fourth digital ITV classroom will be completed in Tucson during Summer 2005.

C. Faculty support -- 153 web courses developed since FY 2003 with TRIF funding. Over 300 Web courses were taught each semester during Academic Year 2004-2005 using a combination of TRIF and Distance Learning Services funding. Approximately 45% growth in Web enrollments.

D. Conducted comprehensive marketing campaign to place print, radio and cable TV advertising in statewide and local media and utilized electronic Internet advertising such as e-mail postcards and Web site banners. Multi-purpose, multi-media marketing materials were emphasized. Wide variety of materials developed and used in multiple campaigns for each program.

**NORTHERN ARIZONA UNIVERSITY**  
 TECHNOLOGY AND RESEARCH INITIATIVE FUND (TRIF)  
 FY 2005 ACTUAL/FY 2006 BUDGET  
**ACCESS/WORKFORCE DEVELOPMENT**

<u>PERFORMANCE MEASURES/DELIVERABLES</u>	<i>FY 2002</i> <b>ACTUAL</b>	<i>FY 2003</i> <b>ACTUAL</b>	<i>FY 2004</i> <b>ACTUAL</b>	<i>FY 2005</i> <b>PROJECTED</b>	<i>FY 2005</i> <b>ACTUAL</b>	<i>FY 2006</i> <b>REVISED</b>
<b>Leveraged Investment</b>						
1. Grants/Contracts Proposed		\$3,951,834	\$5,094,132	\$250,000	\$1,000	\$250,000
Technology Transfer						
2. Courses/Modules Sold/Brokered	0	5	0	2	0	2
<b>Economic Development</b>						
3. Companies identifying NAU as reason for relocating or expanding in AZ		0	0	1	0	1
<b>Work Force Contributions</b>						
4. Potential New Students Served						
-New Teachers	250	542	807	600	679	700
-Nurses/Health Professionals	120	266	414	300	464	350
-Engineers with Advanced Training	20	Reported in ARU TRIF	Reported in ARU TRIF	30	Reported in ARU TRIF	ARU initiative ended - FY2005
-Business/Non-Profit Managers	44	182	303	200	442	350
Specific Curriculum Innovations						
5. Degree/Certificate Programs	11	19	37	20	41	40
6. Statewide Access (Rural and Urban)	yes	yes	yes		yes	
7. Regional/National Global Access	yes	yes	yes		yes	
8. New/Revised Courses	75	72	105	80	153	180
<b>Partnerships</b>						
9. Community College Partners	14	16	17	16	17	16
10. Tri-University (ASU, NAU, U of A)	3	3	3	3	3	3
11. K-12 Partners (schools/districts)	30	51	119	60	127	120
12. Industry or Agency Partnerships	2	21	42	25	75	50

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**NORTHERN ARIZONA UNIVERSITY**  
 TECHNOLOGY AND RESEARCH INITIATIVE FUND (TRIF)  
 FY 2005 ACTUAL/FY 2006 BUDGET  
**BIOSCIENCES/BIOTECHNOLOGY**

	<u>FY 2005</u> <u>REV BUDGET</u>	<u>FY 2005</u> <u>ACTUAL</u>	<u>FY 2006</u> <u>ORIG BUDGET</u>	<u>FY 2006</u> <u>REV BUDGET</u>
<b>REVENUE</b>				
Carry Forward	\$ 200,490	\$ 200,490		\$ 281,233
TRIF Revenue	768,000	844,490	806,400	806,400
<b>Total Revenue</b>	<u>\$ 968,490</u>	<u>\$ 1,044,980</u>	<u>\$ 806,400</u>	<u>\$ 1,087,633</u>
<b>EXPENDITURES</b>				
<b>OPERATING BUDGET</b>				
Personal Services	\$ 301,957	\$ 570,586	\$ 93,000	\$ 815,724
ERE	85,085	125,796	18,000	174,021
All Other Operating	581,448	67,366	695,400	97,888
<b>TOTAL OPERATING BUDGET</b>	<u>\$ 968,490</u>	<u>\$ 763,748</u>	<u>\$ 806,400</u>	<u>\$ 1,087,633</u>
<b>CAPITAL BUDGET</b>				
Building Renovation	\$ -	\$ -	\$ -	\$ -
Debt Service	-	-	-	-
COP's Lease Purchase Payment	-	-	-	-
<b>TOTAL CAPITAL BUDGET</b>	<u>\$ -</u>	<u>\$ -</u>	<u>\$ -</u>	<u>\$ -</u>
<b>EXPENDITURES GRAND TOTAL</b>	<u>\$ 968,490</u>	<u>\$ 763,748</u>	<u>\$ 806,400</u>	<u>\$ 1,087,633</u>

\*Note: FY 2005 revenue/expense reported prior to official fiscal year close

**INITIATIVE OVERVIEW**

Consistent with the principles of the Arizona at Risk, this initiative focuses on the projects in the broad field of biotechnology which can:

1. Enhance the reputation of Flagstaff and Arizona as a center of quality bioscience/biochemistry research
2. Secure additional resources, largely in the form of federal grants, to speed up the processes of basic and applied research related to biotechnology
3. Stimulate technology transfer to better position Arizona in the fields of bioscience and biotechnology
4. Expand and enrich the Arizona workforce trained in state-of-the-art aspects of biotechnology

