TECHNOLOGY AND RESEARCH INITIATIVE FUND (TRIF)
ANNUAL REPORT

ARIZONA BOARD OF REGENTS

Arizona State University
Northern Arizona University
The University of Arizona

For the fiscal year ended June 30, 2008,

as required by A.R.S. §15-1648(D).

September 1, 2008

Arizona Board of Regents
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Phoenix, AZ 85004-4593
602-229-2500
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Arizona State University ***Northern Arizona University*** ***University of Arizona***

September 1, 2008

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

Dear Governor Napolitano, President Bee, 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 this Annual Report for the Arizona Board of Regents Technology and Research Initiative Fund (TRIF) for the fiscal year ended June 30, 2008. 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 found in the appendix to this report.

This Annual Report provides budget and expenditure information on each TRIF initiative. These initiatives are consistent with statutory language calling for use of 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- 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.

The FY 2008 TRIF budget supported development of The University of Arizona College of Medicine-Phoenix, in partnership with Arizona State University on the Phoenix Biomedical Campus; the biosciences and biotechnology; information science and technology; access and workforce development, including expansion of the

NAU-Yuma campus, Arizona Universities Network (AZUN), and preparation of math and science teachers and healthcare workers; and optical sciences, water sustainability, and environmental research and development.

ABOR funded a significant, new, multi-year TRIF initiative in mid-FY 2008—the Arizona Solar Energy Initiative, a joint effort of Arizona State University and The University of Arizona. The goal is to establish a world-renown, highly interdisciplinary environment and structure that develops and translates research into useful applications in solar renewable energy. Close synergy among academia, industry, power utilities, and policymakers will accelerate the creation and adoption of distributed renewable power integrated into the electric grid and homes.

ABOR also funded a new initiative at Northern Arizona University in mid-FY 2008—Promoting Forest Health in Arizona. This project is designed to provide the scientific support and leadership required to help solve the wildfire and forest health problem throughout Arizona.

All TRIF-funded projects 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 approved by the Arizona Board of Regents and are available on our website at: www.azregents.edu

We believe that you will find the project brochures included in this report helpful and informative. They provide a snapshot of each TRIF-funded initiative, including performance measures and metrics, financial information, and project management and advisory boards.

Please contact me at 602-229-2505 or jsideman@azregents.edu if I can answer any questions or provide additional information.

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. Robert Shelton, President, The University of Arizona

ARIZONA BOARD OF REGENTS
TECHNOLOGY AND RESEARCH INITIATIVE FUND (TRIF)
ANNUAL REPORT
For the fiscal year ended June 30, 2008

EXECUTIVE SUMMARY

- Education 2000 (Proposition 301), passed by Arizona voters in November 2000, approved a six-tenths-cent increase in the state sales tax to be dedicated to K-12, the community colleges, and the universities. Pursuant to A.R.S. §§42-5010, 42-5029, and 42-5155, collection of the tax began on June 1, 2001, and will continue through June 30, 2021.

- 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. As of June 30, 2008, $406.9 million in revenue from Proposition 301 has been received into TRIF.

- In March 2007 the Arizona Board of Regents approved a five-year TRIF budget plan for FY 2007-2011. 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."

- 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.azregents.edu Project brochures fully describing each project have also been developed and are included in this Annual Report and are also available on the Arizona Board of Regents web site.

- Actual TRIF revenue received during FY 2008 totaled $69.6 million.

- Actual TRIF expenditures in FY 2008 totaled $74.7 million, representing 76.3% of total available revenue (including carryforward amounts from the prior year). Recognizing the timing under which these revenues flow to the Arizona Board of Regents from the Arizona State Treasurer's Office, that is, on a monthly basis and even after fiscal year end, this expenditure rate is not unexpected.

- 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 2008.

- TRIF budget guidelines adopted by the Board call for full expenditure of FY 2008 funds by December 31, 2008. The universities and central office may then request that any unexpended funds be reallocated for the same or a different use.

- Expenditure detail by university and central office and by initiative is presented in this report. TRIF project brochures are included in this Annual Report, presenting in a concise format a description of each TRIF-funded project, project goals, performance analysis, financial information, management and advisory boards, and contact information to "Learn More" about each project.

- 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, as mentioned above, are included in the project brochures.

- 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 Arizona State University at the Polytechnic campus and Arizona State University at the West campus.

- This report reflects compliance with the 20% statutory limitation on use of TRIF funds for capital projects. In FY 2008, 7.7% of TRIF expenditures were for capital projects.

- This FY 2008 TRIF Annual Report is available on the Arizona Board of Regents website at: www.azregents.edu

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

For the Fiscal Year Ended June 30, 2008

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ARIZONA UNIVERSITY SYSTEM

TECHNOLOGY AND RESEARCH INITIATIVE FUND (TRIF)

FY 2008 ACTUAL / FY 2009 - 2011 BUDGETS

SUMMARY

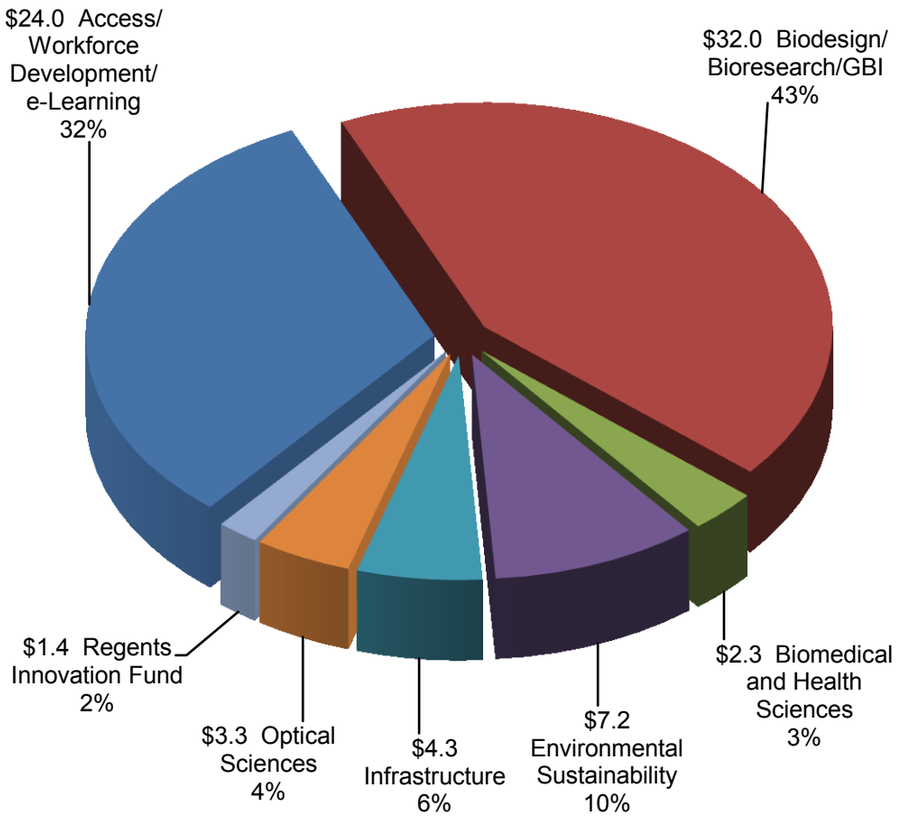
	FY 2007 ACTUAL	*FY 2008 REVISED BUDGET*	*FY 2008 ACTUAL*	*FY 2009 REVISED BUDGET*	*FY 2010 REVISED BUDGET*	*FY 2011 REVISED BUDGET*
REVENUE						
Carryforward	$ 32,465,192	$ 26,338,535	$ 27,009,237	$ 22,864,097	$ 1,645,686	$ 940,239
TRIF Revenue	71,922,360	75,548,237	70,818,544 [1]	74,430,148	78,806,364	82,009,679
TOTAL REVENUE	**$ 104,387,552**	**$ 101,886,772**	**$ 97,827,781**	**$ 97,294,245**	**$ 80,452,050**	**$ 82,949,918**
EXPENDITURES						
OPERATING BUDGET						
Personal Services	$ 28,331,875	$ 41,543,578	$ 29,784,082	$ 41,658,369	$ 33,447,339	$ 34,778,047
ERE	7,838,610	11,470,035	8,508,401	12,084,309	9,372,136	9,775,927
All Other Operating	23,199,744	30,052,442	25,496,155	23,796,533	18,882,913	19,648,497
Grants/Projects	1,812,640	2,743,436	1,702,337	2,255,596	1,781,671	1,864,359
TOTAL OPERATING BUDGET	**61,182,869**	**85,809,491**	**65,490,975**	**79,794,807**	**63,484,059**	**66,066,831**
CAPITAL BUDGET						
Building Renovation	209,107	4,174,820	347,337	2,274,400	3,394,100	3,614,900
Debt Service	8,333,939	7,562,144	4,430,248	9,830,551	8,913,773	6,884,418
ASU Polytechnic/West COPs	3,650,200	3,751,800	3,721,800	3,748,800	3,747,800	3,748,600
NAU Conference Center	4,071,491	-	162,830	-	-	-
AZUN Build Out	-	-	500,000	-	-	-
TOTAL CAPITAL BUDGET	**16,264,737**	**15,488,764**	**9,162,215**	**15,853,751**	**16,055,673**	**14,247,918**
EXPENDITURES GRAND TOTAL	**$ 77,447,606**	**$ 101,298,255**	**$ 74,653,190**	**$ 95,648,558**	**$ 79,539,732**	**$ 80,314,749**
SUMMARY BY PROGRAM AREA						
Access/Workforce Development/e-Learning	$ 21,415,578	$ 35,225,269	$ 24,020,841	$ 27,977,324	$ 22,521,352	$ 22,924,204
Biodesign/Bioresearch/GBI	34,530,399	37,695,018	32,014,985	35,926,523	33,721,957	35,087,813
Biomedical and Health Sciences	1,199,372	5,050,628	2,345,392	3,708,436	2,027,921	2,027,921
Environmental Sustainability	5,440,997	10,697,524	7,168,372	11,346,761	8,436,055	8,618,613
Infrastructure	10,408,324	6,085,392	4,328,140	10,435,092	8,000,535	6,594,472
Optical Sciences	3,187,607	4,350,138	3,340,957	4,328,463	3,678,161	3,825,288
Regents Innovation Fund	1,265,329	2,194,286	1,434,503	1,925,959	1,153,750	1,236,438
EXPENDITURES GRAND TOTAL	**$ 77,447,606**	**$ 101,298,255**	**$ 74,653,190**	**$ 95,648,558**	**$ 79,539,732**	**$ 80,314,749**

[1] Includes $1.2 million of FY 2007 TRIF revenue that exceeded the June 30, 2007, revenue accrual and, therefore, was not reported in FY 2007.

ARIZONA UNIVERSITY SYSTEM
TECHNOLOGY AND RESEARCH INITIATIVE FUND (TRIF)
FY 2008 BUDGET / ACTUAL
SUMMARY BY PROGRAM AREA

	FY 2008 REVISED BUDGET	*FY 2008 ACTUAL*
REVENUE		
Carryforward	$ 26,338,535	$ 27,009,237
TRIF Revenue	75,548,237	70,818,544
TOTAL REVENUE	**$ 101,886,772**	**$ 97,827,781**
EXPENDITURES		
OPERATING BUDGET		
Personal Services	$ 41,543,578	$ 29,784,082
ERE	11,470,035	8,508,401
All Other Operating	30,052,442	25,496,155
Grants/Projects	2,743,436	1,702,337
TOTAL OPERATING BUDGET	**85,809,491**	**65,490,975**
CAPITAL BUDGET		
Building Renovation	4,174,820	347,337
Debt Service	7,562,144	4,430,248
ASU Polytechnic/West COPs	3,751,800	3,721,800
NAU Conference Center	-	162,830
AZUN Build Out	-	500,000
TOTAL CAPITAL BUDGET	**15,488,764**	**9,162,215**
EXPENDITURES GRAND TOTAL	**$ 101,298,255**	**$ 74,653,190**
SUMMARY BY PROGRAM AREA		
Access/Workforce Development/e-Learning	$ 35,225,269	$ 24,020,841
Biodesign/Bioresearch/GBI	37,695,018	32,014,985
Biomedical and Health Sciences	5,050,628	2,345,392
Environmental Sustainability	10,697,524	7,168,372
Infrastructure	6,085,392	4,328,140
Optical Sciences	4,350,138	3,340,957
Regents Innovation Fund	2,194,286	1,434,503
EXPENDITURES GRAND TOTAL	**$ 101,298,255**	**$ 74,653,190**

FY 2008 SYSTEM ACTUAL TRIF EXPENDITURES
(in millions)



ARIZONA UNIVERSITY SYSTEM

TECHNOLOGY AND RESEARCH INITIATIVE FUND (TRIF)

FY 2008 ACTUAL / FY 2009 BUDGET *CAPITAL* EXPENDITURES

($ in thousands)

	TRIF INITIATIVE	FY 2008 Revised Budget	FY 2008 Actual	FY 2009 Budget
ASU	*Biodesign Institute at ASU*	**$4,059**	**$907**	**$3,024**
	ASU Poly/West Certificates of Participation (COPs) *	**n/a**	**n/a**	**n/a**
	Solar Energy	**$0**	**$4**	**$28**
	Total Capital Expenditures	**$4,059**	**$911**	**$3,052**
	Capital as % of Total ASU Expenditures	**13.0%**	**3.7%**	**9.9%**
NAU	*Access/Workforce Development*	$2,185	$562	$0
	Arizona Universities Network (AZUN)	$0	$500	$500
	Capital Projects	$0	-$163	$0
	University Initiatives	$0	$0	$3,809
	NAU-Yuma Expansion	$500	$500	$0
	Total Capital Expenditures	**$2,685**	**$1,399**	**$4,309**
	Capital as % of Total NAU Expenditures	**10.3%**	**9.4%**	**17.6%**
UA	*Bioresearch Program*	$350	-$316	$0
	Water and Environmental Sustainability Program	$146	$30	$0
	Education and Infrastructure Program	$4,497	$3,416	$4,744
	Total Capital Expenditures	**$4,992**	**$3,131**	**$4,744**
	Capital as % of Total UA Expenditures	**13.4%**	**10.6%**	**13.9%**
ABOR	**Total Capital Expenditures**	**$0**	**$0**	**$0**
	Capital as % of Total ABOR Expenditures	**0.0%**	**0.0%**	**0.0%**
Total System Capital Expenditures		**$11,737**	**$5,440**	**$12,105**
20% Statutory Limit on Capital Expenditures		**$19,509**	**$14,186**	**$18,380**
Capital Expenditures as % of Total System Expenditures		**12.0%**	**7.7%**	**13.2%**

* Not applicable. TRIF allocations for ASU Polytechnic and ASU West debt service (FY 2008 actual of $3.7 million) are directed by statute. Therefore, these amounts are excluded from both the calculation of the total system capital and the 20% statutory limitation on capital expenditures.

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ARIZONA STATE UNIVERSITY

TECHNOLOGY AND RESEARCH INITIATIVE FUND (TRIF)

FY 2008 ACTUAL / FY 2009 - 2011 BUDGETS

SUMMARY

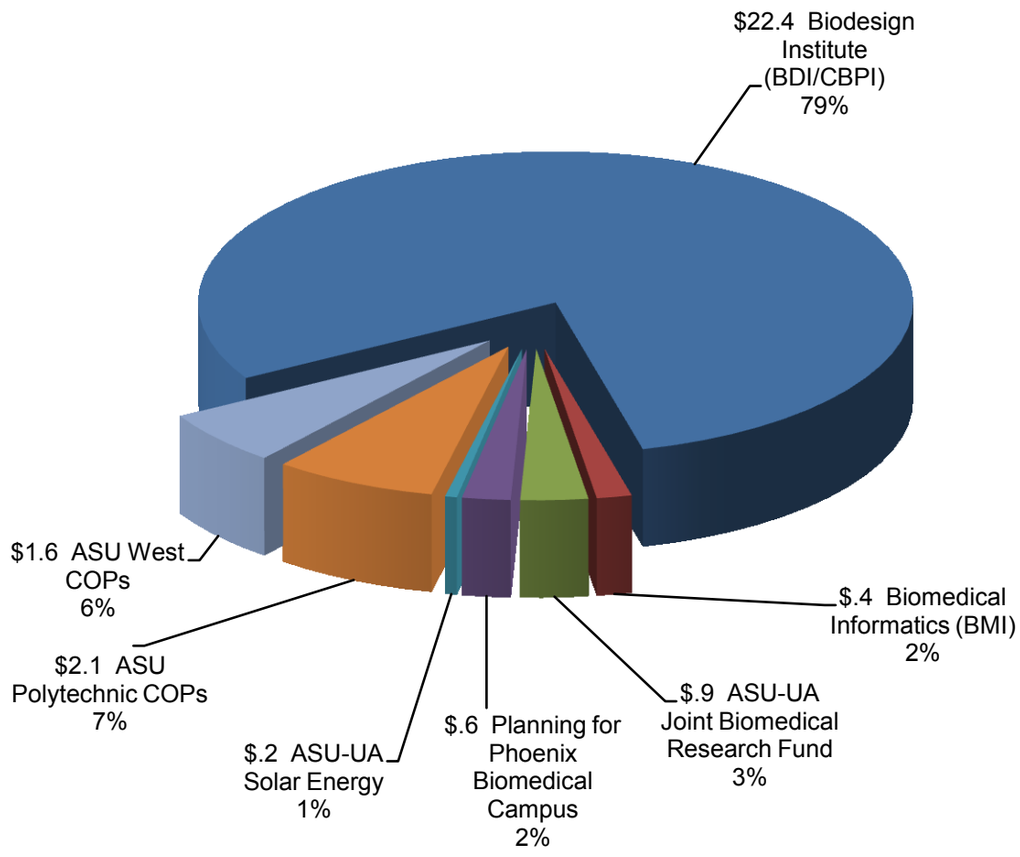
	FY 2007 ACTUAL	*FY 2008 REVISED BUDGET*	*FY 2008 ACTUAL*	*FY 2009 REVISED BUDGET*	*FY 2010 REVISED BUDGET*	*FY 2011 REVISED BUDGET*
REVENUE						
Carryforward	$ 11,111,300	$ 5,872,900	$ 6,536,600	$ 5,610,100	$ -	$ -
TRIF Revenue	27,041,400	29,137,200	27,223,000	28,895,000	30,543,900	31,774,900
TOTAL REVENUE	**$ 38,152,700**	**$ 35,010,100**	**$ 33,759,600**	**$ 34,505,100**	**$ 30,543,900**	**$ 31,774,900**
EXPENDITURES						
OPERATING BUDGET						
Personal Services	$ 13,276,700	$ 12,474,700	$ 11,615,800	$ 14,620,700	$ 11,814,400	$ 12,407,900
ERE	3,368,900	2,794,200	3,008,600	3,931,800	3,133,400	3,294,900
All Other Operating	11,166,300	11,930,100	8,892,500	9,151,800	7,350,900	7,604,300
TOTAL OPERATING BUDGET	**27,811,900**	**27,199,000**	**23,516,900**	**27,704,300**	**22,298,700**	**23,307,100**
CAPITAL BUDGET						
Building Renovation	40,100	3,179,200	133,300	2,274,400	3,394,100	3,614,900
Debt Service	777,600	880,100	777,600	777,600	1,103,300	1,104,300
COPs Lease Purchase Payment	3,650,200	3,751,800	3,721,800	3,748,800	3,747,800	3,748,600
TOTAL CAPITAL BUDGET	**4,467,900**	**7,811,100**	**4,632,700**	**6,800,800**	**8,245,200**	**8,467,800**
EXPENDITURES GRAND TOTAL	**$ 32,279,800**	**$ 35,010,100**	**$ 28,149,600**	**$ 34,505,100**	**$ 30,543,900**	**$ 31,774,900**
SUMMARY BY INITIATIVE						
Biodesign Institute (BDI/CBPI)	$ 27,734,500	$ 25,853,400	$ 22,354,500	$ 25,721,500	$ 24,496,100	$ 25,726,300
Biomedical Informatics (BMI)	551,200	2,448,800	446,400	3,005,600	1,000,000	1,000,000
ASU-UA Joint Biomedical Research Fund	210,700	1,289,300	858,100	431,200	500,000	500,000
Planning for Phoenix Biomedical Campus	133,200	616,800	616,800	-	-	-
ASU-UA Solar Energy	-	1,050,000	152,000	1,598,000	800,000	800,000
ASU Polytechnic COPs	2,046,100	2,082,800	2,082,800	2,084,200	2,083,800	2,081,600
ASU West COPs	1,604,100	1,669,000	1,639,000	1,664,600	1,664,000	1,667,000
EXPENDITURES GRAND TOTAL	**$ 32,279,800**	**$ 35,010,100**	**$ 28,149,600**	**$ 34,505,100**	**$ 30,543,900**	**$ 31,774,900**

ARIZONA STATE UNIVERSITY
TECHNOLOGY AND RESEARCH INITIATIVE FUND (TRIF)
FY 2008 BUDGET / ACTUAL
SUMMARY BY PROGRAM AREA

	FY 2008 REVISED BUDGET	*FY 2008 ACTUAL*
REVENUE		
Carryforward	$ 5,872,900	$ 6,536,600
TRIF Revenue	29,137,200	27,223,000
TOTAL REVENUE	**$ 35,010,100**	**$ 33,759,600**
EXPENDITURES		
OPERATING BUDGET		
Personal Services	$ 12,474,700	$ 11,615,800
ERE	2,794,200	3,008,600
All Other Operating	11,930,100	8,892,500
TOTAL OPERATING BUDGET	**27,199,000**	**23,516,900**
CAPITAL BUDGET		
Building Renovation	3,179,200	133,300
Debt Service	880,100	777,600
COPs Lease Purchase Payment	3,751,800	3,721,800
TOTAL CAPITAL BUDGET	**7,811,100**	**4,632,700**
EXPENDITURES GRAND TOTAL	**$ 35,010,100**	**$ 28,149,600**

SUMMARY BY INITIATIVE		
Biodesign Institute (BDI/CBPI)	$ 25,853,400	$ 22,354,500
Biomedical Informatics (BMI)	2,448,800	446,400
ASU-UA Joint Biomedical Research Fund	1,289,300	858,100
Planning for Phoenix Biomedical Campus	616,800	616,800
ASU-UA Solar Energy	1,050,000	152,000
ASU Polytechnic COPs	2,082,800	2,082,800
ASU West COPs	1,669,000	1,639,000
EXPENDITURES GRAND TOTAL	**$ 35,010,100**	**$ 28,149,600**

FY 2008 ASU ACTUAL TRIF EXPENDITURES
(in millions)



ARIZONA STATE UNIVERSITY

REPORT FOR THE FISCAL YEAR ENDING JUNE 30, 2008

TECHNOLOGY AND RESEARCH INITIATIVE FUND (TRIF)

The Biodesign Institute (top) includes laboratories (below) that are designed to enhance communication and collaboration.

The Biodesign Institute at Arizona State University (BDI) is ASU's flagship TRIF initiative focusing on use-inspired, collaborative research to improve human health and the quality of life. The research agenda emphasizes translation (the application of discoveries to commercial uses and societal benefits) and impact (the quest for effective innovation). To accelerate the pace of discovery, BDI merges formerly distinct fields of research, including biology, chemistry, physics, medicine, agriculture, environmental science, electronics, materials science, engineering and computing.

ASU has also made complementary strategic investments in capacity building project areas such as information technology, wireless communications, materials, renewable energy and technology transfer to advance faculty groups and provide support functions for research that demonstrates promise for high impact economic development and projected future integration with the major BDI initiatives.

The Department of Biomedical Informatics (BMI) was established in 2005 within the School of Computing and Informatics at Arizona State University and began receiving TRIF funds in FY 2007. BMI is playing an important role in expanding the understanding of disease prevention and treatment and improving patient care through realizing the vision of personalized medicine. Their mission is to prepare individuals to make major contributions to the creation and evaluation of computational and informatics tools and their application to biomedical and clinical research, health care practice, public health and education of health professionals and patients.

Also beginning in FY 2007, TRIF supports the Joint ASU-UA Biomedical Research Fund in providing combined ASU-UA TRIF resources for collaborative university and other organizational biomedical projects.

Beginning in FY 2008, TRIF funded a joint ASU-UA initiative in Solar Energy. ASU established the Solar Power Laboratory (SPL) to manage and direct the Solar Energy Initiative. Its mission is to advance the science, innovation development and education training in solar power utilization to provide abundant, clean, sustainable power to Arizona and society. ASU is unique in that it uses an integrated science-to-commercialization-to-policy structure, which is particularly critical to success in the worldwide renewable energy field.

TRIF also provides annual debt service funding for ASU Polytechnic and ASU West infrastructure and campus improvement projects, including multiple building renovations and a laboratory/computer classroom building.

ASU TRIF PROGRAM

Contents

Dr. Rick Shangraw
Vice President for Research and Economic Affairs

September 1, 2008

CONSOLIDATED PERFORMANCE ANALYSIS

PERFORMANCE MEASURES/DELIVERABLES	FY02 Actual	FY03 Actual	FY04 Actual	FY05 Actual	FY06 Actual	FY07 Proj	FY07 Actual	FY08 Proj	FY08 Actual	FY09 Proj	FY10 Proj	FY11 Proj
Biodesign Institute and Capacity Building Project Investments												
Return on Investment ($ amounts in millions)												
Federal and non-federal awards	11.92	8.63	27.09	35.88	47.00	51.60	52.09	56.76	80.88	62.44	68.68	75.55
Royalty income						0.50	0.48	0.52	1.05	0.55	0.57	0.60
Foundation funding						0.47	0.57	0.50	10.70	0.52	0.55	0.57
Return Total						52.57	53.14	57.78	92.63	63.50	69.80	76.73
Value of new startups to ASU	.05	.09	1.40	2.53	3.8							
New products in marketplace	5	3	5	10	7							
Value of new products to ASU	.42	.40	1.40	2.53	3.8							
Technology Transfer												
New invention disclosures	97	91	98	166	152	145	158	147	145	148	150	151
New patent applications filed	108	106	128	168	82	156	140	157	83	159	160	162
New patents issued	11	17	18	41	22	20	15	20	12	21	21	21
Total start-up companies licensing ASU technology	3	3	4	4	4	4	7	4	0	4	4	4
Licenses or options signed (as indication of technology adoption by industry)	9	20	24	28	32	32	22	33	43	33	33	34
New software packages distributed	-	6	10	2	N/A							
Form industry-university nationwide research consortium	-	In Progress	4	2	N/A							
Create research road map in collaboration with industry	In Progress	Completed	4	1	N/A							
Fund proof of concept grants to faculty	6	6	5	9	6							
Business plans written	2	6	9	8	2							
Technology transfer portal inquiries from industry	1	13	15	20	27							
Work Force Contributions												
Post-doctoral appointments	5	48	44	64	88	37	56	38	110	38	39	39
Post-doctoral researchers leaving to enter the workforce	-	19	24	32	39	26	26	27	53	27	27	27
Graduate students employed	29	120	106	121	103	113	324	114	404	115	117	118
Graduate students earning degrees and entering the workforce	-	33	67	63	71	75	95	75	136	76	77	78
Undergraduate students involved	39	84	139	177	160	172	157	173	645	175	177	179
Increase in number of teachers who graduate with math/science certification	9	-	7	(14)	7							
Growth in CS/CSE Graduates	-21	10	37	53	30							
Partnerships/Collaborations												
The number of Biodesign Institute research grants/contracts involving funding from non-government entities						17	25	17	37	17	18	18
The number of Biodesign Institute research grants/contracts involving subcontracts to non-ASU researchers						18	35	18	22	18	19	19
New research collaborations with industry and national laboratories	9	13	19	14	49							
Curriculum Innovations												
Tier 1 Introduction to Information Technology for all students - Completed FY 2002	Completed											
Tier 2 package of 3 courses	Partially		Partially	Partially	Partially							
Tier 3 concentration for BIS degree		Partially	Partially	Partially	Partially							
BS Applied Computing (ASU West) Begins Fall 2005	Approved				X							
High school students completing software design material	88	227	200	-	N/A							
Internships w/ industry	32	88	136	71	50							
New courses introduced (Bio, Info, Nano)	4	6	16	13	5							
Economic Development												
Companies identifying ASU as a factor for relocating or expanding in AZ	2 large	0 large 2 small	1 large 3 small	7 large 3 small	3 large 4 small							
Biomedical Informatics												
Return on Investment ($ amounts in millions)												
Federal and non-federal awards						0.80	1.76	2.00	8.13	2.83	4.71	6.10
Royalty income						0.02	0.00	0.02	0.00	0.03	0.03	0.04
Foundation funding						0.03	0.00	0.04	0.02	0.04	0.05	0.06
Return Total						0.85	1.76	2.06	8.15	2.90	4.80	6.20
Economic Impact												
BMI tenure-track faculty hired by the Department [FTE]						2	2	7	7	11	14	16
BMI research faculty hired by the Department [FTE]						3	3	4	2	6	7	8
New invention disclosures and patent applications filed						N/A	N/A	3	3	5	8	10
Total start-up companies licensing ASU technology						N/A	N/A	N/A	N/A	1	2	3
Work Force Contributions												
Graduate students earning concentrations in BMI						10	Begin Fall 07	10	13	10	20	20
Graduate students earning masters degrees in BMI						N/A	Begin Fall 07	10	0	13	20	30
Graduate students earning doctoral degrees in BMI						N/A	N/A	N/A	N/A	5	10	15
Undergraduate students earning concentrations in BMI						N/A	N/A	N/A	N/A	N/A	20	30
Medical students trained in informatics						N/A	N/A	24	24	48	72	96
Partnerships/Collaborations												
Number of partnerships with biomedical providers						4	6	8	12	12	14	16
Number of partnerships with industry						2	1	4	2	8	12	15
Solar Energy												
Return on Investment ($ amounts in millions)												
Federal and non-federal awards								N/A	N/A	4.10	11.20	10.70
Royalty income								N/A	N/A	0.10	0.25	0.50
Foundation funding								N/A	N/A	0.10	0.20	0.30
Return Total								N/A	N/A	4.30	11.65	11.50
Technology Transfer												
New invention disclosures								N/A	0	6	6	6
New patent applications filed								N/A	0	3	4	5
New patents issued								N/A	0	2	3	4
Total start-up companies licensing ASU technology								N/A	0	0	1	2
Licenses or options signed (as indication of technology adoption by industry)								N/A	0	1	2	3
Work Force Contributions												
Post-doctoral appointments								N/A	0	2	4	8
Post-doctoral researchers leaving to enter the workforce								N/A	0	0	2	4
Graduate students employed								N/A	0	10	20	30
Graduate students earning degrees and entering the workforce								N/A	0	2	5	10
Undergraduate students involved								N/A	0	6	6	6
Joint ASU-UA Biomedical Research Fund												
Return on Investment ($ amounts in millions)												
Federal and non-federal awards						N/A	N/A	1.25	0.87	1.25	1.25	1.25
Royalty income						N/A	N/A	N/A	N/A	N/A	N/A	N/A
Foundation funding						N/A	N/A	N/A	N/A	N/A	N/A	N/A
Return Total						0.00	0.00	1.25	0.87	1.25	1.25	1.25

Explanation of Performance analysis

- The FY07-FY11 **Return on Investment** measures include federal and non-federal awards, royalty income and foundation funding. The sum of these three components (the **Return Total**) is then divided by the related TRIF expenditures for the fiscal year to arrive at the **Return on Investment** ratios included in the financial table below. For the initial five year TRIF funding period FY02-FY06, the return on investment was 1.7:1. FY02-FY06 ROI calculations do not include royalty income and foundation funding.
- **Technology Transfer** measures provide results for ASU's newly structured technology transfer initiative, Arizona Technology Enterprises (AzTE). Measures for inventions, patents and licensing activity are included. The Biodesign Institute provides a primary focus for AzTE as it facilitates the development of intellectual property, promotes industrial linkages, drives technology marketing, and accelerates the successful transition of ASU discoveries into the marketplace.