# NORTHERN ARIZONA UNIVERSITY

## FY 2005 ACTUAL/FY 2006 BUDGET BIOSCIENCES/BIOTECHNOLOGY

### FY 2005 GOALS/OBJECTIVES

1. Identify new projects for major focus in the TRIF budget years 5 and 6
  2. Focus efforts on obtaining new grant funds, primarily from the federal government using TRIF funds for leverage
  3. Establish additional external collaborations with individuals and groups from industry and other academic institutions
  4. Continue our nascent efforts with regard to obtaining patents for the new discoveries that have been supported, in part, by TRIF funds
  5. Provide technical training and education to undergraduate and graduate students through advanced-content classes and individual research experiences
  6. Expand the "mini-grant" program that provides support up to \$25,000 to investigators exploring initiatives that might possibly expand into major Bio-Tech Projects
- FY 2005 GOALS/OBJECTIVES

<u>PERFORMANCE MEASURES/DELIVERABLES</u>	<i>FY 2002 ACTUAL</i>	<i>FY 2003 ACTUAL</i>	<i>FY 2004 ACTUAL</i>	<i>FY 2005 PROJECTED</i>	<i>FY 2005 ACTUAL</i>	<i>FY 2006 REVISED</i>
<b>1. Leveraged Investment</b>						
Increased External Funding	\$1,400,000	\$6,286,000	\$5,550,000	\$3,000,000	\$1,339,900	\$1,500,000
<b>2. Technology Transfer</b>					\$11,600,000 pend	
3. Patents Applied For	1	2	2	1	1	1
4. Products Generated/Disclosed		5	discussions	1	2	1
5. Business Expansions	0			1	2	1
6. Industry Partnerships	0	2	2	2	2	3
7. Tech Transfer: startup companies created	0	2	1	0	0	0
8. Presentations at professional meetings			55		24	
Publications in refereed journals			59		3, 8 in prep or sub	
<b>9. Economic Development</b>						
Incubation/Formation of Biotech Concerns in Flagstaff/Northern Arizona				1	2	1
<b>10. Work Force Contributions</b>						
11. Graduate/postdoc students in pipeline	60	62	60	65	25	70
12. Undergraduate students with research experience	80	79	43	65	53	110
13. Undergrad students in specialized bio-tech courses			133		58, 12 grad	
M.S./PhD/Post-Doc Graduate Increases	11	12	5	3	8	5
<b>14. Specific Collaborations</b>						
New Research Collaborations	6	29	3	1	17	2

**NORTHERN ARIZONA UNIVERSITY**  
TECHNOLOGY AND RESEARCH INITIATIVE FUND (TRIF)  
FY 2005 ACTUAL/FY 2006 BUDGET  
**BIOSCIENCES/BIOTECHNOLOGY**

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**FY 2005 RESULTS AND ACCOMPLISHMENTS**

**Leveraged Investments:**

There was a general decrease in the NEW leveraged funding compared to previous years, in part because those researchers who had received large amounts of funding for the initial three years were not included in this report. There was still a large amount of new funding received, more than 1.5 times that which was taken in through TRIF funding. Based on previous success rates, the \$11.6M pending should yield more than \$4M in funding, which will exceed the projected amount. All but three of the projects funded through this year's proposals submitted proposals for external funding at least partially as a result of having TRIF funds available.

**Technology Transfer:**

Five patents from previous years are in place, one new patent has been filed this year, and two product disclosures have been filed. Two business expansions have also been started. While no companies have been created, several of the researchers have begun discussions to accomplish this goal. There were 24 presentations at professional meetings this year, which should lead to further publications, grant activity, and new products and processes as further research is continued on these projects.

**Work Force Contributions**

We now offer specialized training in molecular techniques, immunology, instrumentation, biochemistry and medical microbiology. 58 undergraduate students received training in FY05. This is fewer than the previous year because one of the classes is offered every second year. Students not only learn how to carry out these activities, but more importantly, they also learn the theory behind the use of these various apparatus and procedures. When combined with research training in the laboratory, this number increases to over 100 undergraduate students receiving training in research techniques. We currently have 5 new post-doctoral fellows in place and over 50 undergraduates working in the labs on TRIF-funded research projects.

**Specific Collaborations**

One of the most exciting collaborations is a new initiative, called SABRE (Strategic Alliance for Bioscience Research and Education). SABRE has brought together faculty and researchers from disciplines such as Biology, Electrical Engineering, Chemistry, Physics and Astronomy, and Health Professions with representatives from the Northern Arizona Technology and Business Incubator and the Greater Flagstaff Economic Council to take advantage of trends toward convergence among disciplines in the life sciences, chemistry, environmental science, physics and engineering. SABRE has been approved by the Arizona Board of Regents and has led a NAU presence at the Arizona Bio Expo. In addition to this on-campus collaboration effort, a great number of off-campus collaborations have been established. These include collaborations with researchers in both academics and business throughout Arizona and the United States, as well as international collaborations.