- **Workforce Contributions** measures show the impact of TRIF funding and research participation by undergraduate students, graduate students, and post-doctoral appointments in the Biodesign Institute and Biomedical Informatics. The measures also include the number of graduate students and post-doctoral researchers leaving ASU to enter the workforce.
- **Partnerships/Collaborations** are an important component for growth of the Biodesign Institute and BMI. Increasing involvement with non-ASU researchers such as the Mayo Clinic, Barrows Neurological Institute, the Translational Genomics Research Institute and the University of Arizona College of Medicine provides additional opportunities to expand and enhance ASU research in the biomedical areas.
- **Curriculum Innovations and Economic Development** measures, along with selected measures in the other categories, were used for the first TRIF funding cycle (FY02 - FY06). For the second funding cycle (FY07 - FY11), several of these measures were no longer applicable or were replaced with more current and meaningful measures.

The Department of Biomedical Informatics is located in the Arizona Biomedical Collaborative building (left) in downtown Phoenix and on the Tempe campus in the Brickyard building in Downtown Tempe.

Financial INFORMATION

	FY02 Actual	FY03 Actual	FY04 Actual	FY05 Actual	FY06 Actual	FY07 Actual	FY08 Rev Budget	FY08 Actual	FY09 Rev Budget	FY10 Rev Budget	FY11 Rev Budget
ASU CONSOLIDATED TRIF FINANCIAL SCHEDULE											
Biodesign Institute & Capacity Building Project Investments											
Revenue	$15,217,000	$25,242,500	$21,220,700	$27,210,100	$26,555,300	$30,611,700	$25,853,400	$24,700,800	$25,721,500	$24,496,100	$25,726,300
Expenditures	4,825,100	20,134,300	12,703,500	18,854,800	19,764,100	27,734,500	25,853,400	22,354,500	25,721,500	24,496,100	25,726,300
Return On Investment	2.5:1	0.4:1	2.1:1	1.9:1	2.4:1	1.9:1	2.2:1	4.1:1	2.5:1	2.8:1	3.0:1
Biomedical Informatics											
Revenue						2,000,000	2,448,800	2,384,600	3,005,600	1,000,000	1,000,000
Expenditures						551,200	2,448,800	446,400	3,005,600	1,000,000	1,000,000
Return on Investment						3.2:1	0.8:1	18.3:1	1.0:1	4.8:1	6.2:1
Solar Energy											
Revenue							1,050,000	1,050,000	1,598,000	800,000	800,000
Expenditures							1,050,000	152,000	1,598,000	800,000	800,000
Return on Investment							N/A	N/A	2.7:1	14.6:1	14.4:1
ASU-UA Joint Biomedical Research Fund											
Revenue						1,000,000	1,289,300	1,255,600	431,200	500,000	500,000
Expenditures						210,700	1,289,300	858,100	431,200	500,000	500,000
Return on Investment						N/A	N/A	1.0:1	2.5:1	2.5:1	2.5:1
Phoenix Biomedical Campus Planning											
Revenue						750,000	616,800	616,800			
Expenditures						133,200	616,800	616,800			
Return on Investment						N/A	N/A	N/A			
ASU Polytechnic & ASU West Certificates of Participation (COPS)											
Revenue	2,500,000	6,100,000	3,572,000	3,815,800	3,781,700	3,791,000	3,751,800	3,751,800	3,748,800	3,747,800	3,748,600
Expenditures	-	6,128,000	3,356,200	3,708,500	3,790,300	3,650,200	3,751,800	3,721,800	3,748,800	3,747,800	3,748,600
Grand Total											
Revenue	17,717,000	31,342,500	24,792,700	31,025,900	30,337,000	38,152,700	35,010,100	33,759,600	34,505,100	30,543,900	31,774,900
Expenditures	4,825,100	26,262,300	16,059,700	22,563,300	23,554,400	32,279,800	35,010,100	28,149,600	34,505,100	30,543,900	31,774,900

The Polytechnic campus Student Union (above left) provides a central meeting place for students. TRIF funds have provided for campus infrastructure improvements at both ASUP and ASUW. The West campus Classroom Laboratory / Computer Classroom Building II (above right) provides much needed instructional space, science and computer labs.

Goals & Results

The ASU strategic decision to invest its TRIF allocation in the biosciences and supporting technology areas resulted in the formation of the Biodesign Institute and the strategic selection of complementary capacity-building projects for funding. The recently added Biomedical Informatics initiative is part of an emerging scientific discipline that deals with the storage, retrieval, sharing and optimal use of biomedical information, data, and knowledge for problem solving and decision making. The study of biomedical informatics is interdisciplinary, drawing upon many diverse fields including medicine, genetics, biology, engineering, computing and information sciences.

Goals:

- Increase the governmental and private funding of research connected with the Biodesign Institute.
- Increase the rate of technology transfer and commercial development coming from the bioscience/biotechnology/ biomedicine areas.
- Enhance interdisciplinary collaborative research in nanotechnology and advanced materials.
- Focus on use-inspired research that will result in demonstrable improvements in patient care and biomedical research.
- Train a new generation of physicians and other health care professionals facile in biomedical computing.

Indicative Results:

- FY08 TRIF related Biodesign and Capacity Building Project federal and non-federal awards increased to $81M, a 55% increase over FY07.

Goals & Results (cont)

- MacroTechnology Works (MTW) was formed to leverage ASU's investment in the $44M/5-year Army Flexible Display Center grant and facility. MTW provides a vehicle to take new discoveries rapidly to the prototype production phase and works closely with ASU's TRIF initiatives.
- The Master's degree program in Biomedical Informatics received 19 applications and admitted 9 students. The PhD degree program had 13 applicants and admitted 7 students, with 2 transfers from the MS program.
- The ASU-UA Joint Biomedical Research Fund has awarded a total of $2M in collaborative grants for in FY07 and FY08.
- ASU is among the top three universities in the United States (along with Stanford and Penn State) in the number of Solar America Initiative R&D Grants for photovoltaics module testing, advanced solar cell materials and next generation photovoltaic devices.

Management

Office of the Vice President for Research and Economic Affairs

Rick Shangraw: Vice President for Research and Economic Affairs

Stephen Goodnick: Associate Vice President for Research

The Biodesign Institute

George Poste: Director, the Biodesign Institute and Del E. Webb Distinguished Professor of Biology

Advisory Boards

The Biodesign Institute, the Department of Biomedical Informatics (BMI) and the Solar Energy have established advisory boards that include nationally and internationally renowned industry and academic members. These groups provide an extensive breadth of knowledge, experience and advice to the initiatives.

Learn More

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Department of Biomedical Informatics
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ASU Arizona State University

ARIZONA STATE UNIVERSITY TECHNOLOGY AND RESEARCH INITIATIVE FUND (TRIF)

The Institute's interdisciplinary research engages diverse capabilities including directed self assembly of macromolecules (top) and pulsed laser analysis of bioenergy transfer processes (middle).

John Chaput, asst. professor at the Biodesign Institute, has used molecular biology tricks to rapidly evolve proteins that have improved stability when compared to naturally occurring proteins (bottom).

ASU BIODESIGN INSTITUTE
ARIZONA STATE UNIVERSITY

The Biodesign Institute is ASU's flagship TRIF initiative. The hundreds of researchers at the Biodesign Institute are driven by a passion to solve some of the world's most urgent problems affecting human health and the well-being of our planet.

Today's scientific discoveries are increasingly dependent on large, interdisciplinary teams working together to solve well-defined problems. The Biodesign Institute is committed to: improving health care through more personalized diagnostics and treatment; providing renewable sources of energy and cleaning our environment; and outpacing the global threat of infectious disease and enhancing national security.

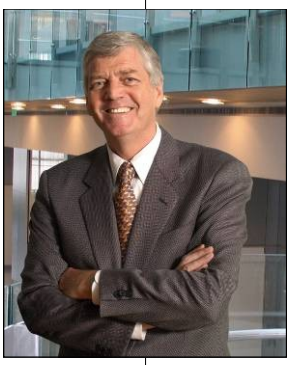
Our **Global Public Health** initiative focuses on outpacing the world's most virulent infectious diseases through improved vaccines and rapid methods for disease detection. **Personalized Medicine** identifies the unique signatures to diseases such as cancer to provide early detection and aid the discovery of new preventions and cures. **Energy and the Environment** efforts secure alternative, bio-inspired sources of energy and bioremediation systems. The Institute is also developing new sensors and monitoring technologies to mitigate possible biological, chemical and radioactive threats and thereby **Secure a Safer World**.

Success hinges on the convergence of new technologies from vastly different fields of science, and translating these discoveries to commercial uses for societal benefit.

Complementary investments in capacity building project areas support research that demonstrates promise for high impact economic development and future integration with the major Biodesign Institute initiatives.

REPORT FOR THE FISCAL YEAR ENDING JUNE 30, 2008

Contents



Dr. George Poste
Director, The Biodesign Institute
& Del E. Webb Distinguished
Professor of Biology

ASU

PERFORMANCE ANALYSIS

PERFORMANCE MEASURES/DELIVERABLES	FY02 Actual	FY03 Actual	FY04 Actual	FY05 Actual	FY06 Actual	FY07 Proj	FY07 Actual	FY08 Proj	FY08 Actual	FY09 Proj	FY10 Proj	FY11 Proj
Return on Investment ($ amounts in millions)												
Federal and non-federal awards	11.92	8.63	27.09	35.88	47.00	51.60	52.09	56.76	80.88	62.44	68.68	75.55
Royalty income						0.50	0.48	0.52	1.05	0.55	0.57	0.60
Foundation funding						0.47	0.57	0.50	10.70	0.52	0.55	0.57
Return Total						52.57	53.14	57.78	92.63	63.50	69.80	76.73
Value of new startups to ASU	.05	.09	1.40	2.53	3.8							
New products in marketplace	5	3	5	10	7							
Value of new products to ASU	.42	.40	1.40	2.53	3.8							
Technology Transfer												
New invention disclosures	97	91	98	166	152	145	158	147	145	148	150	151
New patent applications filed	108	106	128	168	82	156	140	157	83	159	160	162
New patents issued	11	17	18	41	22	20	15	20	12	21	21	21
Total start-up companies licensing ASU technology	3	3	4	4	4	4	7	4	0	4	4	4
Licenses or options signed (as indication of technology adoption by industry)	9	20	24	28	32	32	22	33	43	33	33	34
New software packages distributed	-	6	10	2	N/A							
Form industry-university nationwide research consortium	-	In Progress	4	2	N/A							
Create research road map in collaboration with industry	In Progress	Completed	4	1	N/A							
Fund proof of concept grants to faculty	6	6	5	9	6							
Business plans written	2	6	9	8	2							
Technology transfer portal inquiries from industry	1	13	15	20	27							
Work Force Contributions												
Post-doctoral appointments	5	48	44	64	88	37	56	38	110	38	39	39
Post-doctoral researchers leaving to enter the workforce	-	19	24	32	39	26	26	27	53	27	27	27
Graduate students employed	29	120	106	121	103	113	324	114	404	115	117	118
Graduate students earning degrees and entering the workforce	-	33	67	63	71	75	95	75	136	76	77	78
Undergraduate students involved	39	84	139	177	160	172	157	173	645	175	177	179
Increase in number of teachers who graduate with math/science certification	9	-	7	(14)	7							
Growth in CS/CSE Graduates	-21	10	37	53	30							
Partnerships/Collaborations												
The number of Biodesign Institute research grants/contracts involving funding from non-government entities						17	25	17	37	17	18	18
The number of Biodesign Institute research grants/contracts involving subcontracts to non-ASU researchers						18	35	18	22	18	19	19
New research collaborations with industry and national laboratories	9	13	19	14	49							
Curriculum Innovations												
Tier 1 Introduction to Information Technology for all students - Completed FY 2002	Completed											
Tier 2 package of 3 courses	Partially		Partially	Partially	Partially							
Tier 3 concentration for BIS degree		Partially	Partially	Partially	Partially							
BS Applied Computing (ASU West) Begins Fall 2005	Approved				X							
High school students completing software design material	88	227	200	-	N/A							
Internships w/ industry	32	88	136	71	50							
New courses introduced (Bio, Info, Nano)	4	6	16	13	5							
Economic Development												
Companies identifying ASU as a factor for relocating or expanding in AZ	2 large	0 large 2 small	1 large 3 small	7 large 3 small	3 large 4 small							

Note: The above amounts include the Biodesign Institute and capacity building project investments.

EXPLANATION OF PERFORMANCE ANALYSIS

- The FY07-FY11 **Return on Investment** measures include federal and non-federal awards, royalty income and foundation funding for the Biodesign Institute and capacity building project investments. The sum of these three components (the **Return Total**) is then divided by the related TRIF expenditures for the fiscal year to arrive at the **Return on Investment** ratio included in the financial table below. For the initial five year TRIF funding period FY02-FY06, the cumulative return on investment was 1.7:1. FY02-FY06 ROI calculations do not include royalty income and foundation funding.
- **Technology Transfer** measures provide results for ASU's technology transfer initiative, Arizona Technology Enterprises (AzTE). Measures for inventions, patents and licensing activity are included. AzTE facilitates the development of ASU's intellectual property, promotes industrial linkages, drives technology marketing, and accelerates the successful transition of ASU discoveries into the marketplace.
- **Workforce Contributions** measures show the impact of TRIF funding and research participation by undergraduate students, graduate students, and post-doctoral appointments within the TRIF projects. The measures also include the number of graduate students and post-doctoral researchers leaving ASU to enter the workforce.
- **Partnerships/Collaborations** are an important component for growth of the Biodesign Institute and capacity building project initiatives. Increasing involvement with non-government and non-ASU researchers such as the Mayo Clinic, TGen and Barrows Neurological Institute provides additional opportunities to expand and enhance ASU research.
- **Curriculum Innovations and Economic Development** measures, along with selected measures in the other categories, were used for the first TRIF funding cycle (FY02 - FY06). For the second funding cycle (FY07 - FY11), several of these measures were no longer applicable or were replaced with more current and meaningful measures.

Drs. Bruce Rittmann and Wim Vermaas are researching the use of photo synthetic bacteria to produce diesel fuel at the Biodesign Institute.

FINANCIALS

	FY02 Actual	FY03 Actual	FY04 Actual	FY05 Actual	FY06 Actual	FY07 Actual	FY08 Rev Budget	FY08 Actual	FY09 Rev Budget	FY10 Rev Budget	FY11 Rev Budget
REVENUE											
Carry Forward	$ -	$ 10,391,900	$ 5,108,200	$ 8,517,200	$ 8,355,300	$ 8,869,900	$ 2,877,200	$ 2,874,000	$ 2,346,300		
New TRIF Revenue	15,217,000	14,850,600	16,112,500	18,692,900	18,200,000	21,741,800	22,976,200	21,826,800	23,375,200	24,496,100	25,726,300
TOTAL REVENUE	**$15,217,000**	**$25,242,500**	**$21,220,700**	**$27,210,100**	**$26,555,300**	**$30,611,700**	**$25,853,400**	**$24,700,800**	**$25,721,500**	**$24,496,100**	**$25,726,300**
OPERATING BUDGET											
Personal Services	$ 1,492,100	$ 5,907,800	$ 7,120,900	$ 9,136,400	$ 9,500,300	$ 13,147,900	$ 10,930,900	$ 10,812,900	$ 12,096,300	$ 10,598,800	$ 11,192,300
Employee Related Expenses	221,700	938,900	1,386,700	2,048,700	2,207,300	3,334,300	2,500,600	2,761,100	3,165,400	2,767,000	2,928,500
All Other Operating Expenses	2,150,700	10,760,500	3,853,700	6,994,000	7,464,300	10,434,600	8,362,600	7,873,700	7,436,000	6,632,900	6,886,300
Total Operating Budget	3,864,500	17,607,200	12,361,300	18,179,100	19,171,900	26,916,800	21,794,100	21,447,700	22,697,700	19,998,700	21,007,100
CAPITAL BUDGET											
Building Renovation	960,600	2,527,100	342,200	675,700	592,200	40,100	3,179,200	129,200	2,246,200	3,394,100	3,614,900
Debt Service						777,600	880,100	777,600	777,600	1,103,300	1,104,300
Total Capital Budget	960,600	2,527,100	342,200	675,700	592,200	817,700	4,059,300	906,800	3,023,800	4,497,400	4,719,200
TOTAL EXPENDITURES	**$4,825,100**	**$20,134,300**	**$12,703,500**	**$18,854,800**	**$19,764,100**	**$27,734,500**	**$25,853,400**	**$22,354,500**	**$25,721,500**	**$24,496,100**	**$25,726,300**
Return On Investment	**2.5:1**	**0.4:1**	**2.1:1**	**1.9:1**	**2.4:1**	**1.9:1**	**2.2:1**	**4.1:1**	**2.5:1**	**2.8:1**	**3.0:1**

Note: The above amounts include the Biodesign Institute and capacity building project investments.

GOALS & RESULTS

ASU has invested its TRIF allocation in a select number of highly-integrated science and technology projects to ensure the critical mass and focus that will produce results. Because the Biodesign Institute is the cornerstone of this funding, the goals & results below focus on it. However, other capacity building projects, including the Arizona Institute for Nano-Electronics (AINE), the Decision Theater, Wireless Integrated Nano Technology (WINTech) and the Arizona Institute for Renewable Energy (AIRE) are included in the financial and performance metrics.

Goals:

- Increase governmental and private funding of research at the Biodesign Institute by 15 percent annually
- Increase the rate of technology transfer development from the bioscience / biotechnology / biomedicine areas
- Provide educational and workforce impact for the State
- Enhance interdisciplinary collaborative research in nanotechnology and advanced materials

Indicative Results:

- The Biodesign Institute consists of 53 faculty and 144 academic professionals. Total staffing approximates 550.
- The Biodesign Institute received the platinum certification for "Leadership in Energy and Environmental Design" (LEED) for Building B, which opened in 2006.
- Dr. Stuart Lindsay, a professor in physics and chemistry and the Edward and Nadine Carson Presidential Chair in Physics, received the "Regents' Professor" title which is the highest faculty honor awarded at ASU.
- Dr. Neal Woodbury has been selected as the recipient of the 2008 Gary Krahenbuhl Difference Maker Award from the College of Liberal Arts and Sciences.
- In FY08, the Biodesign Institute received the Virginia G. Piper Trust award of $10.0 million for the creation of the Center for Personalized Diagnostics. World-renowned scientist Lee Hartwell has been recruited to serve as chair of this effort.
- In FY08, Dr. Stephen Albert Johnston, Innovations in Medicine, received a $6.9 million Innovator Award from the Department of Defense for a vaccine against breast cancer.
- In FY08, Drs. Bruce Rittman and Wim Vermaas received a $4.4 million award from Science Foundation Arizona & British Petroleum to develop biodiesel fuel from photosynthetic bacteria.
- For FY08, the Biodesign Institute posted $40 million in research contracts & grants awards which is $16.4 million or 69% greater than the prior year.
- The ASU Flexible Display Center successfully completed a midterm review of their performance by the US Army and a review team composed of experts from academic, industry and the Department of Defense, that will extend their partnership with the US Army through the full 10 year period of the agreement.

MANAGEMENT

OFFICE OF THE VICE PRESIDENT FOR RESEARCH AND ECONOMIC AFFAIRS

Rick Shangraw: Vice President for Research and Economic Affairs

Stephen Goodnick: Associate Vice President for Research

THE BIODESIGN INSTITUTE

George Poste: Director, the Biodesign Institute and Del E. Webb Distinguished Professor of Biology

BIODESIGN INSTITUTE ADVISORY BOARD

★ = **National Academy Member**
✪ = **Nobel Laureate**

Chairman:

★ **Dr. Stephen Benkovic**, Professor; Eberly Chair in Chemistry — Pennsylvania State University

Members:

★ **Dr. Allen J. Bard**, Director, Laboratory of Electrochemistry — University of Texas at Austin
★ **Dr. Carolyn Bertozzi**, T. Z. & Irmgard Chu Distinguished Professor, Department of Chemistry — University of California, Berkeley
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★ **Dr. John Donoghue**, Professor of Neuroscience Division of Biology & Medicine — Brown University
★ **Dr. David Eisenberg**, Director, Institute for Genomics and Proteomics — UCLA-DOE
★ **Dr. Drew Endy**, Assistant Professor, Department of Biological Engineering— Massachusetts Institute of Technology
★ **Dr. Larry Gold**, Chairman and CSO — SomaLogic, Boulder, CO
✪★ **Dr. Lee Hartwell**, President and Director — Fred Hutchinson Cancer Center, Seattle, WA
★ **Dr. Sidney Hecht**, John W. Mallet Professor of Chemistry; Professor of Biology — University of Virginia
★ **Dr. Daniel Nocera**, W. M. Keck Professor of Energy & Professor of Chemistry — Massachusetts Institute of Technology
★ **Dr. James Rothman,** Professor of Physiology & Cellular Biophysics, Columbia University.
★ **Dr. Lucy Shapiro**, Director, Beckman Center for Molecular and Genetic Medicine; Ludwig Professor of Cancer Research — Stanford University School of Medicine
★ **Dr. James Wells**, President and CSO — Sunesis Pharmaceuticals

LEARN MORE

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ASU ARIZONA STATE UNIVERSITY

Ira A. FULTON school of engineering

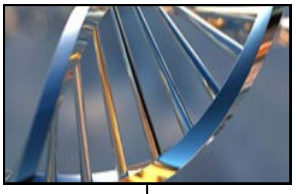
ARIZONA STATE UNIVERSITY

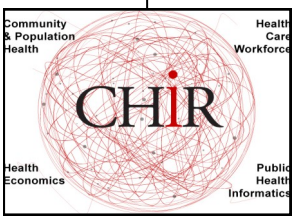
School of Computing and Informatics

DEPARTMENT OF BIOMEDICAL INFORMATICS

REPORT FOR THE FISCAL YEAR ENDING JUNE 30, 2008

TECHNOLOGY AND RESEARCH INITIATIVE FUND (TRIF)





The application of informatics and computing to bioscience will enable physicians and other health care practitioners to replace 'off-the-shelf' medical treatments with courses of treatment customized for the individual patient.

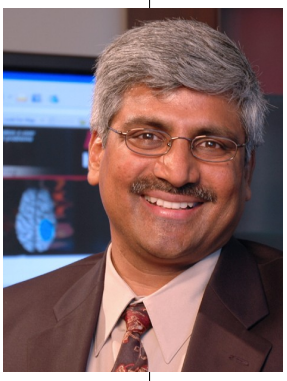
The Department of Biomedical Informatics (BMI) was established in 2005 as a new initiative within the School of Computing and Informatics (SCI) at Arizona State University. The Department is playing an important role in expanding our understanding of disease prevention and treatment and improving patient care through realizing the vision of personalized medicine.

The Department of Biomedical Informatics in collaboration with The University of Arizona supports a partnership between academic researchers, clinical practitioners and regional health care providers to advance research and education in the science and practice of biomedical informatics. The Department's mission is to prepare students to make major contributions for the creation and evaluation of computational and informatics tools and their application to biomedical and clinical research, health care practice, public health and education of health professionals and patients.

Biomedical informatics is an emerging scientific discipline that deals with the storage, retrieval, sharing and optimal use of biomedical information, data, and knowledge for problem solving and decision making. The study of biomedical informatics is interdisciplinary, drawing upon many diverse fields including medicine, genetics, biology, engineering, computing and information sciences.

The Department has begun to offer a wide array of academic degrees and programs in biomedical informatics, including a masters degree program and an informatics immersion and scholarly projects for medical students at the University of Arizona College of Medicine (UACOM) that began in Fall 2007, a doctoral degree program in that will begin in Fall 2008, undergraduate concentrations beginning in Fall 2009, and continuing education courses for health care professionals as scheduled.

Contents



Dr. Sethuraman Panchanathan
Professor and Director,
School of Computing and Informatics

September 1, 2008

PERFORMANCE ANALYSIS

PERFORMANCE MEASURES/IMPACT	FY07 Proj	FY07 Actual	FY08 Proj	FY08 Actual	FY09 Proj	FY10 Proj	FY11 Proj
Return on Investment ($ amounts in millions)							
Federal and non-federal awards	0.80	1.76	2.00	8.13	2.83	4.71	6.10
Royalty income	0.02	0.00	0.02	0.00	0.03	0.03	0.04
Foundation funding	0.03	0.00	0.04	0.02	0.04	0.05	0.06
Return Total	0.85	1.76	2.06	8.15	2.90	4.80	6.20
Economic Impact							
BMI tenure-track faculty hired by the Department [FTE]	2	2	7	7	11	14	16
BMI research faculty hired by the Department [FTE]	3	3	4	2	6	7	8
New invention disclosures and patent applications filed	N/A	N/A	3	3	5	8	10
Total start-up companies licensing ASU technology	N/A	N/A	N/A	N/A	1	2	3
Students Trained							
Graduate students earning concentrations in BMI	10	Begin Fall 07	10	13	10	20	20
Graduate students earning masters degrees in BMI	N/A	Begin Fall 07	10	0	13	20	30
Graduate students earning doctoral degrees in BMI	N/A	N/A	N/A	N/A	5	10	15
Undergraduate students earning concentrations in BMI	N/A	N/A	N/A	N/A	N/A	20	30
Medical students trained in informatics	N/A	N/A	24	24	48	72	96
Partnerships/Collaborations							
Number of partnerships with biomedical providers	4	6	8	12	12	14	16
Number of partnerships with industry	2	1	4	2	8	12	15

The FY07-FY11 **Return on Investment** measures include federal and non-federal awards, royalty income and foundation funding. The sum of these three components (the **Return Total**) is divided by TRIF expenditures for the fiscal year to arrive at the **Return on Investment** ratio included in the financial table on page 3.

DISCUSSION OF PERFORMANCE

Return on Investment The Department of Biomedical Informatics investigators and affiliated SCI faculty currently hold significant grants from agencies including NIH, NSF, and Banner Health, including a $5 million James S. McDonnell Foundation grant and funding from Science Foundation Arizona. Initial awards total $1.6 million with several in process. BMI faculty and affiliated researchers and have submitted over $23.6 million in proposals in FY 08, and proposal activity will continue to increase as newly recruited senior faculty transfer current projects to ASU, additional research centers are developed (see page 3) and new junior faculty arrive and become research productive.

Economic Impact The department will generate research and clinical partnerships that significantly impact our local economy. The department is hiring world-class biomedical informatics researchers and practitioners who are becoming research productive. University-industry collaborations in biomedical, clinical and bioinformatics augment existing strong public health collaborations already in place. The BMI program is positioned to be a top five program and will draw significant external funding. Its collaborations will generate intellectual property and are well positioned to be competitive in an aggressively growing, venture friendly market niche.

Students Trained The department offers BMI Masters and Doctor of Philosophy (Fall 2008) degrees, with current . MS students completing their second year. Two students applied and were accepted for transfer into the PhD program. Although first year students have been outstanding, selection criteria continue to rise to establish BMI's reputation as a high quality research-focused program. Overall, the MS and PhD application acceptance rate in FY 08 was approximately 50% with offers to 9 MS candidates and 7 PhD candidates. In addition, BMI faculty provide immersive informatics instruction for cohorts of UACOM medical students, including 48 FY08 first year students plus 24 second year students. BMI continues development of a highly selective undergraduate biomedical informatics program initially targeting honors students or other highly qualified applicants is progressing with ABOR approval expected in December 2008.

Partnerships/Collaborations Partnerships and collaborative relationships will play a critical role in the success of BMI. Collaborative partnerships are in place with the University of Arizona College of Medicine, Banner Health, Barrow Neurological Institute, The Critical Path Institute, Mayo Clinic—Scottsdale, the Translational Genomics Research Institute, the state Medicaid Agency (AHCCCS), and Maricopa Integrated Health Services. These and future partnerships include joint hires, joint research projects, and planned internships and projects for BMI students.

BMI Research Foci

BMI is building core research strengths in Bioinformatics, Imaging Informatics, Clinical Informatics, and Public Health Informatics. We are also pursuing cross-cutting recruiting in structured knowledge/natural language processing and data mining.

Bioinformatics focuses on the development and application of computational tools to analyze biomedical data and study biological systems to advance understanding variations of disease and developing targeted therapies. ASU BMI investigators work on projects such as modeling of gene regulatory networks to decipher cancer pathways. Plans are underway to develop a Center for Bioinformatics that will work closely with TGen, the Biodesign Institute, the new Partnership in Personalized Medicine, and other entities. BMI is recruiting a senior bioinformatics faculty member to lead this effort.

Imaging Informatics focuses on the developing information technology and computational tools to manage and analyze medical images to support decision-making and patient care. BMI leverages ASU's School of Computing and Informatics research strength in Imaging Informatics. Our investigators work on projects such as identifying brain aneurysms using computer tomography angiography.

Clinical Informatics focuses on maximizing the use of biomedical information in patient care, clinical research and biomedical education. Focuses this year included efforts to develop broad-based approaches to health information exchange, clinical data capture, and clinical decision support. We also participated in developing a proposal for resubmission to NIH for a statewide Clinical and Translational Science Award program grant, which will include a prominent BMI component.

Public Health Informatics focuses on applying information science and technology to public health practice and research. The Center for Health Information and Research (CHIR), led by Dr. William G. Johnson, has developed a comprehensive database of health information for the entire population of Arizona that is used extensively in a variety of health services research, health economics, and epidemiological studies. CHIR received the 2008 ASU President's Gold Medal for Social Embeddedness.

Cognition & Decision Making research focuses on the analysis of medical errors, developing and using clinical guidelines, models for problem solving and decision-making and the evaluation of human-computer interactions. Dr. Vimla L. Patel leads the BMI Collaborative for Decision Making and Cognition. Current projects include a $5M James S. McDonnell Foundation grant to develop a cognitive framework for understanding and reducing medical errors in critical care environments.

Financials

	FY07 Actual	FY08 Rev Budget	FY08 Actual	FY09 Rev Budget	FY10 Rev Budget	FY11 Rev Budget
REVENUE						
Carry Forward	1,000,000	$ 1,448,800	$ 1,452,000	$ 1,938,200		
New TRIF Revenue	1,000,000	1,000,000	932,600	1,067,400	1,000,000	1,000,000
TOTAL REVENUE	**$2,000,000**	**$2,448,800**	**$2,384,600**	**$3,005,600**	**$1,000,000**	**$1,000,000**
OPERATING BUDGET						
Personal Services	200	721,100	300,300	2,021,900	672,700	672,700
Employee Related Expenses	0	79,400	91,800	618,100	205,700	205,700
Operating Expenses	551,000	1,648,300	54,300	365,600	121,600	121,600
Total Operating Budget	$551,200	$2,448,800	$446,400	$3,005,600	$1,000,000	$1,000,000
CAPITAL BUDGET						
Building Renovation						
Debt Service						
Total Capital Budget	-	-	-	-	-	-
TOTAL EXPENDITURES	**$551,200**	**$2,448,800**	**$446,400**	**$3,005,600**	**$1,000,000**	**$1,000,000**
Return On Investment	**3.2:1**	**0.8:1**	**18.3:1**	**1.0:1**	**4.8:1**	**6.2:1**

Goals & Results

Goals: The goals of the Department of Biomedical Informatics include:

- Focusing on use-inspired research that will result in demonstrable improvements in patient care and biomedical research.
- Becoming a nationally recognized leader in biomedical informatics research.
- Embracing new types of collaborations with local and regional partners.
- Leveraging research expertise in Arizona.
- Providing an educational experience that is truly interdisciplinary by bridging traditional boundaries in scientific and medical education.
- Training a new generation of physicians and other health care professionals facile in biomedical computing.
- Serving as a resource to Arizona's biomedical/bioscience community and public health agencies.
- Contributing to the economic development and well-being of the community by supporting and advancing bioscience and biomedical research in Arizona.