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**NORTHERN ARIZONA UNIVERSITY**  
**TECHNOLOGY AND RESEARCH INITIATIVE FUND (TRIF)**  
**FY 2005 ACTUAL/FY 2006 BUDGET**  
**E-LEARNING**

	<u>FY 2005</u> <u>REV BUDGET</u>	<u>FY 2005</u> <u>ACTUAL</u>	<u>FY 2006</u> <u>ORIG BUDGET</u>	<u>FY 2006</u> <u>REV BUDGET</u>
<b>REVENUE</b>				
Carry Forward	\$ 658,826	\$ 658,826	\$ -	\$ 1,210,110
TRIF Revenue	2,160,000	2,375,127	2,268,000	2,268,000
Total Revenue	<u>\$ 2,818,826</u>	<u>\$ 3,033,953</u>	<u>\$ 2,268,000</u>	<u>\$ 3,478,110</u>
<b>EXPENDITURES</b>				
<b>OPERATING BUDGET</b>				
Personal Services	\$ 2,003,866	\$ 1,184,635	\$ 1,632,000	\$ 2,260,771
ERE	471,700	340,964	383,000	660,841
All Other Operating	343,260	298,244	253,000	556,498
<b>TOTAL OPERATING BUDGET</b>	<u>\$ 2,818,826</u>	<u>\$ 1,823,843</u>	<u>\$ 2,268,000</u>	<u>\$ 3,478,110</u>
<b>CAPITAL BUDGET</b>				
Building Renovation	-	-	-	-
Debt Service	-	-	-	-
COP's Lease Purchase Payment	-	-	-	-
<b>TOTAL CAPITAL BUDGET</b>	<u>\$ -</u>	<u>\$ -</u>	<u>\$ -</u>	<u>\$ -</u>
<b>EXPENDITURES GRAND TOTAL</b>	<u>\$ 2,818,826</u>	<u>\$ 1,823,843</u>	<u>\$ 2,268,000</u>	<u>\$ 3,478,110</u>

\*Note: FY 2005 revenue/expense reported prior to official fiscal year close

**INITIATIVE OVERVIEW**

The Center for Research, Development and Assessment in Electronic Learning Environments has been established in response to APNE and the recommendations of the Governor's Task Force for Higher Education. A request to change the name of the Center to "The Center for E-Learning" is being submitted to ABOR at the August board meeting. The Center is dedicated to using information technology to transform teaching and learning and to better prepare graduates for the Arizona workforce. Through the use of Web technologies, place-bound Arizona citizens will have increased access to an education; NAU graduates will be skilled at learning via the Web; and learning will be enhanced using information technology tools. Research in innovative applications of advanced technology into the learning process, coupled with assessment of the actual learning students experience, will assure a high impact of this project on NAU students, and on students across the state.

**FY 2005 GOALS/OBJECTIVES**

1. Use Web technology to transform learning and teaching in both residential and distance education
2. Assess learning effectiveness associated with information technology-mediated learning environments
3. Increase baseline technological literacy skills of all NAU baccalaureate graduates
4. Provide advanced information technology skills to NAU undergraduates through modifications and new academic programs.
5. Assess technological literacy skills of all NAU graduates.

**NORTHERN ARIZONA UNIVERSITY**  
**TECHNOLOGY AND RESEARCH INITIATIVE FUND (TRIF)**  
**FY 2005 ACTUAL/FY 2006 BUDGET**  
**E-LEARNING**

<u>PERFORMANCE MEASURES/DELIVERABLES</u>	<i>FY 2002</i> <b>ACTUAL</b>	<i>FY 2003</i> <b>ACTUAL</b>	<i>FY 2004</i> <b>ACTUAL</b>	<i>FY 2005</i> <b>PROJECTED</b>	<i>FY 2005</i> <b>ACTUAL</b>	<i>FY 2006</i> <b>REVISED</b>
<b>Workforce Contributions</b>						
1. Number of new Web courses developed and offered	125	101 new courses, 140 new sections offered	121	90	141	80
		9476 enrollments, in 408 sections	22 in Winter '04			
2. Number of new IT-enhanced courses developed		32	42	50	53	60
3. Increase in enrollments of distance students in Web courses		1,703	(136)	500	980	500
4. Increase in residential undergraduate enrollments		663	793	750	1,268	750
5. Increase in student academic success in Web courses.		DFW dropped from 17.7% to 16.8%, a 5% improvement	DFW dropped to 9.0%	5%	DFW dropped from 17.7% in FY02 to 15.2% in FY05, an aggregate	5%
6. Total number of faculty participating in Web development	150	117	155	120	126	120
		82 on web courses 35 on web enhanced				
7. Number of NAU students taking Web courses		12,180	10,133	11,000	12,381	12,000
8. Number of graduates with technical literacy skills <i>(to be assessed directly)</i>	1500	889	1,633	2,000	1,919	2,300
9. Percentage of students satisfied with Web learning opportunities		84%, an improvement from 75% last year.	89.2%	90%	87%	90%
		89%, an improvement from 88% last year.				
		<i>(senior survey data)</i>				
10. Number of new certificates in advanced technology for students	2	1		1	0	1
<b>Leveraged Investment</b>						
11. Grants and donations for research in best-practices	\$50,000	\$0	\$0	\$50,000	\$0	\$50,000
<b>Specific Collaborations</b>						
12. Number of private sector partnerships		0		1	2	1

**NORTHERN ARIZONA UNIVERSITY**  
TECHNOLOGY AND RESEARCH INITIATIVE FUND (TRIF)  
FY 2005 ACTUAL/FY 2006 BUDGET  
**E-LEARNING**

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**FY 2005 RESULTS AND ACCOMPLISHMENTS**

**Leveraged Investment:**

The first annual E-Learning Institute was held in May 2005. Four days of intensive seminars and workshops with tracks in Pedagogies and Strategies, Assessment, Emerging Technologies, and Tools & Technologies. Two keynote addresses were given, opening by Dr. Steve Ehrmann, TLT Group, and the closing talk by Dr. Phil Long from MIT. There were 151 attendees primarily from NAU. Next year we expect an expanded agenda and to encourage more attendance from around the state.

**Technology Transfer:**

Shared Curriculum Development - the goals of these projects are to engage teams of faculty with shared curricular development goals to enhance student success in large enrollment courses.

ENV 101Lab – Diana Elder

Introductory environmental science field work using tablet PCs with Geographic Information System (GIS) software and onboard Global Positioning System (GPS). To increase student engagement and field based understanding of data collection and basic research in environmental science. Students will map ecosystem features and relate observation to database information in a geospatial environment.

CHM 130, 151, 235, 238

Improving student success and retention in introductory chemistry. Synchronous communication and conferencing tools will be used for capturing and providing on-demand access for initial access and review.

GIS in the undergraduate geology curriculum – Paul Umhoefer

GIS with onboard GPS in the undergraduate class and field work.

DH 208, 235, 354, 369, 416 – Aamodt, Dray & Moore

Dental Hygiene Electronic Problem Based Learning – A multicontextual approach.

MAT 119, 125 – Nandor Sieben

Online homework to increase success in entry level mathematics courses.

CHM 151Lab, 152Lab

Retooling general chemistry labs using automated feedback homework system.

CIS 360, 370, 310, 410

Network Information Security principles across the Computer Information Systems program.

Physics & Astronomy Introductory courses

Classroom Response Systems (CRS) in large enrollment intro science courses.

PSY 101 – Laurie Dickson.

Building Student Engagement through Web-based Interaction in Psy101.

Hybrid Course Development - these projects were begun in FY04 and most were completed in FY05

**NORTHERN ARIZONA UNIVERSITY**  
TECHNOLOGY AND RESEARCH INITIATIVE FUND (TRIF)  
FY 2005 ACTUAL/FY 2006 BUDGET  
**E-LEARNING**

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In Introduction to Sociology, students consider environmental issues in relation to social behavior. This project involves development, delivery and assessment of a web-enhanced introductory course designed for large sections of almost 100 students. In addition to attending two class meetings per week, students are expected to complete activities, quizzes and reports that are delivered electronically. Two sessions are being taught Fall Semester, 2004 with a total enrollment of 179 students.

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Human and Cultural Relations in Criminal Justice, a junior level writing requirement, is being redesigned into a hybrid course with 50% of the course offered online and the other 50% delivered face to face. The project includes use of interactive group exercises, essays, and exams that are delivered online. Hybridization would allow for more students to enroll in the course and for faculty to share curriculum and activities across all sections.

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**E-LEARNING**

	<u>FY 2005</u> <u>REV BUDGET</u>	<u>FY 2005</u> <u>ACTUAL</u>	<u>FY 2006</u> <u>ORIG BUDGET</u>	<u>FY 2006</u> <u>REV BUDGET</u>
<b>REVENUE</b>				
Carry Forward	\$ 658,826	\$ 658,826	\$ -	\$ 1,210,110
TRIF Revenue	2,160,000	2,375,127	2,268,000	2,268,000
Total Revenue	<u>\$ 2,818,826</u>	<u>\$ 3,033,953</u>	<u>\$ 2,268,000</u>	<u>\$ 3,478,110</u>
<b>EXPENDITURES</b>				
<b>OPERATING BUDGET</b>				
Personal Services	\$ 2,003,866	\$ 1,184,635	\$ 1,632,000	\$ 2,260,771
ERE	471,700	340,964	383,000	660,841
All Other Operating	343,260	298,244	253,000	556,498
<b>TOTAL OPERATING BUDGET</b>	<u>\$ 2,818,826</u>	<u>\$ 1,823,843</u>	<u>\$ 2,268,000</u>	<u>\$ 3,478,110</u>
<b>CAPITAL BUDGET</b>				
Building Renovation	-	-	-	-
Debt Service	-	-	-	-
COP's Lease Purchase Payment	-	-	-	-
<b>TOTAL CAPITAL BUDGET</b>	<u>\$ -</u>	<u>\$ -</u>	<u>\$ -</u>	<u>\$ -</u>
<b>EXPENDITURES GRAND TOTAL</b>	<u>\$ 2,818,826</u>	<u>\$ 1,823,843</u>	<u>\$ 2,268,000</u>	<u>\$ 3,478,110</u>

\*Note: FY 2005 revenue/expense reported prior to official fiscal year close

**INITIATIVE OVERVIEW**

The Center for Research, Development and Assessment in Electronic Learning Environments has been established in response to APNE and the recommendations of the Governor's Task Force for Higher Education. A request to change the name of the Center to "The Center for E-Learning" is being submitted to ABOR at the August board meeting. The Center is dedicated to using information technology to transform teaching and learning and to better prepare graduates for the Arizona workforce. Through the use of Web technologies, place-bound Arizona citizens will have increased access to an education; NAU graduates will be skilled at learning via the Web; and learning will be enhanced using information technology tools. Research in innovative applications of advanced technology into the learning process, coupled with assessment of the actual learning students experience, will assure a high impact of this project on NAU students, and on students across the state.