Results and Updates:

- Robert A. Greenes, MD, PhD, Ira A. Fulton Chair and Professor of Biomedical Informatics, from Harvard University joined the Department in September, 2007.
- Douglas Fridsma, MD, PhD, from University of Pittsburgh was hired as Associate Professor. Assistant Professor Shu-Chuan Chen, a joint appointee, is returning to Mathematics at 100%. The department is negotiating with a senior candidate to participate in Center for Health Information and Research management, and another to lead Department bioinformatics initiatives. Other assistant/associate-level candidates are under active consideration in knowledge management, robotics, imaging informatics, clinical research informatics, and telemedicine/decision support.
- The Master's degree program in Biomedical Informatics received 19 applications and admitted 9 students. The PhD degree program had 13 applicants and admitted 7 students, with 2 transfers from the MS program. Three new BMI courses were offered in the Spring and three new courses are slated for offering in Fall 2008.
- In our first year, faculty have secured a $5,000.000 grant from the James S. McDonnell Foundation for Dr. Vimla Patel's Collaborative for Decision Making and Cognition, an Interagency Service Agreement for $500,000 from AHCCCS, the state Medicaid agency, $490,000 from Science Foundation Arizona, and approximately $3,000,000 in research agreements with data partners for, Dr. William Johnson's Center for Health Information and Research, as well as several smaller awards.
- BMI partnering relationships were extensive during FY08, reflected in proposals for the NIH Clinical and Translational Science Award (CTSA) program with the University of Arizona and other partners, joint projects with AHCCCS, Banner, Mayo, Maricopa Integrated Health Services, and TGen, and several proposals involving other ASU departments and schools.

Management

Ira. A. Fulton School of Engineering

Deirdre Meldrum, Dean

School of Computing & Informatics

Sethuraman Panchanathan, Director
Robert Greenes, Ira A. Fulton BMI Chair and Professor of Biomedical Informatics

Advisory Board

★ = American College of Medical Informatics Fellow
✪ = BMI Department Chair

Chairman:

★ **J. Robert Beck**, **MD —** VP Information Technology and CIO, Fox Chase Cancer Center

Members:

★ **Suzanne Bakken**, **RN**, **DNSc —** Professor of Biomedical Informatics and Alumni Professor of the School of Nursing, Columbia University

Michael Bittner, **PhD —** Director and Sr. Investigator, Translational Genomics Research Institute

✪★ **Christopher G. Chute**, **MD**, **DrPh** — Professor and Chair of Biomedical Informatics, Mayo Clinic Medical School

✪★ **Joyce A. Mitchell**, **PhD** — Professor and Chair, Department of Medical Informatics, University of Utah

✪★ **Mark A. Musen, MD**, **PhD** — Head, Stanford Medical Informatics and Professor of Medicine, Stanford University

George Poste, **DVM, PhD, DSc** — Director, The Biodesign Institute at Arizona State University and Dell E. Webb Distinguished Professor of Biology

Kristen B. Rosati, **JD** — Partner, Coppersmith Gordon Schermer Owens & Nelson, PLC

✪★ **Edward H. Shortliffe**, **MD**, **PhD** — Dean, University of Arizona College of Medicine

Gustavo Stolovitzky, **PhD** — Manager, IBM Functional Genomics and Systems Biology Group, IBM Research, TJ Watson Research Center

Building Locations

The BMI Department is located in the Arizona Biomedical Collaborative Building 1 (ABC1) in downtown Phoenix and in the Brickyard Building on the Tempe campus of ASU.

Learn More

Department of Biomedical Informatics
Telephone: 480.727.7747
Web: http://bmi.asu.edu
Email: bmi@asu.edu

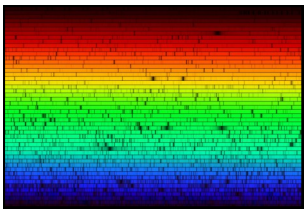
ASU Arizona State University

ARIZONA STATE UNIVERSITY

REPORT FOR THE FISCAL YEAR ENDING JUNE 30, 2008

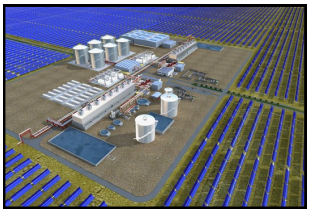
TECHNOLOGY AND RESEARCH INITIATIVE FUND (TRIF)

ASU - UA ARIZONA SOLAR ENERGY INITIATIVE



High Resolution Solar Spectrum

PTL Solar Panels



Solana APS Plant

Advances in solar power technologies for the electric grid, distributed generation will provide the major source of renewable energy in Arizona reducing our reliance on fossil fuels.

New space and military applications will enhance National Security.

Industry and consumers will benefit by reduced electricity costs and a cleaner, sustainable environment.

The Solar Power Laboratory (SPL) was established in December 2007 as a new initiative within ASU's Global Institute of Sustainability (GIOS) to manage and direct the ABOR Solar Energy Initiative. Its mission is to advance the science, innovation development and educational training in Solar power utilization to provide abundant, clean, sustainable power to Arizona and Society. ASU is unique in that it adopts an integrated science-to-commercialization-to-policy structure which is particularly critical to success in the worldwide Renewable Energy field.

The Solar Energy Initiative at Arizona State University and the University of Arizona was started with Technology and Research Initiative Funds. The joint business plan activities are in three major interrelated thrusts: (1) research and development, (2) economic and policy analysis, and (3) education, outreach and marketing. These thrusts will accelerate the growth of solar energy in the State of Arizona and stimulate the economic growth that will result. Research and Development will proceed along the lines recommended by the Arizona Solar Electric Roadmap at both universities.

ASU has over 20 years of experience in Solar Energy and has achieved either leadership or uniqueness in certain solar areas. Solar Energy related researchers and Centers will be merged into an interdisciplinary umbrella organization that spans the Colleges of Engineering, Liberal Arts and Sciences and Design. Its home in GIOS provides strong, functional links to Departments in Business and Energy Policy. Innovation, Solar industry and Power Utility relations will be a major focus of SPL and support economic development efforts to locate companies to AZ.

Contents

Dr. George Maracas,
Professor and COO

Solar Power Laboratory

September 1, 2008

PERFORMANCE ANALYSIS

PERFORMANCE MEASURES/IMPACT	FY08 Proj[1]	FY08 Actual	FY09 Proj	FY10 Proj	FY11 Proj
Return on Investment ($ amounts in millions)					
Federal and non-federal awards	N/A	N/A	4.10	11.20	10.70
Royalty income	N/A	N/A	0.10	0.25	0.50
Foundation funding	N/A	N/A	0.10	0.20	0.30
Return Total	N/A	N/A	4.30	11.65	11.50
Technology Transfer					
New invention disclosures	N/A	0	6	6	6
New patent applications filed	N/A	0	3	4	5
New patents issued	N/A	0	2	3	4
Total start-up companies licensing ASU technology	N/A	0	0	1	2
Licenses or options signed (as indication of technology adoption by industry)	N/A	0	1	2	3
Work Force Contributions					
Post-doctoral appointments	N/A	0	2	4	8
Post-doctoral researchers leaving to enter the workforce	N/A	0	0	2	4
Graduate students employed	N/A	0	10	20	30
Graduate students earning degrees and entering the workforce	N/A	0	2	5	10
Undergraduate students involved	N/A	0	6	6	6

[1] Due to the late (Spring 2008) FY startup of the Solar initiative, FY08 projected and actual measures were not available.

DISCUSSION OF PERFORMANCE

Return on Investment The Solar Power Laboratory is well-poised to begin generating substantial research dollars from federal and non-federal awards. SPL investigators and affiliated faculty currently hold more than 10 grants totaling nearly $2 million and have submitted 10 proposals totaling over $36 million. SPL proposal activity will continue to increase as newly recruited senior faculty, new research centers and new junior faculty arrive and become research productive.

Economic Impact Arizona's abundance of sunlight available for power generation is a draw to the solar industry. ASU's strengths in solar energy provide workforce, innovations and research for this industry. SPL's consolidated solar activities will help win major research grants and increase industry partnerships. Successes will grow new Centers and attract world class faculty. Arizona will establish an internationally competitive solar industry which will expand the tax base and create new jobs. The impact to society will be to accelerate the adoption of sustainable, renewable energy technologies.

Students Trained SPL extends the newly formed education program which offers Associate of Applied Science, certificate, BS and MS Programs with Alternative Energy Technology Concentration. The number of these technical degree programs will increase to generate employees for the growing local solar industry. New interdisciplinary curricula in the School of Sustainability will offer academic and industry students' new degree options to educate the next-generation workforce and prepare citizens for the renewable energy society.

Partnerships/Collaborations The University of Arizona and Arizona State University are partners in the Solar Energy Initiative. ASU's long-standing emphasis on use-inspired research has resulted in many industry, academic and government collaborations. The planned Industrial Collaboration Laboratory (ICL) will increase industry partnerships, provide student/industry internships. Solar power research will produce intellectual property and technology transfer.

SPL RESEARCH FOCI

For four decades, ASU has been a leader in research related to virtually all aspects of solar energy including creating new materials and devices for generating electricity from sunlight, improved methods of photovoltaics testing, design of advanced power systems, and laying the groundwork for sound energy policies. Approximately twenty faculty and their research groups are involved in the Solar Power effort with plans to include others.

Photovoltaics (PV) work at ASU has achieved prominence in solar cell testing, advanced materials and devices and nanotechnology for PV applications. Emphasis will be on high efficiency and low cost solar cells that have over 50% efficiency.

New low cost semiconductor thin film solar cells have strong industrial interest as being the next generation following current silicon. Research includes thin films on inexpensive substrates (i.e. glass) and organic thin films on low cost flexible substrates.

Solar cell testing ASU Polytechnic's Photovoltaics Test Laboratory (PTL) is one of three facilities in the world currently certified for solar cell module performance qualification and reliability. PTL is currently working with nearly all major solar module manufacturers worldwide, as well as the National Renewable Energy Laboratory (NREL).

Bio-inspired solar energy research seeks power generation solutions using biological processes that nature has developed over 3.4 billion years of evolution. Approaches include light conversion by molecules that imitate the photosynthesis process and use of microorganisms as power generating fuel cells.

Advanced Power Systems is collaborative research through the Power Systems Energy Research Center (PSERC), a 12 university consortium with over 40 utility and power industry members.

Research spans individual design of high efficiency DC-AC converters for solar cell modules, design and analysis of 'mini-grids' for medium scale distributed power systems and analysis of the integration of intermittent sources (e.g. solar) into the existing power grid.

Building Integrated Photovoltaics is in collaboration with the ASU College of Design. Work focuses on incorporating existing solar modules into commercial and residential structures and adopting solar components as building materials.

Integrating PV into the design of a building so that solar components also serve as structural or design elements will improve building aesthetics, system reliability and market acceptance of solar energy technology.

FINANCIALS

	FY08 Rev Budget	FY08 Actual	FY09 Rev Budget	FY10 Rev Budget	FY11 Rev Budget
REVENUE					
Carry Forward			$ 898,000		
New TRIF Revenue	1,050,000	1,050,000	700,000	800,000	800,000
TOTAL REVENUE	**$1,050,000**	**$1,050,000**	**$1,598,000**	**$800,000**	**$800,000**
OPERATING BUDGET					
Personal Services	200,000		250,000	250,000	250,000
Employee Related Expenses	50,000		70,000	70,000	70,000
Operating Expenses	800,000	147,900	1,249,800	480,000	480,000
Total Operating Budget	$1,050,000	$147,900	$1,569,800	$800,000	$800,000
CAPITAL BUDGET					
Building Renovation		4,100	28,200		
Debt Service					
Total Capital Budget	-	4,100	28,200	-	-
TOTAL EXPENDITURES	**$1,050,000**	**$152,000**	**$1,598,000**	**$800,000**	**$800,000**
Return On Investment	N/A	N/A	**2.7:1**	**14.6:1**	**14.4:1**

Goals & Results

Goals: The goals of the Solar Power Laboratory include:

Establish ASU as the pre-eminent academic solar energy research, development and training program in the United States, and one of the top such programs in the world.

Accelerate ASU's participation in the US renewable energy research enterprise by constructing a major Solar Sustainability Program.

Discover, innovate and develop to market, evolutionary and revolutionary science and technology in solar energy generation and utilization.

Establish cross-disciplinary educational programs in solar renewable energy to prepare citizens for the renewable energy society.

Develop the workforce of the future to meet the explosive demand for trained personnel and research staff in solar energy development and deployment

Be a key component in attaining commercial global competitiveness of solar energy industry in Arizona

Serve as a resource to the solar industry and government agencies.

Results and Updates:

The Solar Power Laboratory within the Global Institute of Sustainability (GIOS) was established in a collaboration partnering between GIOS and the Ira A. Fulton School of Engineering in affiliation with the College of Liberal Arts and Science and College of Design.

Three prominent scientists and engineers have been hired in Electrical Engineering and School of Sustainability to help lead SPL's research endeavors. Professors Christiana Honsberg, Stuart Bowden and George Maracas have been hired for the venture. Honsberg will be Chief Scientist, Bowden will be Industrial Liaison, and Maracas will be Chief Operating Officer.

Faculty in SPL have secured $2 million in funding. ASU is among the top three universities in the United States (along with Stanford and Penn State) in the number of Solar America Initiative R&D Grants for photovoltaics module testing, advanced solar cell materials and next generation photovoltaic devices.

ASU Polytechnic recently received a $1M NSF grant to establish the Consortium for Alternative and Renewable Energy Technologies Advanced Technological Education. ATE will develop curricula for the high tech work force and let students pursue Certificate Degrees in Alternative Energy including Solar.

Management

Ira. A. Fulton School of Engineering
Deirdre Meldrum, Professor and Dean

College of Liberal Arts and Sciences
Quentin Wheeler - Professor, Vice President and Dean

College of Design

Wellington Reiter, Professor and Dean

ASU Polytechnic
Lakshmi Munukutla, Dep't Chair Electronics Systems,

Advisory Board

Chairman:

TBD

Members:

Bud Annan, Former Director at the Department of Energy

Barry Broome, President and Chief Executive Officer, Greater Phoenix Economic Council

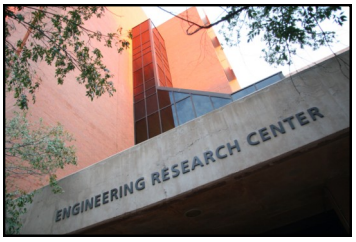
Dr. David Eaglesham, Chief Technology Officer, First Solar, Inc.

Dr. **Henk de Waard,** President, NanoVoltaix Inc.

Edward Fox – Vice President and Chief Sustainability Officer, Arizona Public Service

Building Locations

SPL headquarters is located in the GIOS building on the ASU Tempe Campus. Laboratories are in Engineering Research Center, Goldwater, Physical Sciences and Chemistry buildings.



Learn More

Solar Power Laboratory

Telephone: 480.965-2852

Web: http://solar.asu.edu

Email: SolarASU@asu.edu

ASU
ARIZONA STATE UNIVERSITY

ARIZONA STATE UNIVERSITY POLYTECHNIC

TECHNOLOGY AND RESEARCH INITIATIVE FUND (TRIF)

FY 2008 ACTUAL / FY 2009-11 BUDGET

Campus Capital Infrastructure Development

	FY 2007 ACTUAL	*FY 2008 REV BUDGET*	*FY 2008 ACTUAL*	*FY 2009 REV BUDGET*	*FY 2010 BUDGET*	*FY 2011 BUDGET*
REVENUE						
Carryforward	$ (5,000)	$ 76,900	$ 76,900	$ -	$ -	$ -
TRIF Revenue	2,128,000	2,005,900	2,005,900	2,084,200	2,083,800	2,081,600
TOTAL REVENUE	**$ 2,123,000**	**$ 2,082,800**	**$ 2,082,800**	**$ 2,084,200**	**$ 2,083,800**	**$ 2,081,600**
EXPENDITURES						
OPERATING BUDGET						
Personal Services						
ERE						
All Other Operating						
TOTAL OPERATING BUDGET	**-**	**-**	**-**	**-**	**-**	**-**
CAPITAL BUDGET						
Building Renovation						
Debt Service						
COPs Lease Purchase Payment	2,046,100	2,082,800	2,082,800	2,084,200	2,083,800	2,081,600
TOTAL CAPITAL BUDGET	**2,046,100**	**2,082,800**	**2,082,800**	**2,084,200**	**2,083,800**	**2,081,600**
EXPENDITURES GRAND TOTAL	**$ 2,046,100**	**$ 2,082,800**	**$ 2,082,800**	**$ 2,084,200**	**$ 2,083,800**	**$ 2,081,600**

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 ASUP. 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. ASUP completed all TRIF funded capital improvement projects by June 2005.

ARIZONA STATE UNIVERSITY WEST

TECHNOLOGY AND RESEARCH INITIATIVE FUND (TRIF)

FY 2008 ACTUAL / FY 2009-11 BUDGET

Classroom Laboratory / Computer Classroom II Building and Central Plant Expansion

	FY 2007 ACTUAL	*FY 2008 REV BUDGET*	*FY 2008 ACTUAL*	*FY 2009 REV BUDGET*	*FY 2010 BUDGET*	*FY 2011 BUDGET*
REVENUE						
Carryforward	$ (3,600)	$ 63,900	$ 63,900	$ 30,000		
TRIF Revenue	1,671,600	1,605,100	1,605,100	1,634,600	1,664,000	1,667,000
TOTAL REVENUE	**$ 1,668,000**	**$ 1,669,000**	**$ 1,669,000**	**$ 1,664,600**	**$ 1,664,000**	**$ 1,667,000**
EXPENDITURES						
OPERATING BUDGET						
Personal Services						
ERE						
All Other Operating						
TOTAL OPERATING BUDGET	**-**	**-**	**-**	**-**	**-**	**-**
CAPITAL BUDGET						
Building Renovation						
Debt Service						
COPs Lease Purchase Payment	1,604,100	1,669,000	1,639,000	1,664,600	1,664,000	1,667,000
TOTAL CAPITAL BUDGET	**1,604,100**	**1,669,000**	**1,639,000**	**1,664,600**	**1,664,000**	**1,667,000**
EXPENDITURES GRAND TOTAL	**$ 1,604,100**	**$ 1,669,000**	**$ 1,639,000**	**$ 1,664,600**	**$ 1,664,000**	**$ 1,667,000**

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.

Arizona State University

FY 2007-2011 ASU-UA Joint Biomedical Research Fund

September 1, 2008

Arizona State University and The University of Arizona jointly administer the TRIF-funded *Collaborative on Biomedical Research Grant Program* with awards totaling $2,000,000 ($1,000,000 each) in FY07 and $1,000,000 ($500,000 each) per year in FY08-FY11.

These projects are collaborative in nature and may also include other biomedically oriented organizations such as the Translational Genomics Research Institute (T-Gen), the Critical Path Institute (C-Path), the many health-related institutions in the state, and Northern Arizona University. This investment will accelerate development of the research enterprise associated with The University of Arizona College of Medicine-Phoenix in partnership with Arizona State University and the state-wide development of biomedical research. The funds are targeted to support joint research ventures among the institutions, and translating from basic to clinical research.

The main objectives of the program are to provide seed funding to:

1. Support the development and strengthening of collaborative research ties between ASU and UA as a basis for enhancement of state-wide interaction among research institutions; and,

2. Support the development and submission of proposals for external funding of research from competitive granting agencies (e.g., NSF, NIH, DOE, etc.) and industry.

To administer these funds, ASU and UA have established a coordinating committee to set the scientific and technical criteria for selection and to make the awards. The coordinating committee includes the Presidents and Vice Presidents for Research from ASU and UA. Review of proposals includes input from faculty at these universities. While some projects in the first year were selected specifically to enhance collaborative ties between ASU's Biodesign Institute and UA's BIO5 Institute, as a general practice, projects are solicited through a broad Request for Proposals, and are selected according to the following criteria:

- Scientific excellence
- Collaboration of faculty members from more than one institution as principal investigators
- Likelihood of success in securing long-term, significant federal or other (e.g., Science Foundation Arizona) funding
- Clear demonstration of the value-added significance of the inter-institutional collaboration required
- Potential for significant impact on our understanding of basic biomedical mechanisms or translation of research results to the clinical setting
- Potential for impact on overall State-wide strength in the biomedical sciences.

Thus far the program has awarded $1,999,977 in FY07 and $1,000,000 in FY08 for the following projects:

Title	**FY07**	**FY08**
Proteomic and Metabolomic Biomarker Investigation of Type 2 Diabetes	$250,000	
Geno- and Immuno-Signatures in Acute Asthma	$297,977	
Development of a Rapid Immunosignature Diagnostic Test for Valley Fever	$320,000	
Molecular Therapeutics Collaborative Program between BIO5 and BioDesign Institutes	$325,000	
Rapid Biomarker Analysis for Emergency Medicine	$157,141	$196,682
A Network-Science Approach to Normal- Tissue Organization and Carcinogenesis	$141,562	$180,468
A Digital Media Based Biofeedback System for Neural Rehabilitation	$147,309	$184,057
Evaluating the Role of VDR Polymorphisms and B-Catenin Signaling in Colorectal Adenoma Risk	$65,414	$81,642
Selective Modulation of Basal Ganglia Excitability: A Potential Gene Therapy for Parkinson's Disease	$151,685	$178,441
Novel Superluminescent LEDs and Ultrahigh-resolution for OCT for Medical Imaging Applications	$143,889	$178,710

We plan to postpone the next round of awards until FY10 and use unspent funds from FY 08 and/or revenue from FY09 ($500,000 from each university) to offset the current TRIF revenue shortfall, using the funds to cover existing TRIF programs. We propose to announce consideration of proposals for FY10 in the spring of 2009. We would fund those new projects for two years, which would take us through the current five-year funding cycle.

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PLANNING FOR PHOENIX BIOMEDICAL CAMPUS (PBC)

Status Report on Activities Related to the
Health Sciences Education Building (HSEB), Arizona Biomedical Collaborative II (ABC II), and the Phoenix Biomedical Campus Comprehensive Development Plan

September 1, 2008

1. Project Status:

Planning for the Phoenix Biomedical Campus (PBC) projects has progressed considerably over the past year, with the guidance and participation of representatives from The University of Arizona, Arizona State University, Northern Arizona University, the Arizona Board of Regents, the City of Phoenix, and other stakeholders. Following is a summary of related events and accomplishments:

- In June 2008, the Arizona Legislature approved the Stimulus Plan for Economic and Education Development (SPEED) initiative that will provide $470 million of funding for the PBC projects. This funding will allow both the HSEB and ABC II projects to move forward;

- CO Architects, in association with Ayers Saint Gross, the master planners for the site, were selected as the Design Consultants for the PBC project. They are working with the Executive Committee and user groups to refine the project space program that will form the basis of the project design;

- The selection process has begun for the Construction Manager at Risk (CMR) for the project. We hope to have the CMR under contract and ready to work with the design team by early September;

- The University of Arizona (UA) will have primary responsibility for project administration with regard to project contracting and financial management. The UA will provide project management support as needed to Dave Harris, who will lead the overall on-site PBC project management team; and,

- The PBC projects were included in the June, 2008 Capital Development Plans of each of the three universities and were approved by the Board of Regents. We expect SPEED project funding approval at a July 24th Board meeting.

2. Proposed Schedule:

- Programming for the project is scheduled for completion in the fall of 2008. Schematic design will begin as the programming is being completed. We will expedite the remainder of the design process to allow construction to begin as soon as possible. The construction documents may be prepared in as many as six separate bid packages to allow for the most effective fast-tracking process.

- We currently anticipate that construction will begin as soon as July 2009, with required site preparation and utilities work. Considering the size and complexity of these projects, we anticipate that construction of the HSEB building will be completed in the spring of 2012, and that the ABC II building will be completed in the spring of 2013. We will review and confirm these dates with the construction manager upon his selection.

3. Issues to be Resolved:

- Role of private sector in developing the PBC campus;

- Funding or financing of the needed parking structure; and,

- Funding, financing and cash flow strategies for the 20% portion of this SPEED funded project that the universities must provide.

4. Use of $1.5 Million in ABOR Planning Funds:

ASU and UA were each allocated $750,000 in TRIF planning funds by the Arizona Board of Regents. In FY 2007, $344,300 was expended. In FY 2008, $972,700 was spent on construction manager fees, consultant fees, and project management fees. We will utilize the remaining $183,000 of TRIF funding for the next steps of programming and design of the MEB and ABC II projects until the SPEED project funding becomes available.

NORTHERN ARIZONA UNIVERSITY

TECHNOLOGY AND RESEARCH INITIATIVE FUND (TRIF)

FY 2008 ACTUAL / FY 2009 - 2011 BUDGETS

SUMMARY

	FY 2007 ACTUAL	*FY 2008 REVISED BUDGET*	*FY 2008 ACTUAL*	*FY 2009 REVISED BUDGET*	*FY 2010 REVISED BUDGET*	*FY 2011 REVISED BUDGET*
REVENUE						
Carryforward	$ 13,264,390	$ 10,186,141	$ 10,185,986	$ 10,414,898	$ 1,617,765	$ 912,318
TRIF Revenue	14,612,967	16,033,055	15,159,929	15,647,265	16,614,155	17,394,322
TOTAL REVENUE	**$ 27,877,357**	**$ 26,219,196**	**$ 25,345,915**	**$ 26,062,163**	**$ 18,231,920**	**$ 18,306,640**
EXPENDITURES						
OPERATING BUDGET						
Personal Services	$ 6,413,799	$ 9,411,705	$ 6,369,877	$ 9,317,888	$ 7,192,408	$ 7,258,796
ERE	1,820,063	2,778,820	1,983,389	2,677,289	1,851,248	1,874,706
All Other Operating	3,558,889	11,093,247	5,178,742	8,140,205	5,470,325	6,037,969
TOTAL OPERATING BUDGET	**11,792,751**	**23,283,772**	**13,532,008**	**20,135,382**	**14,513,981**	**15,171,471**
CAPITAL BUDGET						
Building Renovation	-	500,000	500,000	-	-	-
Debt Service	3,091,339	2,185,423	236,179	4,309,016	2,805,621	500,000
Conference Center	4,071,491	-	162,830	-	-	-
AZUN Build Out	-	-	500,000	-	-	-
TOTAL CAPITAL BUDGET	**7,162,830**	**2,685,423**	**1,399,009**	**4,309,016**	**2,805,621**	**500,000**
EXPENDITURES GRAND TOTAL	**$ 18,955,581**	**$ 25,969,195**	**$ 14,931,017**	**$ 24,444,398**	**$ 17,319,602**	**$ 15,671,471**
SUMMARY BY INITIATIVE						
Access and Workforce Development	$ 5,556,985	$ 5,923,899	$ 3,977,466	$ 3,175,627	$ 3,000,000	$ 3,000,000
Growing Biotechnology	917,127	881,211	659,596	604,298	913,880	913,880
e-Learning	2,041,506	2,122,232	1,939,262	1,905,436	1,810,000	1,810,000
ERDENE (Environmental)	1,967,092	2,533,668	1,790,130	2,723,528	1,872,092	1,872,092
Capital Projects	2,824,999	-	(162,821)	-	-	-
University Initiatives	2,904,282	1,552,549	309,530	6,416,175	3,932,142	2,133,760
AZUN	2,320,413	5,198,656	2,732,934	2,956,235	3,079,047	3,201,859
Healthcare Program Expansion	32,165	3,182,990	965,052	3,154,182	1,156,220	1,169,940
NAU Statewide Expansion	391,012	2,823,990	2,219,868	1,658,917	1,156,221	1,169,940
NAU-Yuma Expansion	-	1,750,000	500,000	1,500,000	-	-
Promoting Forest Health in Arizona	-	-	-	350,000	400,000	400,000
EXPENDITURES GRAND TOTAL	**$ 18,955,581**	**$ 25,969,195**	**$ 14,931,017**	**$ 24,444,398**	**$ 17,319,602**	**$ 15,671,471**

Note: Above numbers include revenue and expenditures for Arizona Universities Network (AZUN) detailed on the following page.

NORTHERN ARIZONA UNIVERSITY

TECHNOLOGY AND RESEARCH INITIATIVE FUND (TRIF)

FY 2008 ACTUAL / FY 2009 - 2011 BUDGETS

ARIZONA UNIVERSITIES NETWORK (AZUN) SUMMARY

	FY 2007 ACTUAL	*FY 2008 REVISED BUDGET*	*FY 2008 ACTUAL*	*FY 2009 REVISED BUDGET*	*FY 2010 REVISED BUDGET*	*FY 2011 REVISED BUDGET*
REVENUE						
Carryforward	$ 3,115,813	$ 2,938,106	$ 2,938,105	$ 2,313,450	$ 1,617,765	$ 912,318
TRIF Revenue	2,142,705	2,260,550	2,108,279	2,260,550	2,373,600	2,492,280
TOTAL REVENUE	**$ 5,258,518**	**$ 5,198,656**	**$ 5,046,384**	**$ 4,574,000**	**$ 3,991,365**	**$ 3,404,598**
EXPENDITURES						
OPERATING BUDGET						
Personal Services	$ 721,011	$ 1,611,583	$ 888,896	$ 977,785	$ 1,026,674	$ 1,075,564
ERE	236,840	520,000	306,859	337,550	354,428	371,305
All Other Operating	1,362,562	3,067,073	1,037,179	1,140,900	1,197,945	1,254,990
TOTAL OPERATING BUDGET	**2,320,413**	**5,198,656**	**2,232,934**	**2,456,235**	**2,579,047**	**2,701,859**
CAPITAL BUDGET						
Building Renovation	-	-	-	-	-	-
Debt Service	-	-	-	500,000	500,000	500,000
Conference Center	-	-	-	-	-	-
AZUN Build Out	-	-	500,000	-	-	-
TOTAL CAPITAL BUDGET	**-**	**-**	**500,000**	**500,000**	**500,000**	**500,000**
EXPENDITURES GRAND TOTAL	**$ 2,320,413**	**$ 5,198,656**	**$ 2,732,934**	**$ 2,956,235**	**$ 3,079,047**	**$ 3,201,859**

Note: AZUN FY 2010 and FY 2011 budgets assume renewal of MOU between ABOR and NAU. Current MOU was extended to 6/30/09.

NORTHERN ARIZONA UNIVERSITY

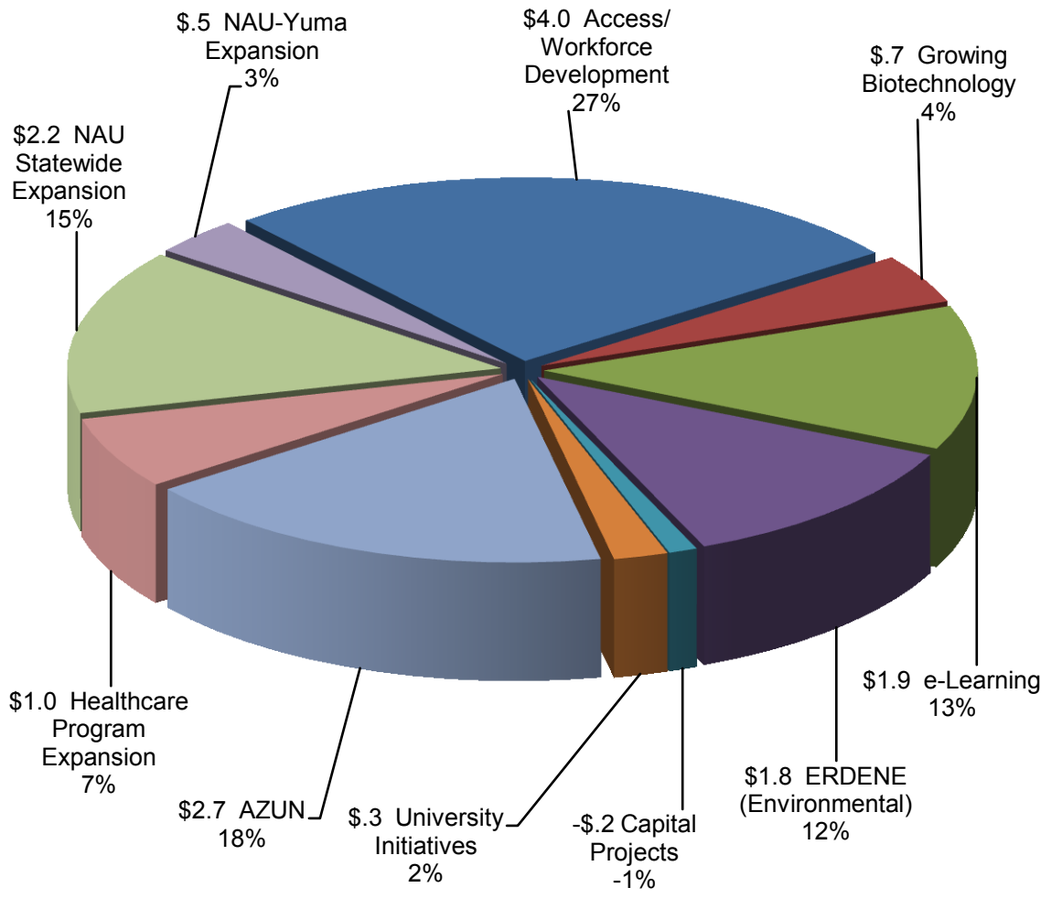
TECHNOLOGY AND RESEARCH INITIATIVE FUND (TRIF)

FY 2008 BUDGET / ACTUAL

SUMMARY BY PROGRAM AREA

	FY 2008 REVISED BUDGET	*FY 2008 ACTUAL*
REVENUE		
Carryforward	$ 10,186,141	$ 10,185,986
TRIF Revenue	16,033,055	15,159,929
TOTAL REVENUE	**$ 26,219,196**	**$ 25,345,915**
EXPENDITURES		
OPERATING BUDGET		
Personal Services	$ 9,411,705	$ 6,369,877
ERE	2,778,820	1,983,389
All Other Operating	11,093,247	5,178,742
TOTAL OPERATING BUDGET	**23,283,772**	**13,532,008**
CAPITAL BUDGET		
Building Renovation	500,000	500,000
Debt Service	2,185,423	236,179
Conference Center	-	162,830
AZUN Build Out	-	500,000
TOTAL CAPITAL BUDGET	**2,685,423**	**1,399,009**
EXPENDITURES GRAND TOTAL	**$ 25,969,195**	**$ 14,931,017**
SUMMARY BY INITIATIVE		
Access and Workforce Development	$ 5,923,899	$ 3,977,466
Growing Biotechnology	881,211	659,596
e-Learning	2,122,232	1,939,262
ERDENE (Environmental)	2,533,668	1,790,130
Capital Projects	-	(162,821)
University Initiatives	1,552,549	309,530
AZUN	5,198,656	2,732,934
Healthcare Program Expansion	3,182,990	965,052
NAU Statewide Expansion	2,823,990	2,219,868
NAU-Yuma Expansion	1,750,000	500,000
Promoting Forest Health in Arizona	-	-
EXPENDITURES GRAND TOTAL	**$ 25,969,195**	**$ 14,931,017**

FY 2008 NAU ACTUAL TRIF EXPENDITURES
(in millions)



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TRIF PROGRAM

NORTHERN ARIZONA UNIVERSITY

September 1, 2008

THE NORTHERN ARIZONA UNIVERSITY TRIF PROGRAM

In the first 7 years of TRIF funding, from FY 2002 to FY 2008, Northern Arizona University made significant strides in all areas funded.

Two of our eight projects, Growing Biotechnology Infrastructure (GBI) and Education and Research for the New Economy (ERDENE), together represent progress in environmental issues, policies, and biotechnology all of which are areas of concern to Arizona's policymakers and citizens.

Another three projects, Access & Workforce Development (AWD), e-Learning , and the Arizona Universities Network (AZUN) together have resulted in substantial expansion in educational opportunities to the state's time and place bound students, involvement of Flagstaff based faculty in web course development, and improvement in technology enhanced instruction. AZUN, from its statewide perspective, particularly combines areas of strength within each of the state universities to make available unique programs that represent multi-university efforts and capabilities.

The remaining projects, University Initiatives, Healthcare Program Expansion, Statewide Expansion, NAU-Yuma Expansion and Building Healthy Forest have allowed (or will allow) Northern Arizona University to invest in facilities and projects related that would not have otherwise been possible. ABOR and the university can take pride in the contributions TRIF funds have made to the High Country Conference Center, the Applied Research and Development building and the Laboratory Science building. Using TRIF funds, NAU is fulfilling its promise to expand health care programming and the university has been able to create an anchor facility in North Phoenix as well as investing to help NAU-Yuma achieve its considerable progress. The Health Forest initiative begins in FY09; we will report on it next year.

More detail about all of these initiatives can be found in the individual project brochures. NAU is grateful to the Arizona Board of Regents for its support, and will continue to work hard to make the best use possible of TRIF funds allocated to it.

Contents

Dr. John Haeger, President
Northern Arizona University

GBI / ERDENE		FY 02 Act	FY 03 Act	FY 04 Act	FY 05 Act	FY 06 Act	FY 07 Act	FY 08 Proj	FY08 Act	FY 09 Proj	FY 10 Proj	FY 11 Proj
ROI	Leveraged dollars ($M)	$7.90	$11.30	$11.00	$15.20	$8.90	$14.90	$8.10	$15.20	$8.90	$10.10	$10.90
	ROI ratio	4.20 : 1	4.56 : 1	3.72 : 1	5.71 : 1	3.28 : 1	5.1 : 1	2.91 : 1	6.1:1	3.19 : 1	3.63 : 1	3.91 : 1
Publica-tions/Conferences	Conferences Sponsored	14	19	21	28	26	21	5	42	10	15	20
	Presentations/Publications	133	180	197	373	166	286	180	3137 (inc. web accesses)	190	210	220
Tech Transfer	Patent Applications/Patents Generated	2	2	2	1	3	2	3	5	4	5	6
	Products Generated and in the Market-place	0	5	49	8	13	5	5	4	7	10	12
Economic Develop-ment	Business Expansions/Spinoffs/Creations	3	3	7	21	10	5	3	10	5	7	11
Workforce Contribu-	Graduate/Postdoc Students Trained	116	149	162	60	67	58	82	137	85	93	100
	Undergrad Students Trained	106	205	106	93	135	119	135	175	160	175	195
	Continuing Education Professionals	85	312	1361	142	274	42	132	142	142	152	162
Specific Collabora-	Government/University collaborations	58	105	112	142	154	86	84	143	92	99	108
	Industry/Miscellaneous collaborations	23	104	63	98	84	143	41	86	47	48	54
Access and Workforce Development / e-Learning		**FY 02 Act**	**FY 03 Act**	**FY 04 Act**	**FY 05 Act**	**FY 06 Act**	**FY 07 Act**	**FY 08 Proj**	**FY08 Act**	**FY 09 Proj**	**FY 10 Proj**	**FY 11 Proj**
New Students Served	New Teachers	250	542	807	679	773	804	700	1019	750	750	750
	Nurses/Health Professionals	120	266	414	464	540	721	500	640	500	600	600
	Business/Non-Profit Managers	44	182	303	442	528	673	400	725	450	450	500
	Number Degree/Certificate Programs	11	19	37	41	41	41	42	41	44	46	48
Enhanced Courses Developed	Web-IT/Enhanced Courses Developed	125	101	121	141	22	80	95	67	90	85	80
	Number New Faculty Participating Web Development	150	117	155	126	241	325	225	210	250	300	350
Student Course In-volvement	Student Enrollments In Online Courses	7,110	9,476	10,133	12,381	14116	20,526	12,750	31,568	13,000	13,500	14,000
Partnerships	Number K-12 Partners (Schools/Districts)	30	51	119	127	127	127	125	126	130	135	140
	Higher Education Partnerships	17	19	20	20	22	22	20	23	20	20	20
	Private Sector Partnerships	2	21	42	77	80	80	54	85	57	60	62
Technology Transfer	Courses/Modules Sold/Brokered	0	5	0	0	0	0	1	0	1	1	1

PERFORMANCE ANALYSIS

In addition to the Initiative successes described on page 1 and 2 of this brochure, Northern Arizona University takes particular pride in its achievements in the area of health care education. Funds from TRIF combined with funds allocated by the Arizona Legislature are allowing NAU to make significant strides in expanding health care education opportunities to citizens throughout Arizona and preparation for offering programs currently not available at any Arizona public institution . Please see our "Expanding Health Care" brochure for more information.

FINANCIAL INFORMATION

		FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
GBI/ERDENE	Carryforward	$ -	$ 538,756	$ 734,337	$ 497,302	$ 830,232	$ 1,008,633	$ 915,238	$ 828,184	$ -	$ -
	New TRIF Revenue	$ 2,417,502	$ 2,674,544	$ 2,498,906	$ 2,745,600	$ 2,888,423	$ 2,790,824	$ 2,362,672	$ 2,499,642	$ 2,785,972	$ 2,785,972
	TOTAL REV	$ 2,417,502	$3,213,300	########	$3,242,902	$ 3,718,655	$ 3,799,457	$ 3,277,910	$3,327,826	$2,785,972	$2,785,972
	Personal Services	$ 1,278,627	$ 1,637,980	$ 2,132,447	$ 2,335,730	$ 1,770,725	$ 2,418,854	$ 1,645,776	$ 2,399,700	$ 2,390,343	$ 2,390,343
	Other Operating	$ 600,119	$ 840,983	$ 827,573	$ 368,742	$ 939,297	$ 465,365	$ 803,950	$ 928,126	$ 395,629	$ 395,629
	TOTAL EXP	$ 1,878,746	$2,478,963	########	$ 2,704,472	$ 2,710,022	$ 2,884,219	$2,449,726	$3,327,826	$2,785,972	$2,785,972
AWD/E-LEARNING	Carryforward	$ -	$ 2,164,798	$ 2,711,282	$ 2,263,265	$ 2,776,537	$ 1,680,175	$ 1,050,709	$ 1,894,656	$ -	$ -
	New TRIF Revenue	$ 5,135,129	$ 4,878,299	$ 5,662,818	$ 4,927,273	$ 5,183,586	$ 6,969,025	$ 6,760,675	$ 6,995,423	$ 7,115,621	$ 7,242,430
	TOTAL REV	$ 5,135,129	$7,043,097	$8,374,100	$ 7,190,538	$ 7,960,123	$8,649,200	$ 7,811,384	$8,890,079	$ 7,115,621	$7,242,430
	Personal Services	$ 2,326,003	$ 3,412,531	$ 4,069,277	$ 4,011,236	$ 4,150,863	$ 4,703,165	$ 4,378,113	$ 4,221,721	$ 4,148,892	$ 4,148,892
	Other Operating	$ 644,328	$ 919,284	$ 1,836,743	$ 942,881	$ 2,129,085	$ 823,835	$ 976,785	$ 859,342	$ 661,108	$ 661,108
	Debt Service	$ -	$ -	$ -	$ -	$ -	$ 2,071,491	$ 561,830	$ 3,809,016	$ 2,305,621	$ 2,432,430
	TOTAL EXP	$2,970,331	$ 4,331,815	$5,906,020	$ 4,954,117	$6,279,948	$ 7,598,491	$ 5,916,728	$8,890,079	$ 7,115,621	$7,242,430
UNIVERSITY INITIATIVES AND CAPITAL	Carry Forward	$ -	$ 206,744	$ 664,608	$ 1,674,629	$ 3,054,612	$ 5,159,771	$ 120,491	$ 1,175,101	$ -	$ -
	New TRIF Revenue	$ 298,203	$ 590,810	$ 938,517	$ 2,552,961	$ 1,764,371	$ 690,001	$ 1,201,319	$ 1,432,058	$ 1,626,521	$ 2,133,760
	TOTAL REV	$ 298,203	$ 797,554	$ 1,603,125	$ 4,227,590	$ 4,818,983	$ 5,849,772	$ 1,321,810	$ 2,607,159	$ 1,626,521	$2,133,760
	Personal Services	$ 36,174	$ 72,666	$ 62,927	$ 266,070	$ 340,462	$ 153,992	$ 219,039	$ 224,100	$ 345,519	$ 364,523
	Operating	$ 55,285	$ 60,280	$ 17,761	$ 188,050	$ (681,250)	$ 483,950	$ 90,491	$ 2,383,059	$ 1,281,002	$ 1,769,237
	Debt Service	$ -	$ -	$ -	$ -	$ -	$ 3,091,339	$ (162,821)	$ -	$ -	$ -
	Conference Center	$ -	$ -	$ -	$ -	$ -	$ 2,000,000	$ -	$ -	$ -	$ -
	TOTAL EXP	$ 91,459	$ 132,946	$ 80,688	$ 454,120	$ (340,788)	$ 5,729,281	$ 146,709	$ 2,607,159	$ 1,626,521	$2,133,760
HEALTHCARE AND STATEWIDE EXPANSION	Carry Forward					$ -	$ 2,299,998	$ 3,897,233	$ 2,703,507	$ 214,600	$ -
	New TRIF Revenue					$ 2,299,998	$ 2,020,412	$ 1,991,194	$ 2,109,592	$ 2,312,441	$ 2,339,880
	TOTAL REV	$0	$0	$0	$0	$2,299,998	$ 4,320,410	$ 5,888,427	$ 4,813,099	$ 2,527,041	########
	Personal Services					$ -	$ -	$ 914,583	$ 2,534,321	$ 427,800	$ 432,875
	Operating						$ 423,177	$ 2,270,337	$ 2,064,178	$ 2,099,241	$ 1,907,005
	TOTAL EXP	$0	$0	$0	$0	$0	$ 423,177	$ 3,184,920	$4,598,499	$ 2,527,041	########
TSI -- YUMA/HEALTHY FORESTS	Carry Forward							$ -	$ 1,500,000	$ -	$ -
	New TRIF Revenue							$ 2,000,000	$ 350,000	$ 400,000	$ 400,000
	TOTAL REV	$0	$0	$0	$0	$ -	$ -	$2,000,000	$ 1,850,000	$ 400,000	$ 400,000
	Personal Services							$ -	$ 1,300,000	$ 350,000	$ 350,000
	Operating							$ -	$ 550,000	$ 50,000	$ 50,000
	Debt Svc/ Build-out							$ 500,000	$ -	$ -	$ -
	TOTAL EXP	0	0	0	0	$ -	$ -	$ 500,000	$ 1,850,000	$ 400,000	$ 400,000
AZUN	Carry Forward				$1,615,559	$2,534,652	$3,115,813	$2,938,105	$2,313,450	$ 1,617,765	$ 912,318
	New TRIF Revenue				$1,228,962	$2,034,906	$2,142,705	$2,108,279	$2,260,550	$ 2,373,600	$ 2,492,280
	TOTAL REV		N/A	N/A	$2,844,521	$4,569,558	$5,258,518	$5,046,384	$4,574,000	$ 3,991,365	$ 3,404,598
	Personal Services				$2,983	$344,531	$957,851	$1,195,755	$1,315,335	$ 1,381,102	$ 1,446,869
	All Other Operating				$306,886	$1,109,214	$1,362,562	$1,037,179	$1,140,900	$ 1,197,945	$ 1,254,990
	Debt Svc							$500,000	$500,000	$ 500,000	$ 500,000
	TOTAL EXP		N/A	N/A	$309,869	$1,453,745	$2,320,413	$2,732,934	$2,956,235	$3,079,047	$3,201,859

Funding of the Arizona Board of Regents' Technology and Research Initiative Fund (TRIF) is provided by a 0.6 percent increase in the Arizona sales tax rate approved by the voters through Proposition 301 on the November 2000 general election ballot.

ADVISORY BOARDS

NAU TRIF OVERSIGHT BOARD

All Northern Arizona University TRIF Initiatives are principally overseen by Dr. John D. Haeger, assisted by Provost Liz Grobsmith and Dr. Laura Huenneke, Vice President for Research. Appropriate Vice Presidents and Deans also participate in specific project management.

NAU TRIF OVERSIGHT BOARD MEMBERS:

Saundra Johnson, Chair, Flinn Foundation
Paul Begovac, W.L. GORE & Associates, Inc;
Julie Pastrick, Flagstaff Chamber of Commerce;
Gary Smith, Unisource;
Carl Taylor, Coconino County Board of Supervisors;
Nat White, Lowell Observatory.

GROWING BIOTECHNOLOGY (GBI)

ENVIRONMENTAL RESEARCH, DEVELOPMENT, AND EDUCATION FOR THE NEW ECONOMY (ERDENE)

GBI Director Dr. Tim Porter and Director of Strategic Environmental Initiatives Shelley Silbert report Dr. Laura Huenneke, Vice President for Research. Research Initiatives within GBI and ERDENE report to their respective directors.

GBI and ERDENE Advisory Board Members:

Thomas Whitham, Regents' Professor,
NAU, Department of Biological Sciences

Barry Gold, Gordon & Betty Moore Foundation

David LaRoche, U.S. Environmental Protection Agency

Edwin Lewis, NAU Professor of Chemistry and Biochemistry

Michael Bittner, Translational Genomics Research Institute

Mary O'Connell, New Mexico State University,
Plant & Environmental Science

Will Ott and Tom Rainey, Northern Arizona
Technology and Business Incubator

E-LEARNING

ACCESS and WORKFORCE DEVELOPMENT (AWD)

AWD is managed by Fred Hurst, Vice President for Extended Programs and Dean of Distance Learning, who reports to President John Haeger.

e-Learning is managed by Director Don Carter, who reports to the Vice Provost for Undergraduate Studies, Dr. Karen Pugliesi. The Vice Provost for Undergraduate Studies reports to Provost Liz Grobsmith.

e-Learning and AWD Advisory Board Members:

Tacy Ashby, Ed.D., Superintendent,
Cave Creek Unified School District;

Jane Bristol, Director of Economic Development, City of Prescott;

Gypsy Denzine, Ph.D., Associate Dean, NAU College of Education;

Pete Hatfield, C.M.E., Honeywell,
Global Repair Development Engineering;

Mike Kearns, Chancellor-Elect, Mohave Community College

Colleen McGregor, B.S., Designation Specialist & NAU Student,
Health Systems Development, AZ Department of Health Services;

Mike Paredes, Greater Yuma Economic Council;

Raul Sandoval, Ed.D., Executive Assistant to the President,
South Mountain Community College

LEARN MORE

⇒ To learn more about **TRIF at NAU,** contact Dr. Laura Huenneke , Vice President for Research at Laura.Huenneke@nau.edu or (928) 523-4340

⇒ To find out more about **GBI**, contact Dr. Tim Porter in the Department of Physics, at Tim.Porter@nau.edu or 928-523-2540.

⇒ To find out more about **ERDENE**, contact Shelley Silbert in the office of the Vice President for Research, at Shelley.Silbert@nau.edu or (928) 523-4340

⇒ To find out more about **E-Learning**, contact Director Don Carter at Don.Carter@nau.edu, 928-523-1605. or go to www.nau.edu/elearning

⇒ To find out more about **AWD or Statewide Expansion**, contact Fred Hurst, Vice President for Extended Programs and Dean of Distance Learning, at Fred.Hurst@nau.edu, or call 928-523-6598, or go to www.distance.nau.edu

⇒ To find out more about **Health Care Program expansion**, contact Dr. M.J. McMahon, Executive Vice President, at mj.mcmahon@nau.edu, (928) 523-6515, or http://jan.ucc.nau.edu/~hp-p/.

⇒ To find out more about general TRIF projects and research at NAU, go to www.research.nau.edu.

NORTHERN ARIZONA UNIVERSITY

ACCESS & WORKFORCE DEVELOPMENT

NORTHERN ARIZONA UNIVERSITY

September 1, 2008

ACCESS & WORKFORCE DEVELOPMENT

The Northern Arizona University's Access and Workforce Development (A/WD) initiative addresses the needs of Arizona employers and their current and future employees. A/WD is focused on areas of demonstrated need as defined by the Governor's Taskforce on Education and the Arizona Partnership for a New Economy with support from the Technology and Research Initiative Fund (TRIF).

The Northern Arizona University's E-Learning and Access and Workforce Development Initiatives are closely aligned, sharing staffing and leveraging limited funding to accomplish goals. Similarly, the NAU efforts are in complete synergy with the efforts of the Arizona Universities Network (AZUN).

The Access and Workforce Development initiative represents a major commitment by Northern Arizona University to provide education services to Arizona citizens who are time or place bound. This initiative:

1. Addresses the teacher shortage with emphases on alternative certification and preparation of mathematics and science teachers
2. Provides engineers with advanced training to support business and industry
3. Increases the number of advance-trained nurses, dental hygienists and other health professionals to maintain quality of life
4. Educates information technology professionals to serve the new economy needs of the state
5. Prepares entry-level baccalaureate business/non-profit managers to be leaders in existing and new businesses
6. Develops and maintains the support infrastructure for future development of degree and certificates responsive to the needs of the state.

Contents

Fred Hurst
Vice President, Extended Programs
Dean, Distance Learning

METRICS ($ in millions)	FY 02 Act	FY 03 Act	FY 04 Act	FY 05 Act	FY 06 Act	FY 07 Proj	FY 07 Act [1]	FY 08 Proj	FY 08 Act [2]	FY 09 Proj	FY 10 Proj	FY 11 Proj
Technology Transfer and Industry Collaborations												
Courses/Modules Sold/Brokered	0	5	0	0	0	1	0	1	0	1	1	1
Workforce Contributions												
Potential New Students Served												
New Teachers	250	542	807	679	773	700	910	700	1,019	750	750	750
Nurses/Health Professionals	120	266	414	464	540	400	585	500	640	500	600	600
Engineers with Advanced Training	20	Rprtd in AZUN	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Business/Non-Profit Managers	44	182	303	442	528	400	657	400	725	450	450	500
Curriculum Innovations												
Degree/Certificate Programs	11	19	37	41	41	40	41	42	41	44	46	48
Statewide Access (Rural and Urban) (Yes/No)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Regional/National Global Access	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Revised Courses	75	72	105	153	176	40	206	40	225	40	40	40
Partnerships/Collaborations												
Community College	14	16	17	17	19	17	19	17	20	17	17	17
Tri-University (ASU,NAU,U of A)	3	3	3	3	3	3	3	3	3	3	3	3
K-12 (Schools/Districts)	30	51	119	127	127	120	127	125	126	130	135	140
Business/Government	2	21	42	75	80	50	80	53	85	56	59	61

1 FY07 Actuals adjusted using new reporting procedure developed during FY08 for improved tracking of students eligible to enroll by program.

2 FY08 Actuals reported using new reporting procedure for improved tracking of students eligible to enroll by program.

Proposed metrics are based on the expectation of continuous growth in initiative funding over the period FY 2007- FY 2011.

PERFORMANCE ANALYSIS

Work Force Contributions: FY 2008 Objectives and Accomplishments

The objectives for FY 2008 included consolidation of growth and expansion of existing programs, development or conversion of courses and programs to the web, increasing student capacity in new and existing programs, and incremental growth in enrollment for the following areas: Education, Health Professions, Business and Public Service.

Enrollments for FY 2008 continued to grow with the on-going expansion of hybrid programs, establishment of new cohorts, sustained growth in web enrollments, strategic marketing and recruitment efforts, and the expansion to new locations and partnerships all contributing factors in the success of these programs.

- Programs to prepare and serve new teachers grew by almost 12% in FY 2008. The largest growth area was in the master's program in Educational Technology, which grew to 288 admitted students from 237 in FY 2007. The B.S. in Elementary Education was another strong program with a surprising 52% growth over the prior year. Funding for full time anchor faculty members has proven to be an effective model for growth with quality.

- Two Health Professions programs were able to consolidate their growth from the prior year, maintaining steady enrollment in both the Dental Hygiene degree completion program and the BAS/BS Health Science/Community Health program. New program options provided expanded choices for professionals in allied health fields wishing to complete the baccalaureate. Nursing programs, including the RN to BSN, the Accelerated BSN, and the online Master of Science in Nursing grew by a total of 26%. Aggressive marketing contributed to a high of 189 admitted students to the online RN to BSN program, over 20% growth in one year.

- Programs serving business and the public sector grew by more than 10% in FY 2008. The Bachelor of Applied Science in Computer Technology admitted 43 students, an increase of almost 60% in one year. The Master of Administration program grew to 418 active students, after record growth the prior year. Both online and face to face models are used to deliver these popular programs for early and mid-career working Arizonans.

FINANCIAL INFORMATION

	FY 2002 Actual	FY 2003 Actual	FY 2004 Actual	FY 2005 Actual	FY 2006 Actual	FY 2007 Actual	FY 2008 Rev Budget	FY 2008 Actual	FY 2009 Rev Budget	FY 2010 Rev Budget	FY 2011 Rev Budget
REVENUE											
Carry Forward		$1,490,660	$2,074,249	$1,604,439	$1,579,182	$1,223,971	$738,477	$738,477	$1,799,220	$0	$0
New TRIF Revenue	$3,780,774	$3,716,346	$3,958,296	$2,767,273	$2,911,225	$5,071,491	$5,185,423	$5,038,209	$5,185,423	$5,305,621	$5,432,430
TOTAL REVENUE	$3,780,774	$5,207,006	$6,032,545	$4,371,712	$4,490,407	$6,295,462	$5,923,900	$5,776,686	$6,984,643	$5,305,621	$5,432,430
OPERATING BUDGET											
Personal Services	$1,758,482	$2,309,262	$2,758,700	$2,485,637	$2,453,797	$2,973,241	$2,878,625	$2,840,013	$2,716,427	$2,540,800	$2,540,800
Operating	$531,632	$823,495	$1,636,784	$644,637	$812,639	$512,253	$859,851	$575,623	$459,200	$459,200	$459,200
Debt Svcs/Proj Buildout*	$0	$0	$0	$0	$0	$2,071,491	$2,185,423	$561,830	$3,809,016	$2,305,621	$2,432,430
TOTAL EXPENDITURES	$2,290,114	$3,132,757	$4,395,484	$3,130,274	$3,266,436	$5,556,985	$5,923,899	$3,977,466	$6,984,643	$5,305,621	$5,432,430

Funding of the Arizona Board of Regents' Technology and Research Initiative Fund (TRIF) is provided by a six-tenths-cent increase in the Arizona sales tax rate approved by the voters through Proposition 301 on the November 2000 general election ballot.

*Debt Service will be used to cover bond payments associated with the completion of the new Health Professions/Nursing Building

PERFORMANCE ANALYSIS

Infrastructure: FY 2008 Objectives and Accomplishments

The following objectives were met in FY 2008:

Student Services – Arizona students can visit any of the 14 urban and 24 rural locations for assistance with admission, enrollment, payment, and advising. The Distance Learning Service Center is available to support students who are unable to visit a campus or attend classes on-line. The Service Center is available by toll-free phone, email, and online chat. Ninety percent of individuals who rate their experience using the live chat service report a satisfaction level of 4 or 5 on a 5 point scale, 5 being excellent.

Technical Infrastructure – High-bandwidth Internet-access demand is satisfied by 200 Mbps leased connections. Internet 2 connectivity supports the national exchange of instructional and research data. Modem pools are maintained in rural areas to serve students, with the pools moving to new locations as expansion/relocation activity occurred. The Distance Learning network infrastructure and server hardware were upgraded to include increased data storage capacity in the storage area network (SAN); higher capacity data backup library; improved firewall security configuration; and new servers for the DL web sites. New sites were located or enhanced in Phoenix in the North Valley, East Valley, and South Mountain, and around the state at Verde Valley, Globe, Keams Canyon, and Kayenta.

Faculty Support – 225 web courses have been developed since FY 2003 with TRIF funding. Over 900 Web classes were taught during Academic Year 2007-2008 using a combination of TRIF and Distance Learning funding with approximately 20% growth in Web enrollments.

Marketing – A comprehensive advertising campaign themed, "Everywhere you want to learn," continued to aggressively promote TRIF programs. Print, radio, web advertising, and high-quality glossy brochures were designed and produced for targeted markets.

MANAGEMENT

Programmatic oversight is in the NAU Distance Learning department with the vice president for extended programs and dean of distance learning directly responsible for activities. Due to the size of this initiative, close coordination with each program is facilitated by Distance Learning. Fiscal management is centrally controlled to maximize the efficacy of the limited budget. Academic departments are reimbursed for expenses. Integration with ongoing operations helps ensure sustainability.

ADVISORY BOARD

The A/WD Advisory Board provides guidance on program development and student support needs. For the Fall 2008 meeting, topics will include:

- The process for developing and delivering new programs including needs assessment, modes of delivery and how best to reach diverse student populations.
- Incentives to pursue advanced education
- Matching employer needs for professional and workforce development with student demand
- Employer perspectives on non-credit continuing professional development

AWD Advisory Board Members

Tacy Ashby, Ed.D.
Superintendent
Cave Creek Unified School District

Jane Bristol
Director of Economic Development
City of Prescott

Gypsy Denzine, Ph.D.
Associate Dean
NAU College of Education

Barbara Feth, P.T.
Western Region Director and
Associate National Director of Therapy Operations
HealthSouth

Pete Hatfield, C.M.E.
Project Engineer
Honeywell Global Repair Development Engineering

Michael Kearns,M.B.A., D.D.S.
Chancellor
Mohave Community College

Mike Paredes
Greater Yuma Economic Council

Raul Sandoval, Ed.D.
Associate Dean, Enrollment Services
South Mountain Community College

Lt. Jeri Williams, M.Ed.
Commander
City of Phoenix Police Department

NORTHERN ARIZONA UNIVERSITY

LEARN MORE

Contact Fred Hurst, Vice President for Extended Programs and Dean for Distance Learning, at Fred.Hurst@nau.edu, or call 928-523-6598. Or Visit the Distance Learning website at http://www.distance.nau.edu/

THE ARIZONA UNIVERSITIES NETWORK

The **Arizona Board of Regents** gateway to quality distance learning

the POWER of 3

ASU

NORTHERN ARIZONA UNIVERSITY

THE UNIVERSITY OF ARIZONA. TUCSON ARIZONA

The Arizona Universities Network (AZUN), is an innovative, cooperative agreement between Arizona State University, Northern Arizona University, and the University of Arizona. AZUN gives students access, in one location, to many courses and programs offered online by the three universities, either individually or cooperatively. The multi-university initiative combines the strengths of each institution to bring unique educational opportunities to Arizona students in varying circumstances: place or time-bound students, those living in rural areas of the state, or students unable to reside on a university campus because of cost, family obligations, disabilities or other challenges. Students can earn an undergraduate degree, graduate degree, or professional certificate in a wide variety of fields. AZUN also serves those who desire classes for personal or professional enrichment.