**FY 2005 GOALS/OBJECTIVES**

1. Use Web technology to transform learning and teaching in both residential and distance education
2. Assess learning effectiveness associated with information technology-mediated learning environments
3. Increase baseline technological literacy skills of all NAU baccalaureate graduates
4. Provide advanced information technology skills to NAU undergraduates through modifications and new academic programs.
5. Assess technological literacy skills of all NAU graduates.

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<u>PERFORMANCE MEASURES/DELIVERABLES</u>	<i>FY 2002</i> <b>ACTUAL</b>	<i>FY 2003</i> <b>ACTUAL</b>	<i>FY 2004</i> <b>ACTUAL</b>	<i>FY 2005</i> <b>PROJECTED</b>	<i>FY 2005</i> <b>ACTUAL</b>	<i>FY 2006</i> <b>REVISED</b>
<b>Workforce Contributions</b>						
1. Number of new Web courses developed and offered	125	101 new courses, 140 new sections offered	121	90	141	80
		9476 enrollments, in 408 sections	22 in Winter '04			
2. Number of new IT-enhanced courses developed		32	42	50	53	60
3. Increase in enrollments of distance students in Web courses		1,703	(136)	500	980	500
4. Increase in residential undergraduate enrollments		663	793	750	1,268	750
5. Increase in student academic success in Web courses.		DFW dropped from 17.7% to 16.8%, a 5% improvement	DFW dropped to 9.0%	5%	DFW dropped from 17.7% in FY02 to 15.2% in FY05, an aggregate	5%
6. Total number of faculty participating in Web development	150	117	155	120	126	120
		82 on web courses 35 on web enhanced				
7. Number of NAU students taking Web courses		12,180	10,133	11,000	12,381	12,000
8. Number of graduates with technical literacy skills <i>(to be assessed directly)</i>	1500	889	1,633	2,000	1,919	2,300
9. Percentage of students satisfied with Web learning opportunities		84%, an improvement from 75% last year.	89.2%	90%	87%	90%
		89%, an improvement from 88% last year.				
<i>(senior survey data)</i>						
10. Number of new certificates in advanced technology for students	2	1		1	0	1
<b>Leveraged Investment</b>						
11. Grants and donations for research in best-practices	\$50,000	\$0	\$0	\$50,000	\$0	\$50,000
<b>Specific Collaborations</b>						
12. Number of private sector partnerships		0		1	2	1

**NORTHERN ARIZONA UNIVERSITY**  
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**FY 2005 RESULTS AND ACCOMPLISHMENTS**

**Leveraged Investment:**

The first annual E-Learning Institute was held in May 2005. Four days of intensive seminars and workshops with tracks in Pedagogies and Strategies, Assessment, Emerging Technologies, and Tools & Technologies. Two keynote addresses were given, opening by Dr. Steve Ehrmann, TLT Group, and the closing talk by Dr. Phil Long from MIT. There were 151 attendees primarily from NAU. Next year we expect an expanded agenda and to encourage more attendance from around the state.

**Technology Transfer:**

Shared Curriculum Development - the goals of these projects are to engage teams of faculty with shared curricular development goals to enhance student success in large enrollment courses.

ENV 101Lab – Diana Elder

Introductory environmental science field work using tablet PCs with Geographic Information System (GIS) software and onboard Global Positioning System (GPS). To increase student engagement and field based understanding of data collection and basic research in environmental science. Students will map ecosystem features and relate observation to database information in a geospatial environment.

CHM 130, 151, 235, 238

Improving student success and retention in introductory chemistry. Synchronous communication and conferencing tools will be used for capturing and providing on-demand access for initial access and review.

GIS in the undergraduate geology curriculum – Paul Umhoefer

GIS with onboard GPS in the undergraduate class and field work.

DH 208, 235, 354, 369, 416 – Aamodt, Dray & Moore

Dental Hygiene Electronic Problem Based Learning – A multicontextual approach.

MAT 119, 125 – Nandor Sieben

Online homework to increase success in entry level mathematics courses.

CHM 151Lab, 152Lab

Retooling general chemistry labs using automated feedback homework system.

CIS 360, 370, 310, 410

Network Information Security principles across the Computer Information Systems program.

Physics & Astronomy Introductory courses

Classroom Response Systems (CRS) in large enrollment intro science courses.

PSY 101 – Laurie Dickson.

Building Student Engagement through Web-based Interaction in Psy101.

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**NORTHERN ARIZONA UNIVERSITY**  
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**CHM 151L – Jim Maxka**

A hybrid model of the introductory chemistry lab has been developed to show innovative ways of teaching and performing assessment. Project goals are to increase student learning, minimize drop rate, and provide new methods for analyzing the effectiveness of our laboratory assignments. The online course would save student time, TA time, use of chemicals, and generation of waste. Lab videos, reports, post-lab follow up questions, and grades are available to students online.