AZUN students receive personalized service through a central service center and coordinators located on each university campus. Students are counseled by advisors via phone or e-mail, pay only one tuition bill, and have automatic transfer of credits once a course is completed. The innovative AZUN structure created by the Arizona Board of Regents, provides the capability for meeting both present needs and future demand as more students across the state realize the benefits of further education and seek access to their public universities.

Students benefit from the many options offered by AZUN:

- Access to easily transferable classes from all three state institutions
- Wide selection of accredited degree programs offered online
- Ease of cross-institution enrollment once admitted to a participating AZUN university
- Ability to select a degree or non-degree track, with a full- or part-time course load
- Automatic transfer of credits earned from the provider institution to the student's home institution
- Flexible learning formats providing anywhere, anytime access
- Consultation via email or phone with a home-institution coordinator when selecting classes or a program of study
- Payment of one tuition bill for classes taken at all three participating institutions

September 1, 2008

Contents

Fred Hurst
Vice President for Extended Programs
and Dean for Distance Learning
Northern Arizona University

METRICS ($ in millions)	FY 05 Proj	FY 05 Act	FY 06 Proj	FY 06 Act	FY 07 Proj	FY 07 Act	FY 08 Proj	FY 08 Act	FY 09 Proj
Workforce Contributions									
Potential New Students Served									
Teachers	20	11	100	40	200	209	315	293	331
Nurses[1]	10	73	80	42	60	92	63	-	66
Fire Science Baccalaureate Completers	-	-	50	In Progress[2]	50	In Progress[2]	53	32	55
Law Enforcement Baccalaureate Completers	-	-	50	In Progress[2]	50	16	53	153	55
Curriculum Innovations									
Degree/Certificate Programs (new)	9(4)	9(6)	9(4)	9(3)	9(4)	9(3)	9(4)	8	9(4)
Regional/National Global Access	-	yes	-	yes	-	yes	-	yes	-
New/Revised Courses	5	30	40	16	30	13	30	9	30
Partnerships/Collaborations									
Community College Partners	17	17	15	19	19	19	19	20	19
K-12 Partners (schools/districts)	127	127	30	127	127	127	127	126	127
Out-of-State Partners	0	0	1	0	1	0	1	0	1
Growth Indicators									
Students Cross-Registering (per year)	250	331	400	370	400	379	420	527	441
Web Course Completion Rates[3]	TBD	TBD	TBD	91%	-	91%	-	91%	-
Enrollment System-Wide in Electronically-Delivered Courses (on and off campus)[4]	42,799	40,615	44,000	49,523	58,500	64,939	61,425	80,892	64,496
Electronically-Delivered Courses (on and off campus)	1,715	1,170	1,800	1,860	2,200	2,362	2,310	3,610	2,426
Electronically-Delivered Programs System-Wide	45	49	48	56	58	89	61	113	64
New Enrollments System-Wide	TBD	-	TBD	8,908	9,000	15,416	9,450	15,593	9,923
Satisfaction and Quality Measures (Experience Rated as Good or Very Good)	TBD	TBD	TBD	91%	-	Mean = 7.2	-	In Progress[4]	-

[1] Funding for three-year grant for Nursing education ended in FY2007; support of Nursing programs continues through the TRIF Allied Health initiative.

[2] Currently recruiting faculty, building courses and structuring program for online delivery.

[3] Reflects NAU completion rates only; information unavailable for ASU and UA.

[4] Survey tool being revised to evaluate cross-registration student experience and effectiveness of marketing and recruiting efforts

PERFORMANCE ANALYSIS

Program Development: FY 2008 Objectives and Accomplishments

Teacher Education: The Early Childhood Education and the B.S. Elementary Teacher Education programs are now active and growing. A combined enrollment of 64 students are being served in the Elementary Education program through the South Mountain, North Valley, East Valley and Tucson site offices. The Early Childhood program graduated its first cohort at the Paradise Valley location this year and will move to Scottsdale to start a second cohort in Fall 2008. A new faculty member was hired and will start a cohort program in Elementary/Special Education in partnership with Flowing Wells Unified School District (Tucson) in Fall 2008.

Law Enforcement: The Bachelor of Applied Science (B.A.S) in Administration of Justice emphasis has admitted 62 students with 47 students in the East Valley. In Tucson, students have the option of the Justice Systems Policy & Planning emphasis or the B.I.S in Criminal Justice, and 65 students have been admitted to date. Instruction for these programs also supports the well-established law enforcement program in Yuma.

Fire Science: The B.A.S. Fire Science emphasis will transition to a new Emergency Services Administration emphasis this year to meet both firefighter needs and broader emergency responder requirements. Courses within both programs are being developed for online delivery, and 32 students have been admitted to the Fire Science program so far this year.

Speech/Language Pathology Assistant Certificate: A full time faculty member based at the North Valley office teaches online courses for the certificate program which serves both the education and nursing sectors across the state. Currently 37 students are active in the program.

Nursing: The B.S. Nursing program based at Tucson Medical Center will be relocated to the Tucson North facility this year. The new facility will allow for consolidation of all faculty, video conference classrooms, computer labs, and clinical laboratory equipment to one location. Legislative Allied Health funding provides additional support for this program.

Leadership and Public Management: A Master of Administration cohort program serves business and public sector professionals with advanced training in leadership and public management. The program is available in both a fully online format, and in locally offered cohorts in Maricopa and Pima counties.

FINANCIAL INFORMATION

	FY 2005 Actual	FY 2006 Actual	FY 2007 Actual	FY 2008 Revised Budget	FY 2008 Actual	FY 2009 Budget	FY 2010 Revised	FY 2011 Revised
REVENUE								
Carry Forward	$1,615,559	$2,534,652	$3,115,813	$2,938,106	$2,938,105	$ 2,313,450	$ 1,617,765	$ 912,318
New TRIF Revenue	$1,228,962	$2,034,906	$2,142,705	$2,260,550	$2,108,279	$ 2,260,550	$ 2,373,600	$ 2,492,280
TOTAL REVENUE	$2,844,521	$4,569,558	$5,258,518	$5,198,656	$5,046,384	$ 4,574,000	$ 3,991,365	$ 3,404,598
OPERATING BUDGET								
Personal Services	$ 2,983	$ 344,531	$ 957,851	$2,131,583	$1,195,755	$ 1,315,335	$ 1,381,102	$ 1,446,869
Operating	$306,886	$1,109,214	$1,362,562	$3,067,073	$1,037,179	$1,140,900	$1,197,945	$1,254,990
Debt Service						$500,000	500000	$500,000
AZUN Build Out					$500,000			
TOTAL EXPENDITURES	$ 309,869	$1,453,745	$2,320,413	$5,198,656	$2,732,934	$ 2,956,235	$ 3,079,047	$ 3,201,859

Funding of the Arizona Board of Regents' Technology and Research Initiative Fund (TRIF) is provided by a six-tenths-cent increase in the Arizona sales tax rate approved by the voters through Proposition 301 on the November 2000 general election ballot.

PERFORMANCE ANALYSIS

Program Development Continued...

Development and Delivery of Shortened-Format Web Courses: The number of web courses in the 7-week format increased from 59 to 71 courses from FY07 to FY08, including three new course developments. Courses are representative of a range of university academic programs at both the undergraduate and graduate levels.

Development and Delivery of High Capacity Undergraduate Web Courses: Support mechanisms and new approaches have been developed to ensure high capacity in critical web-delivered courses. High capacity in courses is provided by lead faculty and supported by teaching assistants. Multiple sections of the same course are taught by instructors under the mentoring and supervision of regular faculty. Effective enrollment management strategies maximize web course capacity. The number of high capacity sections offered grew from 170 to 196.

Continue the Development of Competency-Based and Experiential Learning: Competency-based and experiential learning allows students to receive credit for life experience towards degree or certificate completion. Career and technical education, as well as nursing, accept non-credit training and professional experience in lieu of courses that would be redundant with the student's prior training and experience. In 2008, an agreement made with the Service-Persons Opportunity College (SOC) provides opportunities for armed-forces personnel to transfer in non-credit courses from their military careers. Impediments to expansion of competency-based and experiential learning include a lack of administrative infrastructure, academic standards, and cost implications.

Infrastructure: FY 2008 Objectives and Accomplishments

AZUN Portal Project: The AZUN Web portal project was designed to interconnect each university's student information system (SIS). It provides automated admission, registration, tuition/fee payment and financial aid information for current and prospective students interested in taking courses from any of the three universities.

Phase I of the Portal replicated the functions of the original AZUN Web site (course and degree search with articulation information) and implemented the online admission function. Phase I was completed in December of 2006. The Board approved delaying the implementation of Phase II of the Portal until the number of students using AZUN to cross-register among the universities increases to 1,000 per semester. Until that time, the universities believe that it is more cost effective to manually cross-register students.

The universities continue to monitor the student services provided by the AZUN Portal to ensure seamless and efficient operation. Technical staff at the AZUN and university levels continue to meet to enhance the Portal's capacities and to develop new functionalities.

LEARN MORE

Contact Fred Hurst, Vice President for Extended Programs and Dean for Distance Learning, at Fred.Hurst@nau.edu, or 928-523-6598. Or Visit the AZUN website at http://www.azun.net.

Infrastructure continued...

Student Services: The AZUN Service Center continues to serve students from all three institutions. A recent upgrade to the phone system provided improved tracking capabilities as well as improved service to incoming callers. Prospective students are offered assistance with navigating the application process at the institution of their choice (NAU, ASU, UA) by phone, email, and live chat. Ninety percent of individuals who rate their experience using the live chat service report a satisfaction level of 4 or 5 on a 5-point scale, 5 being excellent.

Articulation: Each of the universities has program information published on the AzTransfer.com website. This tool helps transfer students obtain accurate information about requirements and how courses apply to degree programs at each institution. When a student completes an AZUN class, the transcript is automatically sent to the student's home institution and posted as transfer credits on the student's transcript. Access to AzTransfer.com is available through the AZUN Web Portal.

Technology: The AZUN web server hardware was upgraded to provide enhanced redundancy. A higher capacity data backup library was installed, allowing for daily data backups of the AZUN portal site. A number of software enhancements that improved the student experience on the AZUN portal site were implemented.

Marketing: A new advertising campaign aimed at informing NAU, UA, and ASU students of cross-registration opportunities was researched, designed, tested, and presented to ABOR's IT/AZUN oversight committee. Prospective student advertising continued throughout FY08, with AZUN ads appearing in magazines and newspapers around Arizona, on kiosks in Sky Harbor Airport, billboards in Phoenix, transit shelters and malls in the Phoenix/Tucson area, and in underwriting for Public Radio stations in Flagstaff, Phoenix and Tucson. Current university students were targeted through campus newspapers, social media, local print and outdoor advertising, while influencers were targeted in print, public radio, and online. New print, online, radio, and outdoor materials supporting these campaigns are being developed. An on-the-ground campaign will target current students on all three campuses beginning in October 2008.

MANAGEMENT

Programmatic oversight is provided by the NAU Distance Learning department of Northern Arizona University with the vice president for extended programs and dean of distance learning directly responsible for activities. Integration with ongoing operations helps ensure sustainability and provides a high level of coordination. The Arizona Board of Regents provides final oversight.

ARIZONA BOARD OF Regents

THE ARIZONA UNIVERSITIES NETWORK

The **Arizona Board of Regents** gateway to quality distance learning

e-Learning

NORTHERN ARIZONA UNIVERSITY

September 1, 2008

e-Learning

Northern Arizona University's e-Learning Initiative promotes effective and innovative use of information technology to support student learning, provide educational access, and develop technology skills among students and faculty.

NAU's e-Learning Center supports the TRIF initiative in the following ways:

- Educates faculty and students in methods and skills required by today's technology based economy,
- Develops, in collaborative support with faculty, engaging and effective web-based and technology enhanced courses,
- Promotes a learning-centered approach to increase student success,
- Provides expanded access to pursuing an education regardless of students' locations.

The e-Learning Center works with faculty to evaluate emerging technologies and new teaching practices. Promising technologies, such as live web-based video conferencing, classroom response systems, and social software, including wikis, blogs, and podcasts, are incorporated into pilot courses, studied, assessed, and where appropriate, promoted across the curriculum.

The e-Learning Center's programs actively involve faculty and students in the use of technology. For example, as of fall 2006, the e-Learning Center and NAU's Information Technology Services (ITS) group collaborated to offer online access to course materials for every class taught at NAU. This approach allows faculty to provide students easy access to syllabi, readings, assignments, and grades, and it also gives students and faculty new and effective ways to communicate.

Other programs developed and supported by the e-Learning Center include: 1. ongoing faculty development events, such as round-table forums and focus groups, 2. showcases highlighting faculty achievements in the use of instructional technologies, 3. the e-Learning Institute, an annual 3-day conference that promotes technology and learning centered "best practices" at NAU and colleges and universities in the southwest, 4) faculty curriculum redesign supported by min-grants, and 5) faculty research to examine effective practices that support student success.

Contents

Don Carter, e-Learning Director

METRICS	FY 02 Act	FY 03 Act	FY 04 Act	FY 05 Act	FY 06 Act	FY 07 Proj	FY 07 Act	FY 08 Proj	FY 08 Act	FY 09 Proj	FY 10 Proj	FY 11 Proj
Work force Contributions												
Number of new Web courses developed and offered	125	101/140	121	141	22/471	100	78	95	67	90	85	80
Number of new Hybrid courses developed						15	2 (c)	25	9	35	45	55
Number of new IT – enhanced courses developed	0	32	42	53	7	20	80	25	>1500 (D)	30	35	40
Number of courses redesigns						15	5	20	12	25	30	35
Number of faculty participating in Web development	150	117	155	126	241	200	325	225	210	250	300	350
Number of student enrollments in online courses	7,110	9,476	10,133	12,381	14,116	12,500	20,526	12,750	31,568	13,000	13,500	14,000
Number of student enrollments in hybrid courses						1,000	36 (A)	1,300	1350	1,600	2,000	2,500
Number student enrollments in enhanced courses						2,000	2769	3,000	>10,000 (E)	4,000	5,000	6,000
Increase student academic success in Web courses		5%	9%	16%	5.3% decrease	5%	5%	5%	0%	5%	5%	5%
Increase in student success in enhanced & redesigned courses						5%	First Year Baseline	5%	0% (F)	5%	5%	5%
Percentage of students satisfied with Web learning	0	84%	89.2%	87%	87%	91%	86% (B)	92%	96%	93%	94%	95%
Number of graduates with technical literacy skills	1,500	889	1,633	1,919	2,238	2,000	1995	2,050	2,100	2,100	2,150	2,200
Number of graduates with advanced technical literacy skills						1,000	282	1,200	625	1,500	1,600	1,700
Partnerships												
Number of private sector partnerships	0	0	0	2	2	1	2	1	2	1	1	1
Number of scholarly publications/conference presentations						3	8	5	15	7	10	10

(A) This measures depend on course descriptors in the class schedule. These policies are currently in the approval process.
(B) 86% satisfied or very satisfied with web learning at NAU, 89% say NAU has successfully or very successfully integrated learning technology

(C) Of the 13,068 classes offered at NAU in FY07, 7,333 or 56% of them used the course shell for some class activities.

(D) All courses now have a Blackboard Vista shell for web enhancement, well over 1500 are using the shell, most with our assistance, some without

(E) More than 50% of the courses use a web enhanced format, thus an estimate that about 50% of the students use such a resource is reasonable

(F) The DFW rate did not decrease but overall the gradepoint average did increase.

PERFORMANCE ANALYSIS

Our e-Learning Initiative has a clear focus on workforce development. Enhancement of technological skills as a result of the technology integration across curriculums prepare NAU graduates for a knowledge and innovation based Arizona economy.

- Curriculum innovations are critical to developing students' technological skills. These innovations include the development and offering of new online courses, hybrid courses, and course redesign at the undergraduate level.
- Advances in student centered e-Learning occur through research and development (R&D) activities. The e-Learning Center's R&D efforts are reflected in support for faculty through innovation funds and a "best practice" laboratory. New technologies, teaching practices, and standards of quality centered on learning in a technological environment are core to the e-Learning Initiative.
- Increasing access to higher education for Arizona's citizens is a major goal for e-Learning. Through information and instructional technology, students who are time-restricted or place-bound, will be able to enroll in NAU courses and degree programs through improved University access.
- The e-Learning Center supports partnerships and collaborations between academic units and distance learning programs at NAU. For example, the e-Learning Center provides support for the creation and continuous improvement in online, hybrid, and on-site courses. Many of the online courses are offered through the Arizona Universities Network (AZUN).
- Impact of the e-Learning Initiative is measured by the number of students with enhanced and advanced technical literacy skills. Multiple indicators (e.g., observations, questionnaires, test score data, interviews, etc.) are used to characterize the level of student technological skills.
  - ⇒DFW (Drop, Failure, Withdrawal) rates are one measure of course effectiveness. In 2008, the DFW rate in web courses remained constant at 15.2%.
  - ⇒A 56% percent increase in web course enrollment, providing greater educational access by time and place bound students.
  - ⇒As students and faculty embrace online access to course materials, the demand for hybrid and web-enhanced courses has increased. ELC's response has been to broaden support for all types of technology enhanced courses.
  - ⇒Over 100 faculty new to using web technology to enhance their traditional courses.
- Other programs developed and supported by the e-Learning Center include:
  - ⇒Ongoing development support to faculty creating fully-online and hybrid courses
  - ⇒Daily training opportunities for faculty in the use of course management tools and other instructional technologies
  - ⇒Just-in-time technical support for faculty including Phone Help, email help, convenient satellite ELC offices, searchable Frequently Asked Questions on the ELC web site, and "Tech Buddies" (trained student workers) to help faculty troubleshoot problems.
  - ⇒ Review of fully-online and hybrid courses for technical quality and accessibility.

FINANCIAL INFORMATION

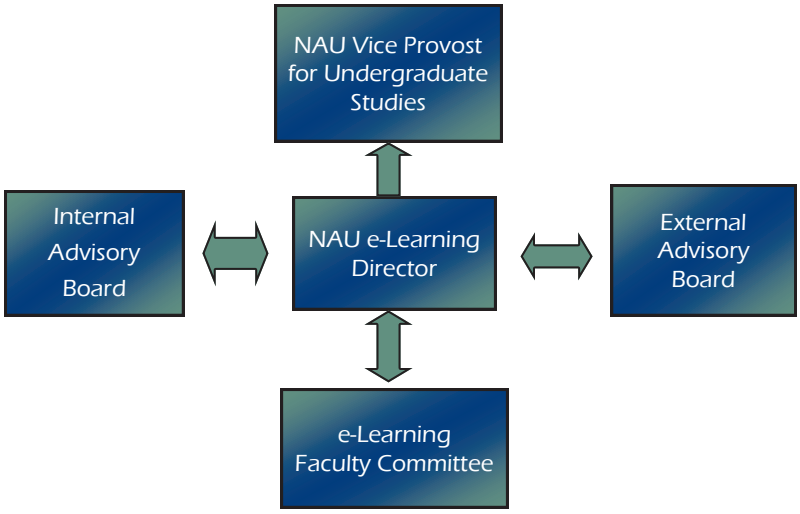
	FY 2002 Actual	FY 2003 Actual	FY 2004 Actual	FY 2005 Actual	FY 2006 Actual	FY 2007 Actuals	FY 2008 Revised Budget	FY 2008 Actuals	FY 2009 Rev Budget	FY 2010 Rev Budget	FY 2011 Rev Budget
REVENUE											
Carry Forward		$674,138	$637,033	$658,826	$1,197,355	$456,204	$312,232	$312,232	$95,436		
New TRIF Revenue	$1,354,355	$1,161,953	$1,704,522	$2,160,000	$2,272,361	$1,897,534	$1,810,000	$1,722,466	$1,810,000	$1,810,000	$1,810,000
TOTAL REVENUE	$1,354,355	$1,836,091	$2,341,555	$2,818,826	$3,469,716	$2,353,738	$2,122,232	$2,034,698	$1,905,436	$1,810,000	$1,810,000
OPERATING BUDGET											
Personal Services	$567,521	$1,103,269	$1,310,577	$1,525,599	$1,697,066	$1,729,924	$1,803,897	$1,538,100.00	$1,505,294	$1,608,092	$1,608,092
Operating	$112,696	$95,789	$199,959	$298,244	$1,316,446	$311,582	$318,335	$401,162	$400,142	$201,908	$201,908
TOTAL EXPENDITURES	$680,217	$1,199,058	$1,510,536	$1,823,843	$3,013,512	$2,041,506	$2,122,232	$1,939,262	$1,905,436	$1,810,000	$1,810,000

Funding of the Arizona Board of Regents' Technology and Research Initiative Fund (TRIF) is provided by a 0.6 percent increase in the Arizona sales tax rate approved by the voters through Proposition 301 on the November 2000 general election ballot.

GOALS

The "e" in e-Learning means more than electronic or online courses. The "e" includes our ability to create engaging, effective, and efficient teaching and learning environments. NAU's goals include:

- Increase NAU's capacity to serve local and distance students by bringing affordable and convenient courses to those who cannot attend classes on campus or need more schedule flexibility.
- Use learner centered principles and information technology to accommodate varied teaching and learning styles, providing motivation and support for continued student success.
- A guarantee that ALL students who graduate from NAU, regardless of their entering preparation, are technically literate and prepared for a lifetime of learning.
- Establish NAU as a leader in applying e-Learning practices to enhance educational quality and access.



MANAGEMENT

The e-Learning Center is managed by the Director of e-Learning, Don Carter, who reports to Dr. Karen Pugliesi, Vice Provost for Undergraduate Studies.

ADVISORY BOARDS

The e-Learning Center is guided by two advisory boards, one internal and one external.

The Internal Advisory Board consists of administrative and faculty leaders on campus who have vested interest in the success and implementation of the Initiative.

Membership includes the e-Learning Center Director, the Director of Faculty Development, six faculty (one from each college), two students (one on the Mountain Campus and one Distance Learning), and representatives from each of the following: Academic Chairs Council, Cline Library, Council of Deans, Distance Learning, Information Technology Services, and the Provost's Academic Computing Advisory Committee.

The External Advisory Board is composed of three members who are leaders in the field of e-Learning and who provide guidance and national perspective on teaching and learning using technology.

The e-Learning Faculty Committee, composed of the faculty who serve on the internal advisory board, is responsible for recommending baseline learning outcomes, addressing standards, selecting courses for redesign, and reviewing internal grant projects.

LEARN MORE

Contact Don Carter, Director of the NAU e-Learning Initiative, at don.carter@nau.edu, or 928-523-1605. Or visit the e-Learning Center website at http://www.nau.edu/elearning

NORTHERN ARIZONA UNIVERSITY

ENVIRONMENTAL RESEARCH, DEVELOPMENT, AND EDUCATION FOR THE NEW ECONOMY (ERDENE)

NORTHERN ARIZONA UNIVERSITY

September 1, 2008

ERDENE

The pressing needs of the 21st century require economic and community structures that sustain Arizona's rich environment while simultaneously expanding our state's economy. Environmental Research, Development, and Education for the New Economy (ERDENE) sparks university-community partnerships to integrate technological ingenuity and business acumen with ecological and social understanding. This inspires triple bottom line thinking, yielding regional economic performance that is financially profitable, socially beneficial, and ecologically sustainable. ERDENE enhances opportunities to adapt to emerging business sectors, reach untapped market potential, and pursue innovation from the earliest design phase.

ERDENE focuses on NAU's environmental research strengths in five major areas: ecological restoration, water resources, renewable energy technologies, applied research for sustaining rural communities, and comprehensive monitoring and management of complex systems. The program also builds on NAU's strong connection with rural Arizona and success in building collaborative partnerships with private, public, tribal, and non-profit entities.

NAU Faculty and Students Working on Wind Turbines in Northern Arizona

ERDENE initiatives cross disciplines and bridge the gap between academic, business and public sectors. Some examples include developing a marketable product from the sludge byproduct of a local paper manufacturer, creating ultrasound technologies to assess forest insects within trees and chemical traps for the most aggressive varieties, and designing and testing strategies for ultra energy-efficient systems for a new generation of wireless sensor network technology. The program promotes environmental, economic and community health by addressing real problems in innovative ways.

Contents

Shelley Silbert
Director of Strategic Environmental Initiatives

METRICS ($ in millions)	FY 02 Act	FY 03 Act	FY 04 Act	FY 05 Act	FY 06 Act	FY 07 Proj	FY 07 Act	FY 08 Proj	FY08 Act	FY 09 Proj	FY 10 Proj	FY 11 Proj
Return on Investment												
Federal and State Funds	$5.50	$4.30	$4.40	$12.90	$3.30	$5.00	$8.30	$3.90	$7.59	$4.20	$4.50	$4.80
Industrial Dollars	$0.40	$0.40	$0.50	$0.50	$0.10	$0.20	$0.07	$0.30	$0.12	$0.40	$0.40	$0.50
Other Dollars	$0.60	$0.30	$0.50	$0.50	$0.40	$0.50	$0.40	$0.60	$3.20	$0.70	$0.80	$0.90
Qualitative Returns Including Presentations & Publications	121	180	138	305	119	150	221	150	3127 (includes web-site access)	160	170	180
Technology Transfer												
Products Generated and in the Marketplace	0	0	49	6	12	3	5	3	4	6	8	10
Business Spinoffs	1	0	1	1	1	0	4	0	2	1	2	3
Patent Applications Generated	1	0	0	0	0	0	1	1	4	2	3	4
Conferences Sponsored	14	19	21	28	26	3	21	5	42	10	15	20
Business Expansions	2	1	5	16	5	0	4	1	8	2	3	4
Work Force Contributions												
Graduate/Postdoc Students in Pipeline or Graduated	56	87	102	35	38	65	32	62	104	65	68	70
High End Baccalaureates in Specific Disciplines	38	27	47	23	15	8	3	6	21	6	6	6
Baccalaureates Produced in Related Disciplines	n/a	n/a	n/a	n/a	n/a	50	15	42	N/A	45	48	50
Certificates Granted	0	0	3	73	0	5	0	5	0	5	5	5
Undergrad Students in Pipeline	26	126	63	40	45	50	78	55	325	60	65	70
Continuing Ed Professionals	85	312	1361	142	265	250	42	130	142	140	150	160
Specific Curriculum Innovations												
New Programs such as Certificates (full time students)	3	1	1	0	2	0	2	1	2	1	1	1
Revised Courses	10	14	16	22	6	2	6	3	7	4	4	4
New Courses (full time students)	2	9	29	31	12	2	5	2	3	3	3	3
New Programs – Participating Professionals	0	0	0	0	9	0	4	2	0	2	2	2
Partnerships												
Community College 2+2 Programs	2	9	7	8	8	2	6	4	5	6	8	10
Tri-University (ASU, NAU, UofA)	4	6	7	10	9	5	2	8	8	12	15	18
Industry/Private Sector Collaborations	17	73	58	79	48	35	55	38	81	40	42	45
Community-based (including tribes)	34	58	51	60	76	35	78	38	45	40	42	45
Regional, Nat'l, International Research and Linkages	20	41	54	72	69	35	75	38	75	40	42	45

PERFORMANCE ANALYSIS

- ERDENE will focus its efforts on securing new funding in five areas: ecological restoration, renewable energy technologies, rural and tribal community development, water resource management, and environmental monitoring.
- Technology transfer performance covers a broad spectrum of activities including patents, spin-off companies, products, and business expansions. A significant measure of ERDENE's technology transfer productivity is through sponsored conferences and workshops for business, industry, and government agencies.
- ERDENE works closely with Flagstaff businesses and civic organizations to develop and recruit new sustainable resource based companies to northern Arizona.
- Workforce contributions are measured by undergraduate and graduate students in the pipeline or graduated with degrees or certificates relevant to area and the number of continuing education professionals participating in training programs offered through ERDENE.
- ERDENE supports student research and critical skill development to enhance preparedness for Arizona's workforce opportunities.
- ERDENE collaborations are measured by the number of partnerships with community colleges, universities, industries, communities, and regional/national/international organizations.

Students and Faculty from the Ecological Restoration Institute on a forest restoration field trip.

FINANCIAL INFORMATION

	FY 2002 Actual	FY 2003 Actual	FY 2004 Actual	FY 2005 Actual	FY 2006 Actual	FY 2007 Actual	FY 2008 Revised	FY2008 Actual	FY 2009 Budget	FY 2010 Budget	FY 2011 Budget
REVENUE											
Carry Forward	$0	$175,540	$224,067	$296,812	$476,956	$667,386	$572,386	$572,386	$611,421	$0	$0
New TRIF Revenue	$1,450,500	$1,551,412	$1,681,405	$1,977,600	$2,080,472	$1,872,092	$1,961,282	$1,829,165	$2,112,107	$1,872,092	$1,872,092
TOTAL REVENUE	$1,450,500	$1,726,952	$1,905,472	$2,274,412	$2,557,428	$2,539,478	$2,533,668	$2,401,551	$2,723,528	$1,872,092	$1,872,092
OPERATING BUDGET											
Personal Services	$1,062,225	$1,260,419	$1,426,244	$1,639,348	$1,425,694	$1,902,726	$2,381,647	$1,437,357	$2,206,300	$1,759,766	$1,759,766
Operating	$212,735	$242,466	$224,416	$301,376	$464,348	$64,366	$152,021	$352,773	$517,228	$112,326	$112,326
TOTAL EXPENDITURES	$1,274,960	$1,502,885	$1,650,660	$1,940,724	$1,890,042	$1,967,092	$2,533,668	$1,790,130	$2,723,528	$1,872,092	$1,872,092
ROI *	5.1 : 1	3.4 : 1	3.0 : 1	7.2 : 1	2.0 : 1	3.0 : 1	3.1 : 1	4.8:1	3.2 : 1	3.3 : 1	3.4 : 1

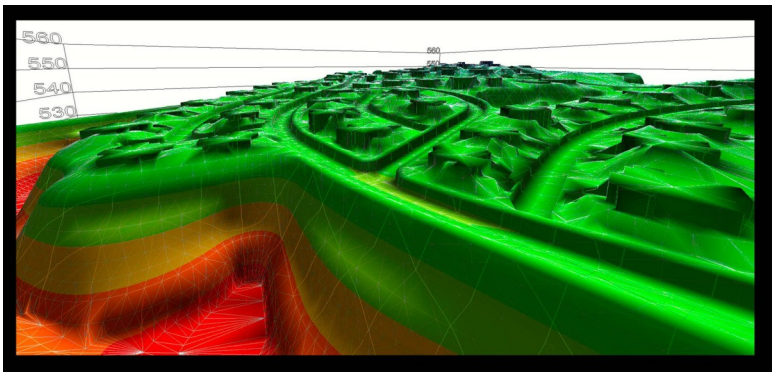
* New ROI methodology used in FY 2007, and will continue to be used for all future years. This is an ABOR requested calculation change from FY 2002-2006.

Funding of the Arizona Board of Regents' Technology and Research Initiative Fund (TRIF) is provided by a 0.6 percent increase in the Arizona sales tax rate approved by the voters through Proposition 301 on the November 2000 general election ballot.

GOALS

ERDENE goals specifically include:

- Promote environmental, economic and community health through research, outreach, and education.
- Address Arizona's environmental and economic issues with a focus on sustainable systems.
- Support initiatives with specific environmental, economic and social benefits to Arizona citizens.
- Continue to identify and capture new funding to further the economic development of Arizona.



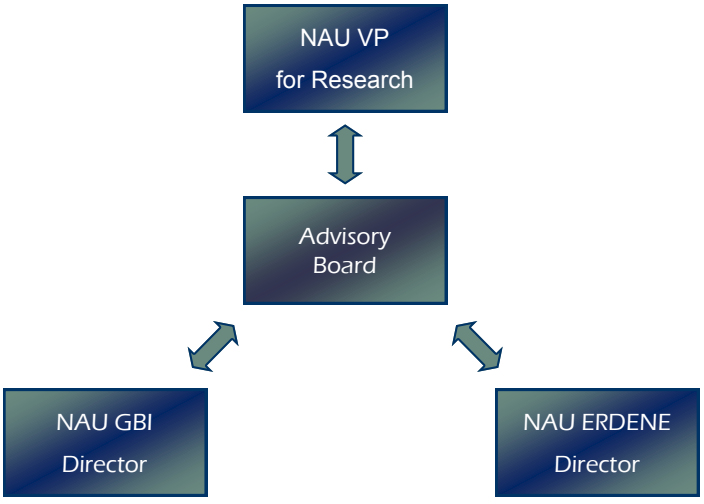
Wind Resource Modeling

ADVISORY BOARD

A new Research and Development Advisory Board has been formed to oversee Growing Biotechnology (GBI) and Environmental Research, Development, and Education for the New Economy (ERDENE) initiatives. This board consists of deans, faculty, and people from off campus with expertise in environmental and biotechnology.

MANAGEMENT

Director of Strategic Environmental Initiatives Shelley Silbert, reports to Dr. Laura Huenneke, Vice President for Research, for TRIF related activities.



Michael Bittner
Translational Genomics Research Institute

Will Ott and Tom Rainey
Northern Arizona Technology and Business Incubator

Barry Gold
Gordon and Betty Moore Foundation

David LaRoche
U.S. Environmental Protection Agency

Edwin Lewis
NAU Department of Chemistry and Biochemistry

Stephanie McKinney
Greater Flagstaff Economic Council

Mary O'Connell
New Mexico State University Plant and Environmental Science Department

Thomas Whitham
NAU Department of Biological Sciences

LEARN MORE

- Contact Shelley Silbert at (928) 523-7635 or Shelley.Silbert@nau.edu or visit any of the following websites to learn more about individual initiatives:
- Sustainable Energy Solutions http://ses.nau.edu
- Ecological Restoration Institute http://www.eri.nau.edu/cms/
- Merriam Powell Center for Environmental Research http://www.mpcer.nau.edu/smallindex.html

NORTHERN ARIZONA UNIVERSITY

GROWING BIOTECHNOLOGY INITIATIVE (GBI)

NORTHERN ARIZONA UNIVERSITY

GROWING BIOTECHNOLOGY

September 1, 2008

The Growing Biotechnology Initiative (GBI) enables outstanding interdisciplinary research and development in biosciences, biotechnology, and bioengineering at Northern Arizona University (NAU) to be translated rapidly and effectively to address critical health, technology, and education issues essential for the Arizona New Economy.

GBI, and its associated center SABRE (Strategic Alliance for Bioscience Research and Education) will continue its focus on research in new and emerging areas in the biosciences, including infectious diseases, medical instrumentation, forensic genetics, cancer, musculoskeletal and cardiopulmonary rehabilitation, endocrine systems, biomaterials, and respiratory failure. It is also expanding specific funding opportunities for product development based on research that has been previously funded.

Research areas supported by GBI and SABRE focus primarily on strategic initiatives identified in the revised 2007 Arizona Bioscience Roadmap, and specifically areas to be identified in the forthcoming Northern Arizona Bioscience Roadmap. GBI's vision is to position Arizona as a global leader in the fast-growing biotechnology industry through research, technology transfer, business recruitment, and workforce development.

An emphasis on student participation at both undergraduate and graduate levels in research, combined with the high productivity of university researchers, gives NAU a unique position in Arizona to provide cutting-edge research while providing education and workforce development at all levels for the growing bioscience and biotechnology industries in the State of Arizona.

Contents

Dr. Tim Porter, Director
Growing Biotechnology (GBI)

METRICS ($ in millions)	FY 02 Act	FY 03 Act	FY 04 Act	FY 05 Act	FY 06 Act	FY 07 Proj	FY 07 Act	FY 08 Proj	FY09 Act	FY 09 Proj	FY 10 Proj	FY 11 Proj
Return on Investment												
External Funding Federal, State & Local	$1.40	$6.30	$5.60	$1.30	$4.20	$2.50	$4.10	$2.80	$3.10	$3.10	$3.40	$3.70
External Funding Other	n/a	n/a	n/a	n/a	$0.90	$0.30	$0.05	$0.50	$0.00	$0.50	$1.00	$1.00
Number of Scholarly Publications	12	0	59	8-Mar	47	20	65	30	10	30	40	40
Technology Transfer												
Patent Applications Generated	1	2	2	1	3	2	1	2	1	2	2	2
Products Generated and in the Marketplace	0	5	0	2	1	1	0	2	0	1	2	2
Business Expansions	0	0	0	2	1	1	1	1	0	1	1	1
Technology Transfer: startup companies created	0	2	1	0	1	0	1	1	0	0	0	1
Industry Partnerships	0	2	2	2	8	1	4	1	5	2	1	2
Economic Development												
Incubation/Formation of Biotech Concerns in Flagstaff/Northern Arizona	0	0	0	2	2	0	0	0	0	1	1	2
Work Force Contributions												
Graduate/Postdoc Students in Pipeline	60	62	60	25	29	10	26	20	24	20	25	30
Undergraduate Students with Research Experience	80	79	43	53	90	70	41	80	10	100	110	125
M.S./Ph.D. Graduate Increases	1	12	5	8	10	3	0	3	0	3	3	3
Specific Collaborations												
New Research Collaborations	6	29	3	17	28	2	13	2	10	5	5	7

PERFORMANCE ANALYSIS

- TRIF funds will be leveraged as a result of anticipated new dollars received from agencies, industry, and business.

Environmental Genomics and Genetics Laboratory

- Technology transfer measures are based largely on the development and licensing of new technologies and products. GBI will provide specific grant support to faculty for intellectual property development.
- GBI works closely with the City of Flagstaff and the Northern Arizona Technology and Business Incubator to assist in the incubation, formation, and recruitment of biotechnology companies to northern Arizona.
- Workforce development is a major emphasis area for GBI. Recruiting undergraduate and graduate students into the bioscience pipeline and preparing them for the biotechnology workforce is a high priority.
- GBI is committed to developing new partnerships with industry, business, universities, national laboratories, and governmental agencies. The number of new collaborations and partnerships in joint research ventures is expected to increase over the next five years as the bioscience industry in Arizona continues to grow.
- Selected accomplishments this previous year include genetic studies into drought and pest resistance in Arizona forests, development and business formation related to cell signaling and its relation to disease pathways, acquisition of instrumentation for isotopic analysis, and mass spectrometry to be used for research and student training, and studies related to lateral flow assays.

FINANCIAL INFORMATION

	FY 2002 Actual	FY 2003 Actual	FY 2004 Actual	FY 2005 Actual	FY 2006 Actual	FY 2007 Actual	FY2008 Rev Budget	FY2008 Actual	FY 2009 Rev Budget	FY 2010 Rev Budget	FY 2011 Rev Budget
REVENUE											
Carry Forward		$363,216	$510,270	$200,490	$353,276	$341,247	$342,851	$342,852	$216,763	$0	$0
New TRIF Revenue	$967,002	$1,123,132	$817,501	$768,000	$807,951	$918,732	$538,360	$533,507	$387,535	$913,880	$913,880
TOTAL REVENUE	$967,002	$1,486,348	$1,327,771	$968,490	$1,161,227	$1,259,979	$881,211	$876,359	$604,298	$913,880	$913,880
OPERATING BUDGET											
Personal Services	$216,402	$377,561	$706,203	$696,382	$345,031	$516,128.00	$609,790	$208,419	$193,400	$630,577	$630,577
Operating	$387,384	$598,517	$603,157	$67,366	$474,949	$400,999.00	$271,421	$451,177	$410,898	$283,303	$283,303
TOTAL EXPENDITURES	$603,786	$976,078	$1,309,360	$763,748	$819,980	$917,127	$881,211	$659,596	$604,298	$913,880	$913,880
ROI *	2.3 : 1	6.4 : 1	4.2 : 1	1.8 : 1	6.2 : 1	9.8 : 1	10.2 : 1	8.8:1	10.4 : 1	10.6 :1	10.6 : 1

* New ROI methodology used in FY 2007, and will continue to be used for all future years. This is an ABOR requested calculation change from FY 2002-2006..

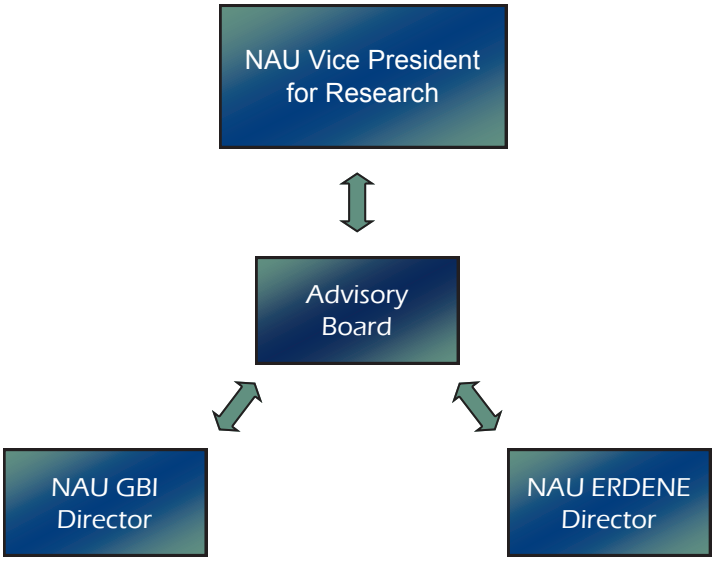
Funding of the Arizona Board of Regents' Technology and Research Initiative Fund (TRIF) is provided by a 0.6 percent increase in the Arizona sales tax rate approved by the voters through Proposition 301 on the November 2000 general election ballot.

GOALS

GBI will foster biotechnology innovation, discovery, technology transfer, and workforce development.

Specific goals include:

- Facilitate technology transfer including patents, licenses, and new businesses based in the biosciences.
- Work closely with the City of Flagstaff and the Northern Arizona Technology and Business Incubator in recruiting and developing new biotechnology business in Northern Arizona.
- Create and refine courses in biotechnology and related fields to provide the training and experience NAU graduates will need to be productive members of Arizona's biotechnology workforce
- Create and maintain partnerships with government, business, and research institutions. Focus on our relationships with University of Arizona and Arizona State University to build the State's bioscience capacity.



LEARN MORE

Contact Dr. Tim Porter at the Department of Physics at Tim.Porter@nau.edu, or call (928) 523-2540.

The NAU Greenhouse

MANAGEMENT

GBI's director, Dr. Tim Porter, reports to Dr. Laura Huenneke, Vice President for Research . For TRIF related activities. Research initiatives within GBI report to Dr. Porter.

ADVISORY BOARD

A new Research and Development Advisory Board has been formed to oversee Growing Biotechnology and Environmental Research, Development, and Education for the New Economy (ERDENE) Initiatives. This board will consist of deans, faculty, and people from off campus, with expertise in environmental biotechnology areas.

Michael Bittner
Translational Genomics Research Institute

Will Ott and Tom Rainey
Northern Arizona Technology and Business Incubator

Barry Gold
Gordon and Betty Moore Foundation

David LaRoche
U.S. Environmental Protection Agency

Edwin Lewis
NAU Department of Chemistry and Biochemistry

Stephanie McKinney
Greater Flagstaff Economic Council

Mary O'Connell
New Mexico State University Plant and Environmental Science Department

Thomas Whitham
NAU Department of Biological Sciences

NORTHERN ARIZONA UNIVERSITY

HEALTHCARE PROGRAM EXPANSION

NORTHERN ARIZONA UNIVERSITY

September 1, 2008

Healthcare Program Expansion

Health Care Program Expansion directly supports Arizona Board of Regents initiatives for health workforce planning. In addition, Northern Arizona University's request responds to the Joint Conference Committee (JCC) recommendations to provide convenient, affordable access to baccalaureate education throughout the state. These programs complement the professional medical / health program degrees offered by UA, ASU, and the new College of Medicine in Phoenix. The North Phoenix building, just off I-17 has consolidated all of NAU's current operations in Maricopa County and provides a place to implement the Health Care Program Expansion plan. A new program in Dental Hygiene degree completion is active at this site. Other programs at other sites are growing.

According to Stephen N. Collier, PhD, Director and Professor, Office of Health Professionals Education and Workforce Development, The University of Alabama at Birmingham, "Most states in the U.S. are experiencing significant shortages of health professionals. Arizona is no exception. Because the physicians workforce determines much of what happens in the overall health care system, other health professional groups are often overlooked." They include a variety of disciplines, some of which are currently offered by Northern Arizona University, and others that could be added to our program portfolio. To fully develop this initiative will require state support, student tuition and fee adjustments, and contributions from NAU's regular TRIF allocation.

Contents

STRATEGIES AND GOALS

> This college realignment plan not only advances an important strategic initiative for the university and the state, but also opens the door to further interdisciplinary collaboration.
>
> *John D. Haeger, NAU President, March 2007*
> *Liz Grobsmith, Provost and Vice President for Academic Affairs*

The goal of this project is to expand access to and availability of Health Care Education in Arizona. Northern Arizona University has a three-part strategy for helping to address the need for health care professionals in Arizona:

1. Enhance existing programs at Flagstaff where it results in increases in the number of health care professionals,
2. Make existing programs directly available in metropolitan and rural areas of Arizona to increase the number of health care professionals,
3. Institute new programs in health care disciplines currently underserved by existing public university programming.

The TRIF over-attainment dollars currently allocated to NAU are allowing the university to make progress on the first two of these strategies. A source of ongoing support is required to continue progress, and an investment of significant additional funds will be required in order to make progress on the third.

STRATEGY 1: Enhance existing programs at Flagstaff where it results in increases in the number of health care professionals.

Supports Four ABOR Strategic Planning Goals:
1. Increase Student Participation in University Education,
2.Enhance the Quality of Student Education,
3.Increase Affordable Education for Students,
4.Provide an Educated Competitive Workforce.

Goal #1: Increase capacity in the Flagstaff-based entry-level Doctor of Physical Therapy (DPT) program

For FY 2006, the current entry-level Doctorate of Physical Therapy (DPT) program admitted cohort of 40 students annually. For FY08, through the use of expansion dollars to hire an additional faculty member, a cohort of 48 was admitted — a 25% increase.

Goal #2: Implement a health sciences degree completion program for students with Associate in Applied Science (AAS) degrees in technical health care areas.

Northern Arizona University first AAS degree completion program was with Gateway Community College's Diagnostic Medical Imagining Training program. Building on planning done with the help of an ARRO grant and using dollars from this initiative to hire an additional faculty and an additional staff member, NAU now has partnerships offering an on-line AAS-to-BS degree in Respiratory Care, Physical Therapy Assisting, Surgical Technology, Paramedic Care and Medical Assisting. Enrollment in these programs has grown from 50 in the DMIT program in Fall '06 to 149 in all programs in Spring, 2008.

Goal #3: Expand the existing master's degree in clinical speech pathology.

Speech Pathologists continue to be in demand throughout Arizona. In FY 2007, Northern Arizona University hired a clinic director and an additional faculty member. NAU also developed a plan to prepare a cohort in Yuma to enter the master's program by providing "leveler", or pre-requisite courses. These students are now eligible to apply for the degree program. The university intends to invest in additional faculty for the Master's program, further enhancing its ability to expand.

Goal #4: Increase capacity in the Flagstaff-based Athletic Training program

In FY 2007, Northern Arizona University hired one full-time faculty member, and has expanded the bachelor's-level program in Athletic Training from 16 students annually, to 24 students in Fall, 2007. Given the solid base of faculty and facilities currently available on the Flagstaff campus, this is the most economical

STRATEGIES AND GOALS

Continued from page 2

way to produce additional athletic trainers.

STRATEGY 2: Make existing programs directly available in metropolitan and rural areas of Arizona to increase the number of health care professionals in these areas.

Supports Four ABOR Strategic Planning Goals:

1. Increase Student Participation in University Education,
2. Enhance the Quality of Student Education,
3. Increase Affordable Education for Students,
4. Provide an Educated Competitive Workforce.

Goal #1: Relocate the existing Post-Professional Doctor of Physical Therapy Program to Phoenix.

In FY 2007, the Post-Professional Doctor of Physical Therapy Program was relocated to Phoenix and one full-time faculty member was hired. The program is building and transitioning seamlessly in NAU's new I-17 facility. The Post-Professional DPT program is a 36 credit hour program that enable licensed professionals to attain doctoral status. Relocating the program to Phoenix has had two major benefits: (1) it makes doctoral education more easily accessible to the large population of physical therapists in a major metropolitan area, and (2) it will provide a platform for development of a Phoenix-based cohort for the entry-level DPT program, to be implemented in phase #2 of our planned health-care program expansion. Enrollment in this program grew for the first time since 2003.

By achieving these goals,

Northern Arizona University will:

- ow more students to participate in an affordable, public-university based program,
- hance the education they will receive, and
- pand the number of health care professionals in the Arizona workforce

Goal #2: Expand the existing Dental Hygiene completion program to include either a hybrid or face-to-face cohort program in Phoenix.

In Spring, 2008, the first "on-the-ground" BSDH completion program opened for business, offered by faculty hired through these "health care expansion" funds.. Seven students are enrolled in the initial cohort, which makes use of the North Phoenix facility.

Goal #3: Expand the existing nursing cohort in Tucson and establish a new cohort-based program in partnership with the Yuma Regional Medical Center.

In FY 2007, NAU leadership continued to expand their nursing program in Tucson. In addition, Northern Arizona University's School of Nursing strategically partnered with Yuma Regional Medical Center, Arizona Western College, and statewide program personnel to investigate the feasibility of a four year nursing program in Yuma. Northern Arizona University has already built successful nursing satellite programs on the Navajo Reservation and in Tucson, and with additional investment could double the number of students educated annually in Tucson and develop a similar program in Yuma. Enrollment in the BSN program at statewide locations has grown from 37 in Fall, 2006 to 97 in Spring, 2008.

PERFORMANCE ANALYSIS

METRICS	FY 02 Act	FY 03 Act	FY 04 Act	FY 05 Act	FY 06 Act	FY 07 Proj	FY 07 Act	FY 08 Proj	FY 08 Act	FY 09 Proj	FY 10 Proj	FY 11 Proj
Pgm Enrollments								104	205	168	228	238
Degree Awards									71	123	166	186

FINANCIAL INFORMATION

	FY 2005 Actual	FY 2006 Actual	FY 2007 Actual	FY08 Rev Budget	FY 2008 Actual	FY 2009 Rev Budget	FY 2010 Rev Budget	FY 2011 Rev Budget
REVENUE								
Carry Forward	$0	$0	$1,149,999	$2,128,194	$2,128,040	$2,099,386	$0	$0
New TRIF Revenue	$0	$1,149,999	$1,010,206	$1,054,796	$936,398	$1,054,796	$1,156,220	$1,169,940
TOTAL REVENUE	$0	$1,149,999	$2,160,205	$3,182,990	$3,064,438	$3,154,182	$1,156,220	$1,169,940
OPERATING BUDGET								
Personal Services	$0	$0		$1,200,270	$659,318	$2,144,800	$427,800	$432,875
Operating	$0	$0	$32,165	$1,982,720	$305,734	$1,009,382	$728,420	$737,065
Debt Service								
TOTAL EXPENDITURES	$0	$0	$32,165	$3,182,990	$965,052	$3,154,182	$1,156,220	$1,169,940

"Northern Arizona University's health professions expansion initiative meets the public agenda and an extraordinary state need"

John D. Haeger, NAU President, October 2006

With an Executive Dean in place since January, 2008 and a new Dean of Nursing arriving in September, the newly-organized College of Health and Human Services is prepared to move forward in health care education.. ABOR's funds for expanding existing health care programs, the state legislature's allocation for new programming and the SPEED and TRIF dollars that will be used to build a new Health Professions facility on the Flagstaff campus are all facilitating progress.

Northern Arizona University is prepared to bring up new programs at the North Phoenix facility while waiting for the Phoenix Medical Center complex to come to fruition. Faculty are in place and students are enrolling. Planning for Occupational Therapy and Physician Assistant programs is underway. A new biomedical sciences program in the Department of Biological Sciences, complementing these efforts, opens on the Flagstaff campus n Fall, 2008.

LEARN MORE

For on-campus programs, contact Leslie Schulz, Executive Dean, College of Health & Human Services

For off-campus programs, contact Fred Hurst, Vice President for Distance Learning Initiatives or 928-523-6515. http://jan.ucc.nau.edu/~hp-p/

NORTHERN ARIZONA UNIVERSITY

STATEWIDE EXPANSION

NORTHERN ARIZONA UNIVERSITY

September 1, 2008

NAU's STATEWIDE EXPANSION

Northern Arizona University has a long history of providing Arizonans with access to higher education in their home communities. While Northern Arizona University remains committed to bringing educational opportunities to rural Arizonans where they live and work, the need for access is equally important in urban areas for specific academic programs addressing workforce needs and the different demographics presented by non-traditional students.

With Board approval the University entered into a long-term lease of a high profile commercial building on I-17 between Bell and Greenway Roads. Signage is clearly visible from I-17 to the north, south, and east. This an anchor facility that allows Northern Arizona University to:

Northern Arizona University — North Valley

- consolidate existing offices and academic programs,
- serve new students by expanding existing and launching new academic programs in high demand workforce development areas such as nursing, doctorate of physical therapy, dental hygiene, teacher education, and
- provide advanced training for managers in rapidly growing non-profit and business fields.

The TRIF monies have funded lease payments, furniture, fixtures, and equipment (FF&E) including high speed connections for voice, video, and data, as well as other information technology equipment. The University successfully relocated offices and classrooms from leased space at Third Street and Thomas. Programs offered in the new facility draw students from throughout the Valley.

The allocated and requested TRIF funding was used to establish a lasting NAU presence in Maricopa County.

Contents

Statewide Expansion Supports Five of ABOR 's Strategic Plan Goals:

1. Increase Student Participation in University Education
2. Enhance the quality of Student Education
3. Increase Affordable Education for Students
4. Provide an Educated, Competitive Workforce
5. Optimize University Resource Acquisition and Work Environment

CURRENT AND FUTURE ACADEMIC PROGRAMS

	Chandler Gilbert	East Valley	Estrella Mountain	GateWay	Glendale	Mesa	North Valley	Paradise Valley	Phoenix	Scottsdale	South Mountain	Tucson	Tucson North	West Valley	NAU Tucson Medical Center
Unduplicated Campus Headcount	113	1,083		8	47	106	785	231	35	265	48	945	277	498	4
Faculty	2	12					7	2		1	1	11	4	1	
Amenities															
Computer Lab		X					X					X	X	X	
Student Lounge		X					X								
Practicum Lab							X								
VC classroom		X					X	X		X	X	X	X	X	
Wireless internet throughout facility							X								
Full time advisor			X	X		X			X						
Full time program coordinator	X														
Nursing bed lab															X
Sim Man lab															X
Facility Size (sf)	100	9,827	130	96	225	89	39,950	600	90	518	3,000	5,485	8,535	2,613	2,040
Degrees															
Undergraduate															
B.A./B.S. Interdisciplinary Studies - Administration of Justice						X									
B.A./B.S. Interdisciplinary Studies - Criminal Justice												X	X		
B.A./B.S. Interdisciplinary Studies - Organizational Communication							X								
B.A./B.S. Interdisciplinary Studies - Public Management (90/30)	X						X					X	X		
B.A./B.S. Interdisciplinary Studies - Sociology							X					X	X		
B.A.S. Administration of Justice					X	X									
B.A.S. Early Childhood Education							X								
B.A.S. Fire Science Administration						X									
B.A.S. Justice Systems Policy and Planning												X	X		
B.B.A. Business Administration								X				X	X		
B.S. Ed. Early Childhood Education							X			X					
B.S. Dental Hygiene - Degree Completion Program							X								
B.S. Ed. Career and Technical Education - Occupational Education							X								
B.S. Ed. Elementary Education	X		X		X	X		X	X		X	X		X	
B.S. Hotel & Restaurant Management										X			X		
B.S. Interior Design										X			X		
B.S. Parks and Recreation Management										X					
B.S. Speech Communication					X								X		
B.S.N. Nursing															
Graduate															
Bilingual Education Endorsement		X										X	X	X	
Ed.D. Educational Leadership		X										X			
English as a Second Language Endorsement		X					X	X		X		X	X	X	
M. Administration - Leadership		X					X						X		
M.A. Counseling							X			X					
M.A. English - General English Emphasis		X					X								
M.Ed. Bilingual/Multicultural Education		X					X					X	X	X	
M.Ed. Counseling/School Counseling							X					X	X		
M.Ed. Early Childhood Education		X					X			X		X	X	X	
M.Ed. Educational Leadership		X					X	X		X		X	X	X	
M.Ed. Elementary Education with Certification Emphasis		X					X					X	X		
M.Ed. Elementary Education-Continuing Professional Emphasis		X					X	X		X		X	X	X	
M.Ed. Human Relations		X					X	X		X		X	X	X	
M.Ed. in Secondary Education-Continuing Professional Emphasis		X					X	X		X				X	
M.Ed. Secondary Education with Certification Emphasis							X					X	X		
M.Ed. Special Education: Cross-Categorical (noncertified)		X										X	X	X	
Non Degree - Personal Enrichment (Graduate)	X	X		X	X	X	X	X	X	X	X	X	X	X	
Post-Professional Doctor of Physical Therapy							X								
Principal Certificate		X					X	X		X		X	X	X	
Reading Endorsement		X					X	X				X	X	X	
Superintendent Certificate		X	*				X					X	X	X	
Notes													**		

* Instruction offered off campus until space is available

** 1 faculty shared with Pima CC Northwest campus

NARRATIVE

Expansion Activity

- In just two short years, a farsighted agreement between the Maricopa Community Colleges and Northern Arizona University set the stage for growth of undergraduate programs. A memorandum of understanding, signed by Chancellor Rufus Glasper and President John Haeger in April of 2006, opened the door for NAU to have a presence on each of the Maricopa campuses, and to expand transfer programs for Maricopa students.

  Since the signing, NAU has opened or expanded offices at every Maricopa campus with one or more full time staff members. The partnership, called the "NAU-Maricopa Connection," provides 22 on-site bachelor's completion programs on Maricopa campuses, along with a wide variety of baccalaureate and certificate programs available online through the university.

- The new North Valley facility provides classroom, video conference, office and meeting space for university departments and programs. NAU North Valley houses10 full time faculty members and 27 staff, and boasts a cutting edge high speed computer lab free of charge to students, In the first year of operation the facility hosted over 50 meetings and events, and had over 1,200 visitors to the building, serving community groups such as Arizona Town Hall, Maricopa Small Business Development Center, the Arizona Department of Education, Arizona State University Workforce Development, and St. Joseph's Hospital, to name a few.

- Programs based at the North Valley campus serve health professionals with a Dental Hygiene degree completion program, a post-professional Doctor of Physical Therapy, and a Speech Language Pathology Assistant certificate. Other programs include a Master of Administration degree and a broad array of pre-service and professional programs for educators.

- In 2006, the Arizona Board of Regents (ABOR) designated NAU-Yuma as a branch campus. This provided an opportunity for the Yuma faculty to more effectively serve the needs of students around the state. Their first major initiative was to create a Bachelor of Business Administration program approved by ABOR in 2007. The program is delivered via video conference to students in Coolidge, Phoenix, Prescott, Thatcher and Tucson. Advisors and coordinators supported by expansion funds assist with recruiting and advising for the new program, which admitted 76 students in its first year of operation.

FINANCIAL INFORMATION

	FY 2005 Actual	FY 2006 Actual	FY 2007 Actual	FY 2008 Revised Budget	FY 2008 Actual	FY 2009 Budget	FY 2010 Budget	FY 2011 Budget
REVENUE								
Carry Forward	$ -	$ -	$ 1,149,999	$ 1,769,194	$ 1,769,193	$ 604,121	$ 214,600	$ -
New TRIF Revenue	$ -	$ 1,149,999	$ 1,010,206	$ 1,054,796	$ 1,054,796	$ 1,054,796	$ 1,156,221	$1,169,940
TOTAL REVENUE	$ -	$ 1,149,999	$ 2,160,205	$ 2,823,990	$ 2,823,989	$ 1,658,917	$ 1,370,821	$1,169,940
OPERATING BUDGET								
Personal Services	$ -	$ -	$ -	$ -	$ 255,265	$ 389,521	$ -	$ -
Operating	$ -		$ 391,012	$ 2,823,990	$ 1,964,603	$ 1,054,796	$ 1,370,821	$1,169,940
Debt Service					$0	$0		
TOTAL EXPENDITURES	$ -	$ -	$ 391,012	$ 2,823,990	$ 2,219,868	$ 1,444,317	$ 1,370,821	$1,169,940

Funding of the Arizona Board of Regents' Technology and Research Initiative Fund (TRIF) is provided by a 0.6 percent increase in the Arizona sales tax rate approved by the voters through Proposition 301 on the November 2000 general election ballot.

SUPPORT OF ABOR'S STRATEGIC GOALS

Quality

NAU has made significant progress toward enhancing the quality of education delivered off the Flagstaff campus. Expansion of facilities, partnerships, and degrees set the stage for considerable advancements. The North Valley facility, opened October 2007, is NAU's second high-visibility, stand-alone facility outside of the Flagstaff area. This facility provides the institution with 40,000 square feet of classroom and faculty office space. Faculty members based at the North Valley location teach in both traditional classrooms, on the Web and via videoconferencing. Classrooms contain state of the art equipment, faculty have adequate space in which to meet with students or student groups, and the computer lab is available to students when they are most likely to use it. The facility also hosts a student practicum lab that allows for student counseling sessions conducted under the supervision of full-time clinical faculty. In the last two years the student lab has provided Spanish language counseling sessions to community members free of charge. This learning centered environment and its prominent location supports accessible, high-quality learning experiences and is a complement to NAU's other locations on community college campuses.

Affordable Education Through Partnerships

By strengthening our partnerships with Arizona community colleges, NAU has succeeded in increasing student access to four year degrees. The partnerships also enhance continued development of new programs that articulate with associate's degrees. A new Bachelor of Interdisciplinary Studies allows for the transfer of up to 90 units of coursework from the local community college. Students can then earn a bachelor's degree by completing only 30 units at NAU. This is the most affordable four year degree option in the state of Arizona. Student interest in NAU programs has increased markedly in the last year with 46.9 percent growth in undergraduate programs offered at a distance and 13.8 percent growth in new undergraduate students. These outcomes are evidence of NAU's ability to advance ABOR's goals of providing affordable university education for Arizona students.