Completed the projects for design of exemplary practices in assessment of student learning in degree programs that rely heavily on electronic instructional technologies. These include electronic portfolios in elementary education, assessing foundation courses in the Master of Science in Management, comparing outcomes in hybrid and traditional courses in Introduction to Advertising, comparing outcomes in online and traditional courses in Business and Professional Speaking courses, and building assessment reliability across eight programs in The School of Communications that use hybrid and online courses.

Faculty Fellows Research Program. Four fellows worked with the E-Learning staff in directed research projects in the areas of technology for communication, verbal and written, Mathematics Education Practices on the web and Nursing Education Problems on the web. The fellows were: Randi Reppen (English), Jeff Shamata-Hovermill (Math), Laura Humphrey (Communication), Sally Dosier (Nursing).

Starting Fall 2004 all IITV courses used WebCT and web resources for document delivery and further enhancements such as discussions and online gradebook.

**Work Force Contributions:**

Significant and above projected contributions to the workforce were achieved in FY 05. The number of new web courses developed and offered, number of new IT enhanced courses, number of faculty participating in web development, and the number of NAU students taking web classes exceeded expectations. Increases in enrollment for distance students and residential undergraduate students were also achieved in FY 05. Finally, improvements in student academic success were obtained as evidenced by a 16% improvement in the DFW rate for web courses.

**Specific Collaborations:**

NAU is a member (since Jan. 2003) of the Better Teaching through Assessment (BeTA) Project, a FIPSE funded open source development project managed by the Teaching Learning & Technology Group. The BeTA projects support the development of better assessment strategies for gathering student feedback about courses and faculty. NAU is participating with eleven other universities and colleges to develop a multi-tiered online course evaluation tool. The first release of the software is scheduled for Q3 of 2005. NAU is hosting the annual meeting for this project in May 2005.

BeTA members: Johnson C. Smith University, Mount Royal College, Ohio University, St. Edward's University, Santa Ana College, Valencia Community College, University of Hong Kong, Northern Arizona University, University of Southern Indiana, Kent State University, Embry-Riddle Aeronautical University and Washington State University.

TLT Group, see <http://www.tltgroup.org/default.htm>

BeTA, see <http://www.tltgroup.org/Beta/betahome.htm>

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**NORTHERN ARIZONA UNIVERSITY**  
**TECHNOLOGY AND RESEARCH INITIATIVE FUND (TRIF)**  
**FY 2005 ACTUAL/FY 2006 BUDGET**  
**ERDENE**

	<u>FY 2005</u> <u>REV BUDGET</u>	<u>FY 2005</u> <u>ACTUAL</u>	<u>FY 2006</u> <u>ORIG BUDGET</u>	<u>FY 2006</u> <u>REV BUDGET</u>
<b>REVENUE</b>				
Carry Forward	\$ 296,812	\$ 296,812	\$ -	\$ 530,649
TRIF Revenue	1,977,600	2,174,561	2,076,480	2,076,480
<b>Total Revenue</b>	<u>\$ 2,274,412</u>	<u>\$ 2,471,373</u>	<u>\$ 2,076,480</u>	<u>\$ 2,607,129</u>
<b>EXPENDITURES</b>				
<b>OPERATING BUDGET</b>				
Personal Services	\$ 1,576,560	\$ 1,297,726	\$ 1,644,866	\$ 1,772,848
ERE	307,808	341,622	320,749	469,283
All Other Operating	390,044	301,376	110,865	364,998
<b>TOTAL OPERATING BUDGET</b>	<u>\$ 2,274,412</u>	<u>\$ 1,940,724</u>	<u>\$ 2,076,480</u>	<u>\$ 2,607,129</u>
<b>CAPITAL BUDGET</b>				
Building Renovation	-	-	-	-
Debt Service	-	-	-	-
COP's Lease Purchase Payment	-	-	-	-
<b>TOTAL CAPITAL BUDGET</b>	<u>\$ -</u>	<u>\$ -</u>	<u>\$ -</u>	<u>\$ -</u>
<b>EXPENDITURES GRAND TOTAL</b>	<u>\$ 2,274,412</u>	<u>\$ 1,940,724</u>	<u>\$ 2,076,480</u>	<u>\$ 2,607,129</u>

\*Note: FY 2005 revenue/expense reported prior to official fiscal year close

**INITIATIVE OVERVIEW**

Throughout its history Arizona's economy has been closely linked to the state's environment and natural resources. Rich mineral resources, a healthful climate, and wondrous landscapes have stimulated economic enterprises in our cities from Yuma to Page. Development of higher education in Arizona has influenced, and been influenced by, these incredible resources. Leading academic programs in astronomy, forest science, hydrology, materials science, hospitality management, environmental engineering and technology, and others are directly related to the state's resources and economy. Research by The Morrison Institute and others demonstrates the importance of "quality of life" when business leaders choose where to invest, where to locate, and where to expand. Environmental Research, Development and Education for the New Economy (ERDENE), managed by the Center for Sustainable Environments, builds on Northern Arizona University's leadership, expertise, and collaborations in environmental and natural resources science, technology, and management. It is designed to accelerate Arizona's environmental business enterprises, to better understand and manage our critical resources, and to prepare Arizona's workforce for the many opportunities these represent.