Workforce Development

Northern Arizona University remains focused on the workforce needs in the state by advancing the accessibility to degrees in health care, business, and education. Degrees in physical therapy and dental hygiene are currently being offered, and degrees in occupational therapy and physician assistant are being developed for offering in the North Valley facility. These recent efforts to increase the number of highly skilled medical technicians in Arizona illustrate NAU's commitment to workforce development. Seventy-one percent of Distance Learning students work more than 32 hours per week. Flexible delivery methods allow these students to complete university classes regardless of their work schedule. Thirty-seven new online programs were made available during the past year, providing even more opportunities for students to earn degrees or certificates while remaining in the workforce.

NORTHERN ARIZONA UNIVERSITY

LEARN MORE

Contact Fred Hurst, Vice President for Extended Programs, and Dean of Distance Learning, at fred.hurst@nau.edu, or 928-523-6598. www.distance.nau.edu

NAU-YUMA Expansion

NORTHERN ARIZONA UNIVERSITY

September 1, 2008

Business Plan: $2 million

Introduction

The university is able to meet the most pressing educational needs of most Arizona's rural areas thanks to the university's flexibility in strategically managing limited resources. However, the population growth of the urban areas is far outpacing the university's capacity to serve Maricopa, Pima, and Yuma Counties adequately. While Arizona's citizens of Maricopa and Pima Counties have multiple choices to earn baccalaureate or higher degrees—from both private and public institutions, for the population of Yuma County (and neighboring areas), NAU remains the only option to access a baccalaureate-degree-granting institution locally.

Mission: To meet the educational needs of the lower Colorado River region by fostering scholarly, intellectual, and cultural activities in collaboration with the local community colleges and business and governmental entities.

According to the 2006 Educational Needs Report published by the Lumina Foundation, Yuma County has the 26th highest education need among 3,040 counties nationwide—a clear indication that a four-year education is crucial for Yuma's competency to sustain healthy economic growth.

To provide the community with the opportunities that will ensure prosperity of the region, NAU-Yuma will invest in baccalaureate programs that meet current market demands and provide the necessary human capital to diversify the economy. The programs include public administration, business, and engineering.

The applied research center, already under construction, will complement the science classroom instruction and provide the necessary laboratory equipment and space to foster undergraduate research. In addition, it will serve as a base for visiting faculty from the Flagstaff campus involved in applied research in relevant to the Lower Colorado region.

To improve student success, the branch campus will invest, jointly with Arizona Western College, in a Writing Center—a much needed student support service that will improve student persistence and graduation. The Writing Center, as envisioned, will serve the students through their entire academic career, as they are moving from the community college to the university

Contents

Project's most relevant ABOR issues:

- Increase Student Participation in University Education
- Enhance the quality of Student Education
- Increase Affordable Education for Students
- Provide an Educated, Competitive Workforce
- Optimize University Resource

MARKET CONDITIONS

Degree Opportunities

NAU-Yuma is currently the only option for college-bound students of all ages to pursue locally-delivered baccalaureate degrees.. For the last 20 years NAU has been committed to meet the needs of the Yuma region by providing high-quality programs and student services by leveraging the partnership with AWC.

Other options available to local residents are NAU online programs as well as online and hybrid programs of other public and private institutions.

Locally Available NAU-Yuma Programs:

- B.A. Interdisciplinary Studies - Criminal Justice
- B.A. Interdisciplinary Studies - Environmental Sciences
- B.A. Interdisciplinary Studies - Learning & Pedagogy
- B.A. Interdisciplinary Studies - Psychology
- B.A. Interdisciplinary Studies - Sociology
- B.A. Psychology
- B.A. Spanish
- B.B.A. Business Administration - Yuma
- B.S. Criminal Justice
- B.S. Ed. Elementary Education
- B.S. Ed. Secondary Education-Earth Science
- B.S. Ed. Secondary Education-Spanish
- B.S. Environmental Sciences
- B.S. Interdisciplinary Studies - Criminal Justice
- B.S. Interdisciplinary Studies - Environmental Sciences
- B.S. Interdisciplinary Studies - Learning & Pedagogy
- B.S. Interdisciplinary Studies - Psychology
- B.S. Interdisciplinary Studies - Sociology
- B.S. Psychology
- B.S.W. Social Work

Demographics

The Yuma-El Centro designated market area has a population of more than 363,000 and is expected to grow by almost 15 percent by 2012.

It is pre-dominantly a Hispanic community with the population of Hispanic origin comprising 66 percent—a proportion that is expected to grow to 69 percent by 2012.

Approximately 26 percent of the population in Yuma County is either non-US citizen or naturalized, compared with 15 percent in Arizona.

With six percent, Yuma's proportion of adult population enrollment in college or graduate school is significantly below the national norm of nine and Arizona's 8.8 percent. Only 11 percent of Yuma's population (age 25+) has a bachelor's degree or higher, compared with 26 percent statewide and 27 percent nationwide.

The unique demographic composition of the region provides many opportunities and challenges that NAU-Yuma has been addressing for more than 20 years.

Economic Base

Yuma-El Centro is an $18.5 billion market with the top industries by sales volume, including fresh fruit and vegetable merchant wholesalers, farm supplies merchant wholesalers, new car dealers, and supermarkets and other grocery stores. It is obvious that Yuma's economic base is heavily dependent on water-intensive agriculture, with a very few other industries: This lack of economic diversity may pose significant problems for the region should environmental conditions changed dramatically.

Baccalaureate education in business, engineering, computer and applied sciences will play a major role in diversifying local economy—the path to assuring the region's long-term prosperity.

Total number of businesses:	8,844
Total sales volume:	$18.5 billion
Total number of employees:	111,706
Top industry (by # of employees):	National Security
Top industry (by sales volume):	Fresh Fruit and Vegetable Merchant Wholesalers

STRATEGIC INITIATIVES

Applied Research Center: $500,000

The Center, currently under development, will foster regional economic development and provide students and faculty the opportunity for enhanced teaching and learning. As a shared facility with AWC it will further promote collaboration in physical sciences, specifically in biology and chemistry. $500,000 in TRIF dollars were expended in FY 2008 on the infrastructure upgrades necessary for the $6.5 million construction to start.

Academic Programs Expansion: $1,250,000

- Engineering

Considering Yuma-El Centro designated area's economic base and partnership and employment opportunities, there is an unmet need to establish a four-year engineering baccalaureate program. Discussions among NAU, the .S. Army Yuma Proving Ground—one of the largest military installations in the world—,Arizona State University and University of Arizona are currently underway to develop the program.

- Business

The Bachelor of Business Administration was developed to provide graduates with the skills necessary to work effectively in large or small organizations, to start small businesses, or to continue with a graduate-level degree. Emphasis areas include global business, small business, and management, addressing issues such as ethics and social responsibility, environmental sustainability, and profitability. To advance the program, a new program coordinator/advisor and two support positions are needed.

- Public Administration

Many of the current baccalaureate programs are built as liberal arts programs while the current market demand calls for more applied science degrees. To provide major local employers—national security, police protection, legislative bodies, and correctional institutions—with an access to qualified local workforce, the Bachelor of Applied Science in Public Agency Service will be offered in addition to the existing interdisciplinary studies.

- Other Programs

NAU-Yuma's current baccalaureate in-person programs are already focused on much needed social sciences. However, there is an emerging need to provide the community with access to natural and health sciences and computer technology education. Part of the academic programs expansion funding will be used to conduct needs assessment study and to ensure sustainability and enrollment growth of all newly developed as well as existing programs.

Program/ Student Enrollment	2005	2006	2007	2008	2009	2010	2011	2012	2013
Management (BSBA)	42	44	61	70	80	100	100	100	100
B.S. Engineering					8	12	16	20	22
B.A.S. Public Agency Administration					12	16	18	20	20

Student support services including Writing Center: $250,000

Forty five percent of the Yuma County population speaks Spanish at home, compared with 21 percent in Arizona and 12 percent nationwide. This presents both opportunities and challenges to NAU and AWC. While having a good command of Spanish is extremely useful, making business proceedings and social interactions in this bilingual environment easier, for many local students, growing up with English as a second language creates a potential barrier on the path toward educational success. Written and oral communication skills are essential learning outcomes students must master in order to succeed in both college studies and workplace: 73 percent of employers nationwide want colleges to place more emphasis on these soft skills.

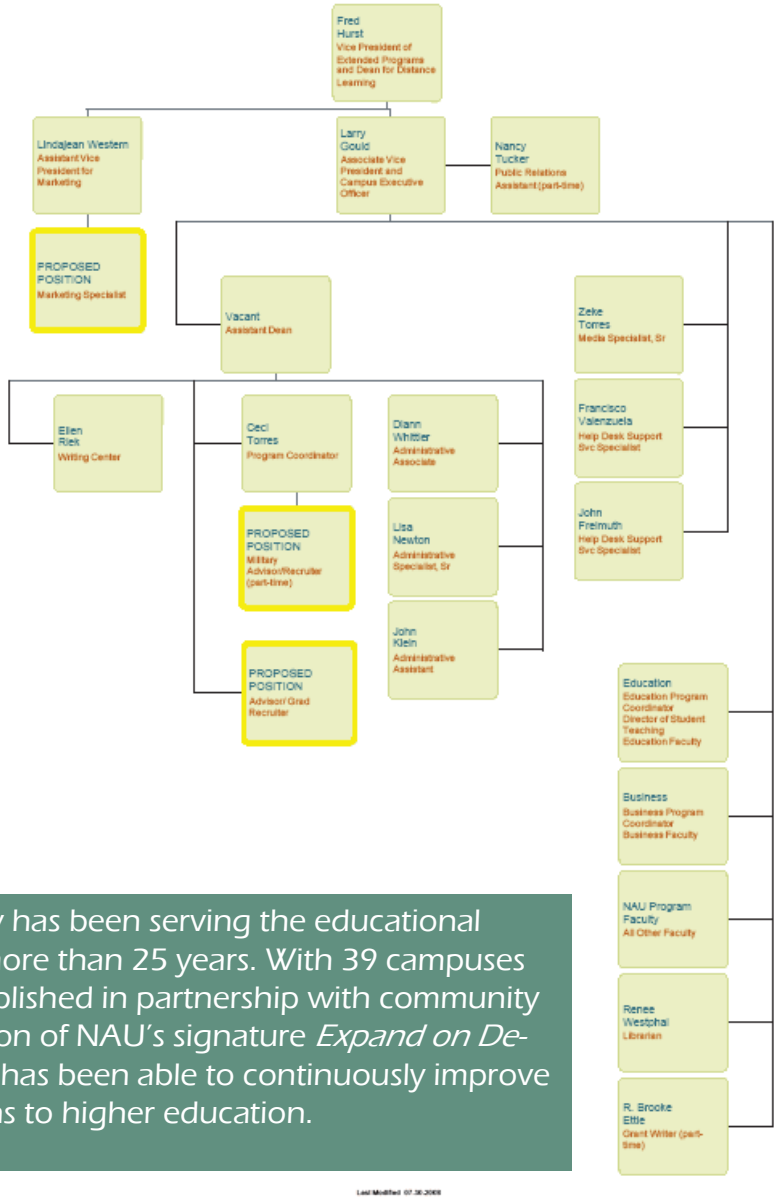
Establishing a joint writing center—in partnership with AWC—is a crucial endeavor to support students from the very beginning of their academic career at AWC and as they progress through NAU programs. The continuity of the Center's services throughout the student's career, the familiar and nurturing staff, the high quality tutoring and coaching, are the key elements of the program. NAU's successful writing center on the Flagstaff campus will serve as a model.

LEARN MORE

Strategic Initiatives—Budget Summary

Strategic Initiative	FY 2008	FY 2009	FY 2010	Total Budget
Applied Research Center	$500,000	$0	$0	$500,000
Academic Program Expansion	$0	$500,000	$750,000	$1,250,000
Student Support Services - Writing Center	$0	$250,000	$0	$250,000
Total Budget	$500,000	$750,000	$750,000	$2,000,000

NA-YUMA Proposed Organizational Chart



Northern Arizona University has been serving the educational needs of rural Arizona for more than 25 years. With 39 campuses across the state—many established in partnership with community colleges—and implementation of NAU's signature *Expand on Demand* model, the university has been able to continuously improve the access of Arizona citizens to higher education.

LEARN MORE

Contact Fred Hurst, Vice President, at fred.hurst@nau.edu, or 928-523-6598.

NORTHERN ARIZONA UNIVERSITY

Promoting Forest Health in Arizona

NORTHERN ARIZONA UNIVERSITY

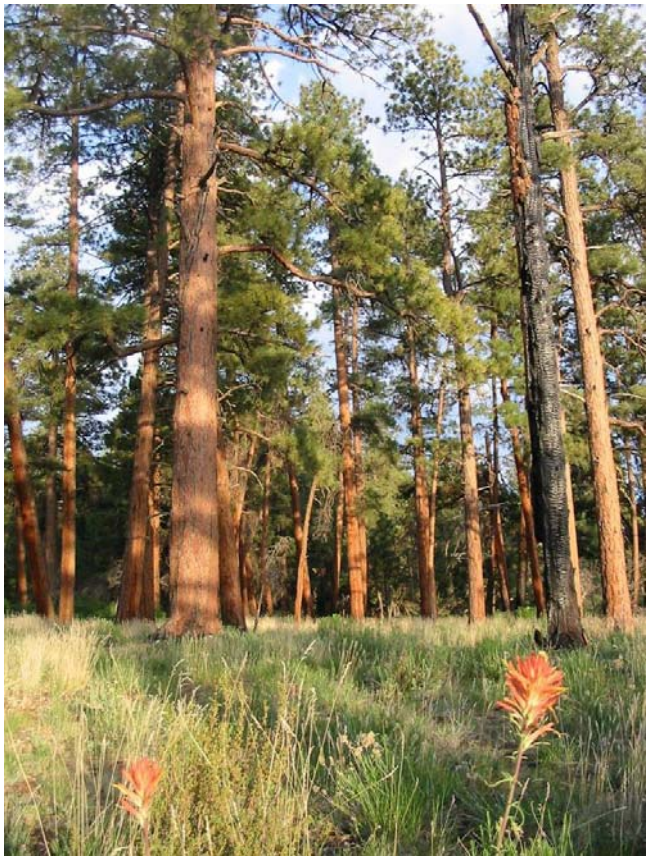
September 1, 2008

Business Plan: $1.15 million

Introduction

In 2003, Governor Janet Napolitano created the Forest Health Advisory Council and the Forest Health Oversight Council in response to the escalating number, frequency, and intensity of wildfires threatening Arizona's forests and communities. The councils were directed to develop policy recommendations in the area of forest health, severe forest fires, and community protection.

In 2005, the Councils established a sub-committee to begin work on a 20-year strategy to restore forest health, protect communities from fire, and encourage appropriate forest-based economic development. The report from that committee, "A Statewide Strategy for Restoring Arizona's Forests", released in June, 2007, identified five key strategies:



- increase the human and financial resources dedicated to restoring Arizona's forests and protecting communities,
- coordinate and implement action at the landscape-scale,
- increase the efficiency of restoration, fire management, and community protection activities,
- encourage ecologically sustainable, forest-based economic activity, and

Contents

Project's most relevant ABOR issues:

- Increase Student Participation in University Education
- Enhance the quality of Student Education
- Increase Affordable Education for Students
- Provide an Educated, Competitive Workforce
- Optimize University Resource

INTRODUCTION

- build public support for accomplishing restoration, community protection, and fire management across the state.

Dr. W. Wallace Covington, director of NAU's Ecological Restoration Institute (ERI), co-chaired the Governor's Forest Health Advisory Council, and was a member of the Strategy Subcommittee. Many of the tenets embedded in the strategies and recommendations of the subcommittee emerged as a result of Dr. Covington's research. ERI employees and resources played a significant role in the development of the strategy. This is the first coordinated strategy to be developed in the West and positions the State of Arizona to attract more human and financial resources for innovative approaches to forest restoration, wildfire avoidance, and the development of restoration-based economic opportunities. Participation and leadership to develop the strategy is one illustration of the commitment of NAU to use the unique assets of the University to help the citizens of Arizona solve contemporary problems.

The ERI is a nationally acclaimed program with a proven track record of working with others to restore forests, identify economic development opportunities and develop strategies for community protection. The financial support from the ABOR Innovation Fund will allow NAU to provide the scientific support and leadership required to contribute to the implementation of the strategy and to help solve the wildfire and forest health problem throughout Arizona.

Mission: To serve as an objective leader in research, scholarship, and education, and in collaborative efforts to plan and implement restoration treatments for frequent-fire forest and woodland landscapes of the Interior West.

Rodeo-Chediski fire, Arizona, 2002, 468,638 acres. Loss to Arizona residents: $400 million

OPERATIONAL STRATEGIES AND GOALS

For the statewide strategy to be successful coordinated action is needed by federal agencies, communities, businesses, citizens, and decision-makers. During the next year the ERI will play a leadership role in the Governor's Forest Health Council. In addition, the ERI will:

- Provide support for a wood characterization study that will identify the amount and type of wood that is available for mechanical thinning and private utilization for wood products and biomass energy. This action is essential to provide the private sector the information they need for business planning and investment.
- Support communities that are planning projects. This effort includes community consultations, presentations and field trips.
- Provide technical assistance to translate and transfer research to land managers on fire behavior and forest restoration for application in the design and implementation of restoration and hazardous fuel reduction treatments. This includes: consultations and field trips with land managers; rapid ecological assessments and fulfilling information requests.

ABOR Innovation Funds will also be used to build upon the extensive investment already made in applied NAU research. These activities include:

- Synthesis of research findings and transfer of information for practical application on restoration treatment effects on reducing the hazard of severe crown fires, and ecological restoration of pinyon-juniper woodlands—the largest forested vegetation type in Arizona and a potential source of biomass
- Prevention of loss to wildfire of natural resources and communities through testing and application of forest restoration techniques
- Development of trained professionals for the Arizona workforce in restoration and forest health — undergraduate research assistants, forestry focus area students in ecological restoration, and graduate students at the M.S. and Ph.D. levels)
- Development of Arizona based public and private sector native plant restoration capabilities for reseeding or replanting following wildfires and other damage, thereby reducing the costly and dangerous effects of invasion by non-native plant species.

Funding of the Arizona Board of Regents' Technology and Research Initiative Fund (TRIF) is provided by a 0.6 percent increase in the Arizona sales tax rate approved by the voters through Proposition 301 on the November 2000 general election ballot.

FINANCIALS

The state funding provided to the ERI in the past has enabled state resources to be leveraged with federal funding to make significant advancements towards restoring Arizona's forests. The Innovation Fund support will permit the ERI to increase the scope and extent of our outreach activities. This support is in line with recommendation #1 of the sub-committee: to invest additional resources in restoring forests and protecting communities. NAU was awarded $1.15 million to allow ERI to expand its research, education and outreach activities so that the benefits of forest health are made available to the people, communities, and governments of Arizona. The funding will be allocated over three fiscal years beginning in fiscal year 2009.

The majority of the budget is dedicated to supporting the personnel required to carry out the research, education, and outreach activities articulated in this plan. The remaining budget supports the travel to communities and national forests, supplies and equipment necessary to complete the goals. This funding will leverage other state and federal funds to maximize leverage and value to all NAU-ERI customers (people, communities, and governments).

Budget Summary

Budget Summary	FY09	FY10	FY11	Total
Salary	$ 231,378	$ 262,906	$ 262,906	$ 757,190
ERE	$ 99,162	$ 112,674	$ 112,674	$ 324,510
Travel	$ 11,676	$ 14,652	$ 14,652	$ 40,980
Operations & Supplies	$ 7,784	$ 9,768	$ 9,768	$ 27,320
Total Budget	$ 350,000	$ 400,000	$ 400,000	$ 1,150,000

The ERI was formally established by the Arizona Board of Regents in 1997 and by federal legislation in 2004. The ERI is funded by a combination of programmatic state and federal funding and through competitive grants programs.

LEARN MORE

Contact W. Wallace Covington, director of NAU's Ecological Restoration Institute (ERI), at 928-523-7182.

NORTHERN ARIZONA UNIVERSITY

UNIVERSITY INITIATIVES

NORTHERN ARIZONA UNIVERSITY

September 1, 2008

NORTHERN ARIZONA UNIVERSITY INITIATIVES

Today's rapidly evolving, competitive, and dynamic world requires nations, states, and universities to be flexible, responsive, and innovative within a very short time frame. NAU is prepared for the opportunities and challenges of this environment by setting aside funds for university initiatives and opportunities that may arise.

As with all NAU TRIF initiatives, these funds have been and will be directed to meet the goals of the TRIF legislation and state economic development priorities. It is anticipated that investments will be made within the general context of the four NAU TRIF business plans focused on access/workforce development, E-learning and environmental and biotechnological research, development, and education. University Initiatives ensures that NAU is positioned to both quickly take advantage of new developments in the research arena, and to provide the infrastructure support needed to ensure the continued growth and success of NAU's TRIF initiatives.

Contents

Photo credit Tom Alexander

Dr. John Haeger, President
Northern Arizona University

PERFORMANCE ANALYSIS

Exterior of New
Laboratory Facility

Occupied: January, 2007

Interior of New
Laboratory Facility

Occupied: January, 2007

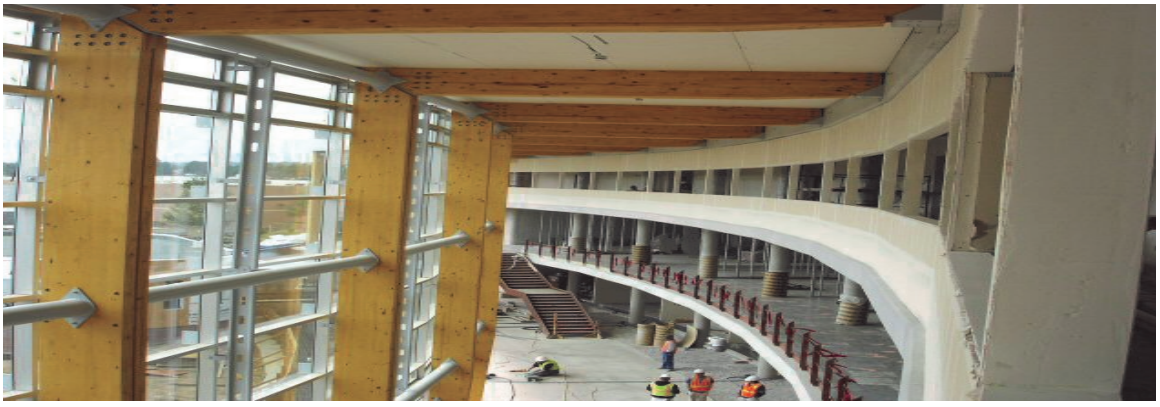
Existing Health Professions Bldg.
New Health Professions Bldg is in
Initial Planning Phase

Expected Completion: FY 2010

PERFORMANCE ANALYSIS

Applied Research and Development Bldg

Occupied: April 2007



FINANCIAL INFORMATION

	FY 2002 Actual	FY 2003 Actual	FY 2004 Actual	FY 2005 Actual	FY 2006 Actual	FY 2007 Revised Budget	FY 2007 Actual	FY 2008 Revised Budget	FY 2009 Budget	FY 2010 Budget	FY 2011 Budget
REVENUE											
Carry Forward	$0	$206,744	$664,608	$1,674,629	$3,054,612	$5,159,771	$120,491	$120,491	$1,175,101	$0	$0
TRIF Revenue	$298,203	$590,810	$938,517	$2,552,961	$1,764,371	$690,001	$1,432,058	$1,201,319	$1,432,058	$1,626,521	$2,133,760
TOTAL REVENUE	$298,203	$797,554	$1,603,125	$4,227,590	$4,818,983	$5,849,772	$1,552,549	$1,321,810	$2,607,159	$1,626,521	$2,133,760
OPERATING BUDGET											
Personal Services	$36,174	$72,666	$62,927	$266,070	$340,462	$153,992	$434,713	$219,039	$224,100	$345,519	$364,523
Operating	$55,285	$60,280	$17,761	$188,050	($681,250)	$483,950	$1,117,836	$90,491	$2,383,059	$1,281,002	$1,769,237
Building Renovation	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Conference Center	$0	$0	$0	$0	$0	$3,091,339	$0	($162,821)	$0	$0	$0
Debt Service	$0	$0	$0	$0	$0	$2,000,000	$0	$0	$0	$0	$0
TOTAL EXPENDITURES	$91,459	$132,946	$80,688	$454,120	($340,788)	$5,729,281	$1,552,549	$146,709	$2,607,159	$1,626,521	$2,133,760

Funding of the Arizona Board of Regents' Technology and Research Initiative Fund (TRIF) is provided by a 0.6 percent increase in the Arizona sales tax rate approved by the voters through Proposition 301 on the November 2000 general election ballot.

GOALS

University Initiatives will provide coordinated oversight of all NAU TRIF Initiatives. This oversight will support our established programs, and ensure flexibility to respond to new demands. Our overall goal is to provide infrastructure that enables a coordinated and integrated approach to research, education, connections with business and practical applications in the face of our changing economy. Initiatives that have been funded so far include

- Investment in the Applied Research and Development and Laboratory Sciences buildings, helping to advance research and scientific education
- Support of TGen North and the Keim laboratory in advancing scientific research in Northern Arizona.
- Investment in the High Country Conference Center, a facility that is already exceeding expectations in the economic benefits it is bringing to Northern Arizona, in the form of conference attendees and their families.

On the near horizon are projects such as:

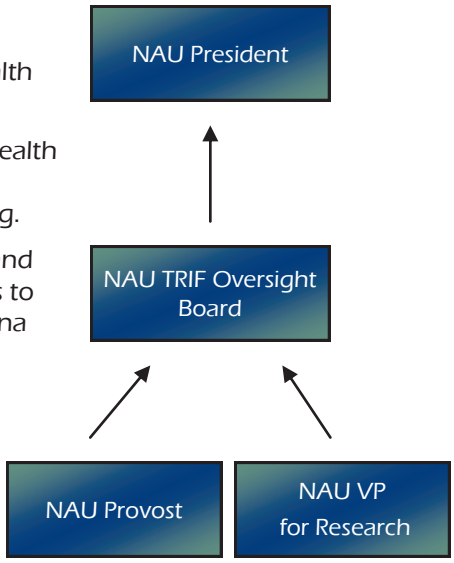
- Supplement legislatively allocated (SPEED) funds to build a showcase Health Professions Education building to accommodate expanded and new health care programs
- Fund an innovative, interdisciplinary Health Policy Institute to complement the investment in health care programming.
- Continue to improve science facilities and broaden faculty research opportunities to compete for Science Foundation Arizona Grants.

OVERSIGHT BOARD

The NAU TRIF Oversight Board will provide general direction and guidance to the President regarding NAU's TRIF programming including University Initiatives.

Oversight Board Membership:

Paul Begovac
W.L. GORE & Associates, Inc.
Saundra Johnson, Chair
Flinn Foundation
Julie Pastrick
Flagstaff Chamber of Commerce
Gary Smith
Unisource
Carl Taylor
Coconino County
Board of Supervisors
Nat White
Lowell Observatory



MANAGEMENT

NAU President, Dr. John D. Haeger, oversees University Initiative activities. He is assisted in this effort by the Oversight Board, Provost and Vice President for Research. Appropriate Vice Presidents and Deans will also participate in specific projects.