**NORTHERN ARIZONA UNIVERSITY**  
TECHNOLOGY AND RESEARCH INITIATIVE FUND (TRIF)  
FY 2005 ACTUAL/FY 2006 BUDGET  
**ERDENE**

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**INITIATIVE OVERVIEW** (continued)

Some anticipated benefits to the citizens of Arizona include:

- Ecological restoration projects such as developing solutions to the threat of catastrophic fires at the wildland/urban interface
- Leveraging additional resources from private, state, and federal sources
- New Economy business start-ups
- Assisting existing business and local government through workforce training and development in environmental themes and skills
- An environmental research and development facility
- Development of new courses and certificates in ecological restoration and environmental engineering
- Preparation of baccalaureate, master, and doctoral students in environmental science and engineering

**FY 2005 GOALS/OBJECTIVES**

Continue success of program and achieve stated performance outcomes.

**NORTHERN ARIZONA UNIVERSITY**  
**TECHNOLOGY AND RESEARCH INITIATIVE FUND (TRIF)**  
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**ERDENE**

<b>PERFORMANCE MEASURES/DELIVERABLES</b>	<b>FY 2002 ACTUAL</b>	<b>FY 2003 ACTUAL</b>	<b>FY 2004 ACTUAL</b>	<b>FY 2005 Projected</b>	<b>FY 2005 Actual</b>	<b>FY 2006 REVISED</b>
<b>Leveraged Investment</b>						
1. Leveraged Federal and State Funds	\$5,525,000	\$4,338,056	\$4,369,274	\$7,986,000	\$12,938,699	\$6,308,000
2. Leveraged Industrial \$\$	\$366,000	\$413,000	\$53,950	\$170,000	\$508,449	\$152,000
3. Leveraged other \$\$ (Private, etc.)	\$642,000	\$300,873	\$529,749	\$155,000	\$493,628	\$304,000
4. Other Returns (presentations and publications)	121	180	138	139	305	27
5. Arizona Economic Losses Avoided			incalculable			
<b>Technology Transfer</b>						
6. Products Generated and in the Marketplace			49	10	6	2
7. Business Spin-offs	1		1	0	1	2
8. Patent Applications Generated	1		0	0	0	2
9. Conferences Sponsored	14	19	21	20	28	8
10. Business Expansions	2	1	5	4	16	8
<b>Work Force Contributions</b>						
11. Graduate students in pipeline or graduated	56	87	102	32	35	61
12. High-end Baccalaureates in Specific Disciplines	38	27	47	5	23	84
13. Certificates Granted	0		3	43	73	8
14. Post-Doc students in pipeline or graduated	26	7	8	4	6.5	5
15. Cont Ed Prof/Sponsored event attendees	85	312	2000	83	142	46
<b>Specific Curriculum Innovations</b>						
16. New Programs -- full-time students	3	1	1	0	0	9
17. Revised Courses and programs	10	14	16	6	22	9
18. New Courses -- full-time students	2	9	29	1	31	15
<b>Partnerships (Specific Collaborations)</b>						
19. Community College 2+2 Programs	2	9	7	2	8	5
20. Tri-University (ASU, NAU, UofA)	4	6	7	3	10	5
21. Industry/Private Sector Collaborations	17	73	58	26	79	27
22. Community-based (including tribes)	34	58	51	23	60	46
23. Regional, Nat'l, Internat'l Research and Linkages	20	41	54	37	72	15

**ERDENE Initiative**

Environmental Research, Development and Education for the New Economy (ERDENE) focuses on environmental programs and projects that benefit the Arizona economy and communities. In 2005, the ERDENE initiative included six core programs in their fifth year of operation and ten projects recently funded and in their first year of operation. Together these ERDENE sponsored programs and projects represent a wide variety of research, education and outreach aimed at benefiting the environment and economies of local communities.

**NORTHERN ARIZONA UNIVERSITY**  
TECHNOLOGY AND RESEARCH INITIATIVE FUND (TRIF)  
FY 2005 ACTUAL/FY 2006 BUDGET  
**ERDENE**

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### **Leveraged Investment**

Phenomenally, ERDENE programs raised more than \$12 million dollars in outside funds during FY2005. Forty-nine awards totaling more than \$10 million were received by faculty participating in the Merriam-Powell Research Center alone.

Federal support for the Ecological Restoration Institute at NAU was designated by Congress and the President in September 2004 through passage of federal legislation that authorizes ERI/NAU to be a restoration institute in Arizona with a designated federal budget line for the purpose of providing the research, information synthesis and transfer required to solve the wildfire crisis. Faculty and staff involved in ERDENE supported programs produced a combined total of 313 publications and professional presentations in FY2005. Conferences organized and sponsored by these programs totaled 28.

### **Technology Transfer**

Prof. Paul Flikkema is preparing the second generation of WIZARD sensors for field testing. The products will be patentable and the testing in diverse applications will insure that their capabilities are well known. This high profile work in sensing of environmental change is also helping NAU faculty make important national connections.

Prof. Timothy Vail is developing tools to rapidly and cheaply monitor endocrine disrupting compounds in the environment. Endocrine disruptors in the environment are a rapidly emerging area of environmental and health concern.

### **Work Force Contributions**

A total of 143 graduate students and 551 undergraduates have been involved in ERDENE supported programs in FY2005. Sixteen students involved in research and training at the Ecological Restoration Institute transitioned to professional positions related directly to forest ecology and forest management. Forty-five undergraduates and 49 graduate students are currently involved in ERDENE supported research through the Merriam-Powell Center.

### **Curriculum Development**

Some of the many exciting curricular programs under development by the Merriam Powell Center include a Virtual Environmental Learning Space, Undergraduate Mentoring in Environmental Biology, and Research Experiences in Environmental Science for Undergraduates and for K-12 Teachers.

### **Collaborations**

Each of the core ERDENE programs have developed dozens of significant collaborations in the past five years. In particular, several of the programs have played significant roles in developing networks of researchers and organizations dedicated to environmentally-related monitoring and enhancement. Noteworthy in this regard is the national network spearheaded by the Center for Sustainable Environments for Rescuing America's Endangered Food Traditions (RAFT) and several networks advanced by the Merriam-Powell Center including the Drought Impact on Regional Ecosystems Network, the Arizona Field Station Network, and the Inter-Mountain Regional Observatory Network.

**NORTHERN ARIZONA UNIVERSITY**  
 TECHNOLOGY AND RESEARCH INITIATIVE FUND (TRIF)  
 FY 2005 ACTUAL/FY 2006 BUDGET  
**CAPITAL**

	<u>FY 2005 REV BUDGET</u>	<u>FY 2005 ACTUAL</u>	<u>FY 2006 ORIG BUDGET</u>	<u>FY 2006 REV BUDGET</u>
<b>REVENUE</b>				
Carry Forward	\$ 1,439,035	\$ 1,439,035	\$ 1,349,282	\$ 2,466,446
TRIF Revenue	960,000	1,055,612	1,008,000	1,008,000
<b>Total Revenue</b>	<u>\$ 2,399,035</u>	<u>\$ 2,494,647</u>	<u>\$ 2,357,282</u>	<u>\$ 3,474,446</u>
<b>EXPENDITURES</b>				
<b>OPERATING BUDGET</b>				
Personal Services	\$ 60,000	\$ 22,385	\$ 60,000	\$ 60,000
ERE	16,800	5,516	16,800	16,800
All Other Operating	50,000	300	280,482	280,480
<b>TOTAL OPERATING BUDGET</b>	<u>\$ 126,800</u>	<u>\$ 28,201</u>	<u>\$ 357,282</u>	<u>\$ 357,280</u>
<b>CAPITAL BUDGET</b>				
Building Renovation	\$ 1,000,000	\$ -	\$ 2,000,000	\$ 3,117,165
Debt Service	920,000	-	-	-
COP's Lease Purchase Payment	-	-	-	-
<b>TOTAL CAPITAL BUDGET</b>	<u>\$ 1,920,000</u>	<u>\$ -</u>	<u>\$ 2,000,000</u>	<u>\$ 3,117,165</u>
<b>EXPENDITURES GRAND TOTAL</b>	<u>\$ 2,046,800</u>	<u>\$ 28,201</u>	<u>\$ 2,357,282</u>	<u>\$ 3,474,445</u>

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**NORTHERN ARIZONA UNIVERSITY**  
TECHNOLOGY AND RESEARCH INITIATIVE FUND (TRIF)  
FY 2005 ACTUAL/FY 2006 BUDGET  
**CAPITAL**

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**INITIATIVE OVERVIEW**

The major focus of this initiative is planning for capital projects to be constructed or enhanced using TRIF fund resources. The two major projects originally planned were an Applied Research Building, which would bring together researchers from a variety of sectors in a facility designed to maximize use of environmentally-sensitive materials through building techniques and site location, and a major renovation of the 30+ year-old Biology and Chemistry labs and classrooms. Further analysis of the Biology and Chemistry buildings as part of ABOR's "deferred maintenance" study showed that it would be impractical to renovate the labs. Thus, a decision was made to construct a new lab building.

The passage of the research bill gives NAU an alternate source for dollars for these projects. However, the pressures to expand the nursing program and equip the ARD and lab buildings makes continuation of this initiative imperative, albeit on a reduced scale. Thus, instead of setting aside enough funds to pay debt service on \$28 million, we are reserving a smaller amount -- \$960,000 for FY05 and \$1,008,000 for FY06.

We plan to use a significant amount of the carry-forward money for a "one-time" purchase for the ARD building, such as a "Living Machine" that will allow us to demonstrate a complete "waster-water" cycle -- from "black water" to reclaimed water. This would not only increase the sustainability of the building, but would also increase the teaching/pedagogical aspects of it since the ARD building will not be completed until FY07. Since we have no other source of funds, being allowed to keep these roll-forward funds would be extremely helpful.

Additionally, some carryforward funds have been identified as a possible source for a recent request to ABOR for the development of a new Conference Center in Flagstaff. This request has not yet been approved therefore, more specific information will be provided in the mid-year report if approval is granted.