LEARN MORE

Contact: Dr. John Haeger, President at John.Haeger@nau.edu or (928) 523-3232

NORTHERN ARIZONA UNIVERSITY

THE UNIVERSITY OF ARIZONA

TECHNOLOGY AND RESEARCH INITIATIVE FUND (TRIF)

FY 2008 ACTUAL / FY 2009 - 2011 BUDGETS

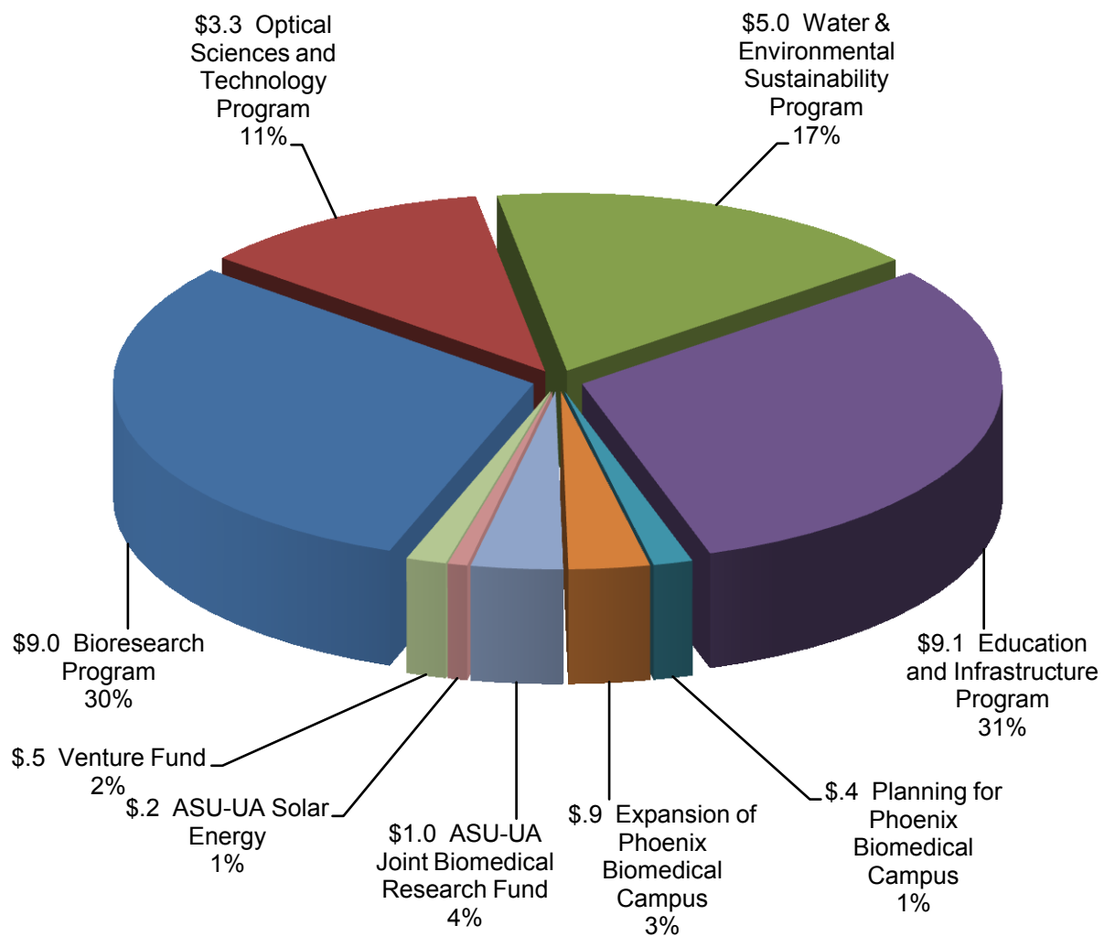
SUMMARY

	FY 2007 ACTUAL	*FY 2008 REVISED BUDGET*	*FY 2008 ACTUAL*	*FY 2009 REVISED BUDGET*	*FY 2010 REVISED BUDGET*	*FY 2011 REVISED BUDGET*
REVENUE						
Carryforward	$ 6,812,073	$ 9,005,784	$ 9,005,784	$ 5,854,007	$ -	$ -
TRIF Revenue	25,351,822	28,202,982	26,384,855	28,212,883	29,894,559	31,004,019
TOTAL REVENUE	**$ 32,163,895**	**$ 37,208,766**	**$ 35,390,639**	**$ 34,066,890**	**$ 29,894,559**	**$ 31,004,019**
EXPENDITURES						
OPERATING BUDGET						
Personal Services	$ 8,486,483	$ 19,507,736	$ 11,666,431	$ 17,564,781	$ 14,440,531	$ 15,111,352
ERE	2,606,677	5,857,258	3,476,967	5,430,220	4,387,488	4,606,321
All Other Operating	8,410,706	6,851,531	11,262,728	6,327,954	6,061,688	6,006,228
TOTAL OPERATING BUDGET	**19,503,866**	**32,216,525**	**26,406,126**	**29,322,955**	**24,889,707**	**25,723,901**
CAPITAL BUDGET						
Building Renovation	169,007	495,620	(285,963)	-	-	-
Debt Service	4,465,000	4,496,621	3,416,469	4,743,935	5,004,852	5,280,118
TOTAL CAPITAL BUDGET	**4,634,007**	**4,992,241**	**3,130,506**	**4,743,935**	**5,004,852**	**5,280,118**
EXPENDITURES GRAND TOTAL	**$ 24,137,873**	**$ 37,208,766**	**$ 29,536,632**	**$ 34,066,890**	**$ 29,894,559**	**$ 31,004,019**
SUMMARY BY INITIATIVE						
Bioresearch Program	$ 5,878,772	$ 10,960,407	$ 9,000,889	$ 9,600,725	$ 8,311,977	$ 8,447,633
Optical Sciences and Technology Program	3,187,607	4,350,138	3,340,957	4,328,463	3,678,161	3,825,288
Water & Environmental Sustainability Program	3,473,905	6,063,856	5,001,366	5,150,109	4,563,963	4,746,521
Higher Education in Rural Southern Arizona	-	500,000	-	810,594	250,000	-
Education and Infrastructure Program	8,160,936	10,203,132	9,100,061	10,429,549	10,329,865	10,832,465
Planning for Phoenix Biomedical Campus	211,146	538,854	447,332	91,522	-	-
Expansion of Phoenix Biomedical Campus	2,009,192	1,448,808	920,628	1,589,051	1,140,000	1,140,000
ASU-UA Joint Biomedical Research Fund	187,472	1,312,528	1,040,892	271,636	500,000	500,000
ASU-UA Solar Energy	-	1,050,000	224,876	1,525,124	800,000	800,000
Venture Fund	1,028,843	781,043	459,631	270,117	320,593	712,112
EXPENDITURES GRAND TOTAL	**$ 24,137,873**	**$ 37,208,766**	**$ 29,536,632**	**$ 34,066,890**	**$ 29,894,559**	**$ 31,004,019**

THE UNIVERSITY OF ARIZONA
TECHNOLOGY AND RESEARCH INITIATIVE FUND (TRIF)
FY 2008 BUDGET / ACTUAL
SUMMARY BY PROGRAM AREA

	FY 2008 REVISED BUDGET	*FY 2008 ACTUAL*
REVENUE		
Carryforward	$ 9,005,784	$ 9,005,784
TRIF Revenue	28,202,982	26,384,855
TOTAL REVENUE	**$ 37,208,766**	**$ 35,390,639**
EXPENDITURES		
OPERATING BUDGET		
Personal Services	$ 19,507,736	$ 11,666,431
ERE	5,857,258	3,476,967
All Other Operating	6,851,531	11,262,728
TOTAL OPERATING BUDGET	**32,216,525**	**26,406,126**
CAPITAL BUDGET		
Building Renovation	495,620	(285,963)
Debt Service	4,496,621	3,416,469
TOTAL CAPITAL BUDGET	**4,992,241**	**3,130,506**
EXPENDITURES GRAND TOTAL	**$ 37,208,766**	**$ 29,536,632**
SUMMARY BY INITIATIVE		
Bioresearch Program	$ 10,960,407	$ 9,000,889
Optical Sciences and Technology Program	4,350,138	3,340,957
Water & Environmental Sustainability Program	6,063,856	5,001,366
Higher Education in Rural Southern Arizona	500,000	-
Education and Infrastructure Program	10,203,132	9,100,061
Planning for Phoenix Biomedical Campus	538,854	447,332
Expansion of Phoenix Biomedical Campus	1,448,808	920,628
ASU-UA Joint Biomedical Research Fund	1,312,528	1,040,892
ASU-UA Solar Energy	1,050,000	224,876
Venture Fund	781,043	459,631
EXPENDITURES GRAND TOTAL	**$ 37,208,766**	**$ 29,536,632**

FY 2008 UA ACTUAL TRIF EXPENDITURES
(in millions)



THE UNIVERSITY OF ARIZONA

TECHNOLOGY AND RESEARCH INITIATIVE FUND (TRIF)

TRIF PROGRAM

THE UNIVERSITY OF ARIZONA.
Arizona's First University.

September 1, 2008

THE UNIVERSITY OF ARIZONA TRIF PROGRAM

The Technology and Research Initiative Fund (TRIF) is a special investment in higher education made possible by the passage of Proposition 301 by Arizona voters in 2000. The TRIF portion of the proceeds from a six-tenths of a cent increase in state sales tax are administered by the Arizona Board of Regents and given to the state's public universities. At the University of Arizona, TRIF funds support creative research efforts in critical high-technology areas, translation of research results to clinical or commercial application, and education of a workforce prepared for the knowledge-based economy of the 21st Century. Funds also support specialized research facilities, enhancement of technology transfer, and distance-learning activities.

Research-intensive TRIF activities fall under Programs that capitalize on broad research and teaching strengths that meet important community needs:

- **Bioresearch**, which includes the BIO5 Institute for bioscience and biotechnology, the McKnight Brain Institute, and the Arizona Clinical and Translational Research and Educational Consortium;
- **Optical Sciences and Technology**, which has especially strong ties with industry; and
- **Water and Environmental Sustainability**, which includes Water Sustainability and Translational Environmental Research initiatives.

Two additional programs are funded by ABOR's TRIF Strategic Investments fund. The **UA-ASU Solar Energy Initiative**, collaborative with Arizona State University, provides funds for new research, develops existing knowledge for industrial enterprise, and develops educational and outreach programs related to solar energy. **Higher Education in Rural Southern Arizona** delivers training and border commerce programs in Arizona's border countries in a hybrid of on-site and distance education. Our final Program, in **Education and Infrastructure**, includes the Educator Development Plan, distance education through Anyplace Access for Arizonans, and on-line degree and certificate programs of the College of Nursing. Cross-cutting, foundational support for many activities is provided through Critical Core Infrastructure and Technology Transfer Infrastructure.

Contents

Meredith Hay, Ph.D.
Executive Vice President and Provost

Leslie P. Tolbert, Ph.D.
Vice President for Research, Graduate Studies, and Economic Development

PERFORMANCE MEASURES

	FY02 Actual	FY03 Actual	FY04 Actual	FY05 Actual	FY06 Actual	FY07 Proj	FY07 Actual	FY08 Proj	FY08 Actual	FY09 Proj	FY10 Proj	FY11 Proj
RETURN ON INVESTMENT (IN MILLIONS)												
Sponsored Awards	$ 14.78	$ 22.92	$ 50.19	$ 39.92	$ 46.79	$ 60.01	$ 72.59	$ 64.84	$ 96.35	$ 71.16	$ 75.96	$ 86.11
Gifts & Other Sources	$ 1.17	$ 5.11	$ 2.58	$ 0.55	$ 1.15	$ 2.00	$ 2.28	$ 2.26	$ 7.29	$ 2.96	$ 3.55	$ 4.25
Patent Royalty Income	$ 0.71	$ 1.08	$ 1.01	$ 1.18	$ 1.69	$ 1.58	$ 1.27	$ 1.73	$ 0.79	$ 1.89	$ 2.04	$ 2.19
TECHNOLOGY TRANSFER & COLLABORATIONS												
Invention Disclosures	109	168	141	167	118	182	161	165	152	174	186	198
Licenses & Options	18	99	42	57	33	42	35	44	45	46	53	61
Patent Applications	78	129	164	177	173	115	145	125	189	134	143	153
New Start-up Companies	12	2	7	9	8	15	4	6	6	8	9	13
Economic Impact Studies	0	0	1	1	0	1	2	1	0	1	1	1
WORKFORCE CONTRIBUTIONS												
Number of Graduate Students Enrolled		1183	1318	1378	1429	326	219	400	276	344	369	406
Number of Undergraduates Enrolled								20	20	56	66	76
Growth in Graduate Enrollment	35	20	26	4	29	3	15	4	(4)	3	4	4
Number of Graduate Degrees Awarded		266	280	285	420	58	29	40	56	45	53	61
New Graduates from ACIST related programs	0	69	256	224	100							
Growth in Optics-Related Undergraduate Enrolment	12	25	44	25	(12)	4	(40)	6	(5)	4	6	4
Number of Undergraduate Degrees Awarded	0	658	705	733	1014	0	0	0	0	0	20	30
Growth in Optics-Related Distance Learning Enrollment	3	48	32	32	23	5	(8)	8	(34)	8	10	10
Undergraduate Trainees	0	9	22	40	313	284	390	290	412	296	304	307
Graduate Trainees	1	16	54	75	379	339	368	361	478	375	401	421
Postdoctoral Trainees	2	2	3	3	140	158	156	154	167	159	162	179
ACIST graduates benefitting from minors in related areas	25	50	100	77	75							
Undergraduates taking non-technical minor	50	100	150	111	75							
Teachers Certified in Undergraduate Level Math & Science	7	12	22	20	24	40	24	40	25	30	30	30
Teachers Certified in Master's Level Math & Science	28	25	26	40	24	30	24	30	14	25	25	25
Teachers Certified in Agriculture	8	13	16	16	12	15	11	17	13	19	20	20
Total Student Credit Hours Produced								0	0	300	400	500
Number of Certificates Granted					9	50	0	58	85	99	135	173
Number of New Certificates Offered								0	0	2	2	2
Clinical Scholars Circle Members						40	44	50	52	80	120	150
Number of Affiliate Clinical Partners in ACTREC						9	3	14	32	21	34	47
New Faculty Hires	11	16	9	13	13	16	22	9	12	12	12	12
CURRICULUM INNOVATIONS & STUDENTS SERVED												
Number of Newly Revised Courses Offered				8	10	15	49	9	15	33	116	323
Number of Online Courses Offered	0	10	19	28	28	37	16	10	20	25	23	28
Curriculum Innovations program implemented	P1	39	40	6	2							
OUTREACH & EDUCATION												
Teachers/Educators Trained	0	524	880	1,032	1,217	1,063	1,419	1,179	1,470	1,220	1,253	1,294
K-12 Students Benefitting & Participating	2,150	29,390	32,730	38,545	77,352	42,925	84,474	69,200	74,727	75,000	80,850	85,900
Workshops, Seminars, & Conferences Supported	11	9	11	11	29	22	38	24	73	34	42	51
Users of Extension & Workplace Resources	0	493	58,000	103,000	156,055	200,000	31,415	250,000	225,503	300,000	350,000	400,000
Communities Assisted						5	7	10	9	10	10	10
Enrollments in Web & Hybrid Courses	0	20,450	24,528	35,353	77,557	39,373	104,715	41,085	2,154	2,434	2,734	3,024
DATA AND RESEARCH ACCESS & NETWORK												
Building Networks Brought to Standards						1	1	1	1	1	1	1
Supercomputer Usage						85-90%	90%	85-90%	78%	85-90%	85-90%	85-90%
Percentile-ranked access to advanced networks						75th or better	75th	75th or better	50th	75th or better	75th or better	75th or better

FINANCIAL INFORMATION

	FY02 Actual	FY03 Actual	FY04 Actual	FY05 Actual	FY06 Actual	FY07 Actual	FY08 Revised Budget	FY08 Actual	FY09 Revised Budget	FY10 Revised Budget	FY11 Revised Budget
UA CONSOLIDATED TRIF FINANCIAL SCHEDULE											
Bioresearch Program											
Revenue	4,837,623	7,565,242	5,617,329	8,741,603	8,332,381	9,231,367	10,960,407	10,606,580	9,600,725	8,311,977	8,447,633
Expenditures	2,075,899	7,199,779	3,852,669	6,220,377	7,645,577	5,878,772	10,960,407	900,889	9,600,725	8,311,977	8,447,633
Return on Investment	0.7:1	2.2:1	6.6:1	4.3:1	3.5:1	6.4:1	2.9:1	5.2:1	4.1:1	5.1:1	5.7:1
Optical Sciences and Technology Program											
Revenue	4,395,646	6,339,470	4,846,348	4,858,145	5,277,994	3,782,078	4,350,138	4,193,386	4,328,463	3,678,161	3,825,288
Expenditures	2,859,694	6,014,645	4,480,050	3,627,920	5,142,408	3,187,607	4,350,138	3,340,957	4,328,463	3,678,161	3,825,288
Return on Investment	4.0:1	0.6:1	4.5:1	0.7:1	1.9:1	6.8:1	3.8:1	9.4:1	3.9:1	4.7:1	4.6:1
Water and Environmental Sustainability Program											
Revenue	474,283	922,432	2,104,886	2,898,746	4,503,450	5,335,450	6,063,856	5,854,659	5,150,109	4,563,963	4,746,521
Expenditures	32,203	827,112	1,667,088	2,302,796	3,813,467	3,473,905	6,063,856	5,001,366	5,150,109	4,563,963	4,746,521
Return on Investment	-	2.2:1	1.2:1	1.5:1	0.9:1	3.0:1	2.5:1	3.8:1	2.3:1	2.8:1	2.9:1
Education and Infrastrucuture Program											
Revenue	2,233,439	3,468,894	3,076,975	3,170,342	3,549,332	8,718,378	10,203,132	9,721,719	10,429,549	10,329,865	10,832,465
Expenditures	1,070,234	2,903,876	2,523,545	2,706,933	3,151,044	8,160,936	10,203,132	9,100,061	10,429,549	10,329,865	10,832,465
Venture Fund											
Revenue	-	-	-	68,123	68,123	1,201,622	781,043	603,234	270,117	320,593	712,112
Expenditures	-	-	-	-	68,123	1,028,843	781,043	459,631	270,177	320,593	712,112
ASU-UA Joint Biomedical Research Fund											
Revenue	-	-	-	-	-	1,000,000	1,312,528	1,052,528	271,636	500,000	500,000
Expenditures	-	-	-	-	-	187,472	1,312,528	1,040,892	271,636	500,000	500,000
Planning for Phoenix Biomedical Campus											
Revenue	-	-	-	-	-	750,000	538,854	538,854	91,522	-	-
Expenditures	-	-	-	-	-	211,146	538,854	447,332	91,522	-	-
Expansion of Phoenix Biomedical Campus											
Revenue	-	-	-	-	-	2,145,000	1,448,808	1,269,679	1,589,051	1,140,000	1,140,000
Expenditures	-	-	-	-	-	2,009,192	1,448,808	920,628	1,589,051	1,140,000	1,140,000
ASU-UA Solar Energy Initiative											
Revenue	-	-	-	-	-	-	1,050,000	1,050,000	1,525,124	800,000	800,000
Expenditures	-	-	-	-	-	-	1,050,000	224,876	1,525,124	800,000	800,000
Return on Investment							N/A	N/A	1.3:1	3.5:1	8.5:1
Higher Education in Rural Southern Arizona											
Revenue	-	-	-	-	-	-	500,000	500,000	810,594	250,000	-
Expenditures	-	-	-	-	-	-	500,000	-	810,594	250,000	-
ACIST											
Revenue	3,864,703	5,813,439	5,747,018	5,271,272	4,307,688	-	-	-	-	-	-
Expenditures	2,182,290	4,286,510	4,859,477	4,350,084	3,876,167	-	-	-	-	-	-
Return on Investment	0.5:1	1.2:1	0.7:1	0.9:1	0.5:1	-	-	-	-	-	-

MANAGEMENT AND ADVISORY BOARDS

Management: All University of Arizona TRIF activities report to **Dr. Meredith Hay,** Executive Vice President and Provost and **Dr. Leslie P. Tolbert,** Vice President for Research, Graduate Studies, and Economic Development. The Directors of the University's TRIF Programs and the individual Initiatives that fall under them are listed below:

BIORESEARCH PROGRAM LEADER: Dr. Vicki Chandler, Director, The BIO5 Institute and Regents' Professor and Carl E. and Patricia Weiler Endowed Chair

ACTREC: Dr. Peter Lance , Professor, Medicine

BIO5: Dr. Vicki Chandler, Regents' Professor, BIO5 institute

Evelyn F. McKnight Brain Institute: Dr. Carol A. Barnes, Regents' Professor and Evelyn F. McKnight Endowed Professor, Psychology

EDUCATION AND INFRASTRUCTURE PROGRAM LEADER: Dr. Ronald Marx, Dean, College of Education

Anyplace Access for Arizonans: Mr. Michael Proctor, Senior Associate Vice President for University Outreach and International Programs

Critical Core Infrastructure: Ms. Michele Norin, CIO and Executive Director, University Information Technology Services

Nursing Online Programs: Dr. Carolyn Murdaugh, Interim Dean and Professor, College of Nursing

Technology Transfer Infrastructure: Mr. Bruce Wright, Associate Vice President for Economic Development, and **Dr. Patrick Jones,** Director, Office of Technology Transfer.

Workforce Initiative: The Educator Development Plan: Dr. Ronald Marx, Dean, College of Education

HIGHER EDUCATION IN RURAL SOUTHERN ARIZONA: Mr. Michael Proctor, Vice President for Outreach and International Programs

OPTICAL SCIENCES AND TECHNOLOGY PROGRAM: Dr. James C. Wyant, Dean and Professor, College of Optical Sciences

WATER AND ENVIRONMENTAL SUSTAINABILITY PROGRAM:

Translational Environmental Research: Dr. Jonathan Overpeck, Director, Institute for the Study of Planet Earth

Water Sustainability: Dr. Sharon Megdal, Director, Water Resources Research Center, College of Agriculture and Life Sciences

ASU-UA JOINT BIOMEDICAL RESEARCH FUND: Dr. Leslie P. Tolbert, Vice President for Research, Graduate Studies, and Economic Development

UA-ASU SOLAR ENERGY INITIATIVE: Dr. Joseph Simmons, Department Head and Professor, Materials Science and Engineering

EXPANSION OF PHOENIX BIOMEDICAL CAMPUS: Mr. Joel Valdez, Senior Vice President, Business Affairs

PLANNING FOR PHOENIX BIOMEDICAL CAMPUS: Mr. Joel Valdez, Senior Vice President, Business Affairs

VENTURE FUND: Dr. Meredith Hay, Executive Vice President and Provost, and **Dr. Leslie P. Tolbert,** Vice President for Research, Graduate Studies, and Economic Development

Advisory Boards: Each University of Arizona TRIF Initiative has its own Advisory Board, composed of experts in the community who can help to steer activities toward maximum societal impact. The four TRIF Programs have Advisory Boards that comprise select members from the Boards of the individual initiatives. within the Programs. For additional information, please refer to page 4 of the brochures for the individual TRIF Programs.

LEARN MORE

- Contact Dr. Leslie P. Tolbert, Vice President for Research, Graduate Studies, and Economic Development, at tolbert@email.arizona.edu or 520-621-3513.

THE UNIVERSITY OF ARIZONA

TECHNOLOGY AND RESEARCH INITIATIVE FUND (TRIF)

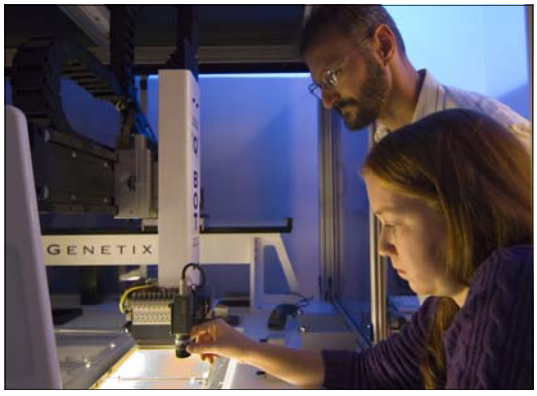
BIORESEARCH PROGRAM

THE UNIVERSITY OF ARIZONA
Arizona's First University

September 1, 2008

TRIF UA Bioresearch Program faculty, students, and staff tackle complex and pressing problems of critical importance to Arizona and the nation. They do so by conducting leading edge interdisciplinary research and training initiatives, and putting in place crucial technology platforms and clinical trials infrastructure.

UA's TRIF-supported scientists are developing new ways to diagnose, treat and prevent disease; uncovering the biological basis of cognition and developing methods to reduce the negative impact of aging; and improving agriculture to better feed the world while maintaining livable environments. Through its research programs in bioengineering, drug discovery, genome structure and function, quantitative biology, and the neural basis for memory changes, scientists address cancer, diabetes, heart, neurological and respiratory diseases, cognition and aging. They develop new diagnostic tools; improve yield and nutritional quality of crops; and develop plants as sources of pharmaceuticals.



The UA Bioresearch Program is building the infrastructure to transfer research breakthroughs into applications that directly benefit society. A key aspect is the training of a new generation of clinical and translational scientists, who are bridging the gap between basic and clinical sciences and who will transform research discoveries into new medicines to treat patients and preserve health. This requires the creation of statewide structures for clinical and translational research, application of biomedical informatics and enabling technologies, and financial support of teams of clinical and translational investigators. A second key aspect is moving discoveries to market through innovative programs and multiple partnerships with the private sector. A third key aspect is improving science education in K-12 and training the next generation of interdisciplinary scientists.

Vicki Chandler has overall responsibility for the TRIF UA Bioresearch Program, which supports three initiatives: the BIO5 Institute (directed by Vicki Chandler), the McKnight Brain Institute (directed by Carol Barnes) and ACTREC (Arizona Clinical and Translational Research and Education Consortium, directed by M. Peter Lance). Measures and goals are combined for all three initiatives.

Contents

Vicki L. Chandler, Ph.D.
Director, BIO5 Institute
Regents' Professor
Carl E. and Patricia Weiler
Endowed Chair

PERFORMANCE MEASURES

	FY 02 Actual	FY03 Actual	FY04 Actual	FY05 Actual	FY06 Actual	FY07 Proj	FY07 Actual	FY 08 Proj	FY 08 Actual	FY 09 Proj	FY10 Proj	FY11 Proj
RETURN ON INVESTMENT												
Sponsored Awards: ($ in millions)	$1.4	$15.7	$25.3	$26.5	$26.9	$29.9	$36.3	$ 30.1	$ 45.9	$ 38.1	$ 41.2	$ 46.3
Federal Awards	$1.4	$15.6	$25.1	$26.2	$26.5	$28.9	$35.3	$ 27.1	$ 37.8	$ 33.1	$ 33.2	$ 33.3
Industrial Awards		$0.1	$0.2	$0.3	$0.4	$1.0	$1.0	$ 1.5	$ 0.6	$ 2.5	$ 3.5	$ 6.5
Other Awards								$ 1.5	$ 7.5	$ 2.5	$ 4.5	$ 6.5
Gifts & Other Sources					$0.2	$1.1	$1.4	$ 1.2	$ 1.3	$ 1.3	$ 1.4	$ 1.5
TECHNOLOGY TRANSFER & COLLABORATIONS												
Invention Disclosures[1]		57	46	65	30	22	30	24	23	27	28	29
Licenses & Options[1]		75	17	25	7	4	4	5	4	6	7	8
Patent Applications	1	37	63	50	37							
New Start-up Companies					1	1	1	0	0	2	0	2
WORKFORCE CONTRIBUTIONS												
Number of Graduate Students Enrolled		1,183	1,299	1,341	1,268							
Number of Undergraduate Degrees Awarded		658	705	733	1,014							
Number of Graduate Degrees Awarded		266	280	285	420							
Undergraduate Trainees					273	242	338	247	348	253	258	261
Graduate Trainees					290	254	300	266	380	280	303	323
Postdoctoral Trainees					137	154	148	146	161	150	151	166
New Faculty Hires	7	8	8	6	6	5	10	5	8	8	8	8
Clinical Scholars Circle Members						40	44	50	52	80	120	150
Number of Affiliate Clinical Partners in ACTREC						9	3	14	32	21	34	47
OUTREACH & EDUCATION												
Teachers/Educators Trained					220	113	289	200	730	200	200	200
K-12 Students Benefitting & Participating					35,082	9,175	45,342	30,000	40,007	30,000	30,000	30,000
Workshops, Seminars, & Conferences Supported	3	3	3	3	10	11	12	11	47	19	26	35

[1]FY03 to FY06 activities include all UA Life Sciences; FY06 to FY08 and projections are BIO5 activities only.

PERFORMANCE ANALYSIS

The Bioresearch Program funds are significantly leveraged to improve Arizonans' lives through conducting leading edge basic and applied research and training programs, moving discoveries to market and increasing the number of businesses in Arizona, preparing students for careers in science, technology and medicine, and improving K-12 science education.

RETURN ON INVESTMENT (ROI)

Achievements of faculty members who are or have been directly supported by TRIF are reported. Bioresearch Program faculty continue to be nationally competitive in garnering federal research dollars, in spite of very tight federal budgets. For example, outstanding faculty and the BIO5 Institute's infrastructure led to a $50 million NSF grant, ($6.6M in FY08), to establish the iPlant Collaborative. The $1 million match each year from McKnight Brain Research Foundation provides a firm base for the McKnight Brain Institute, and ACTREC is providing invaluable infrastructure to support the CATS Research Center that opened January 2008, and the Health Research Alliance Arizona (HRAA) consortium that is submitting a second statewide application for a NIH Clinical Translational Science Award (CTSA) in October 2008.

TECHNOLOGY TRANSFER AND INDUSTRY COLLABORATION

The commercialization of new products and processes and the expansion of the biotechnology industry is facilitated through interactions and collaborations among faculty, students, and industrial scientists and making our leading-edge facilities available

FINANCIAL INFORMATION

	FY02 Actual	FY03 Actual	FY04 Actual	FY05 Actual	FY06 Actual	FY07 Actual	FY08 Revised Budget	FY08 Actual	FY09 Revised Budget	FY10 Revised Budget	FY11 Revised Budget
REVENUE											
Carry Forward	$ -	$ 2,761,724	$ 365,463	$1,764,660	$ 2,521,226	$ 2,586,804	$ 3,352,595	$ 3,352,595	$ 1,605,691	$ -	$ -
New TRIF Revenue	$ 4,837,623	$ 4,803,518	$ 5,251,866	$6,976,943	$ 5,811,155	$ 6,644,563	$ 7,107,812	$ 6,753,985	$ 7,495,034	$7,811,977	$7,947,633
Regents Innovation Fund	$ -	$ -	$ -	$ -	$ -	$ -	$ 500,000	$ 500,000	$ 500,000	$ 500,000	$ 500,000
TOTAL REVENUE	**$ 4,837,623**	**$ 7,565,242**	**$ 5,617,329**	**$8,741,603**	**$8,332,381**	**$ 9,231,367**	**$10,960,407**	**$10,606,580**	**$ 9,600,725**	**$8,311,977**	**$8,447,633**
EXPENDITURES											
Personal Services	$ 620,100	$ 3,325,935	$ 308,333	$2,594,735	$3,604,324	$ 3,350,614	$ 8,945,207	$ 6,199,528	$ 7,834,755	$6,568,007	$6,703,163
All Other Operating Expenses	$ 1,195,799	$ 3,713,844	$ 1,544,336	$1,475,642	$2,353,434	$ 2,359,151	$ 1,165,200	$ 3,115,606	$ 1,265,970	$1,243,970	$1,244,470
Capital	$ 260,000	$ 160,000	$ 2,000,000	$2,150,000	$1,687,819	$ 169,007	$ 350,000	$ (316,028)	$ -	$ -	$ -
Regents Innovation Fund	$ -	$ -	$ -	$ -	$ -	$ -	$ 500,000	$ 1,783	$ 500,000	$ 500,000	$ 500,000
TOTAL EXPENDITURES	**$ 2,075,899**	**$ 7,199,779**	**$ 3,852,669**	**$6,220,377**	**$7,645,577**	**$ 5,878,772**	**$10,960,407**	**$ 9,000,889**	**$ 9,600,725**	**$8,311,977**	**$8,447,633**
Return on Investment	0.7:1	2.2:1	6.6:1	4.3:1	3.5:1	6.4:1	2.9:1	5.2:1	4.8:1	5.1:1	5.7:1

Notes:
1)Carry forward for FY07 consists of the following: Carry forward of $686,804 from BIO5 Institute; Over-realized revenue of $900,000 from McKnight Brain Institute; and Over-realized revenue of $1,000,000 from Arizona Clinical and Translational Research.
2) TRIF Regents Innovation Fund for the HRAA CTSA statewide effort approved at the December 6—7, 2007 ABOR meeting.
3) Return on Investment (ROI) for FY 2007-2011 was calculated using a new methodology approved by Arizona Board of Regents in March 2007, which is different from the ROI methodology used to calculate ROI in FY 2002-2006.
4) Funding of the Arizona Board of Regents' Technology and Research Initiative Fund (TRIF) is provided by a 0.6 percent increase in the Arizona sales tax rate approved by the voters through Proposition 301 on the November 2000 general election ballot.

to industry scientists. Researchers continue to generate substantial invention disclosures and licenses & options in the life sciences arena. Examples of recent innovation include new clinical trial funding for a valley fever therapeutic, and clinical trials for FDA approval of detection of highly infectious bacteria endemic in hospital settings.

WORKFORCE CONTRIBUTIONS

A critical component of economic development is a workforce to meet the needs of Arizona's growing bioscience and health industries. Our workforce initiatives from high school through post-graduate are developed in response to industry needs and provide students with exciting experiences that enhance their learning and career opportunities. Our internships expose students to industry settings and community college, high school students and teachers to cutting-edge research at the university. New graduate programs are training the next generation of interdisciplinary researchers. The translational scholars program and clinical scholar's circle, bringing together basic research faculty mentors and clinical scholars, have been established.

K-12 SCIENCE AND MATH EDUCATION

To enhance K-12 science and math education, we provide teachers and students in schools all over Arizona access to UA science and math resources and opportunities to participate in hands-on research experiences. We lead workshops and symposia for teachers and provide in-classroom support to assist them in implementing new, exciting curricula that meet state standards. Our programs are externally reviewed and receive significant federal funding, reported under ROI.

EDUCATIONAL OUTREACH

National and international scientific meetings have been organized to bring together top investigators in the world. For example, in March 2008, BIO5 hosted the Synthetic Biology Symposium on the UA campus co-sponsored with the Biodesign Institute at ASU. In April 2008, the McKnight Brain Institute hosted the first inter-institutional meeting to foster collaboration among four universities' brain institutes. Our numerous public outreach events raise awareness of issues concerning biotechnology, health and disease, and aging.

GOALS

- Conduct state-of-the-art interdisciplinary bioresearch and translate it into tangible human benefit.
- Foster collaborative research between UA faculty and researchers within other Arizona institutions.
- Develop leading-edge interdisciplinary education and training programs for undergraduate and graduate students.
- Promote a translational scholars program and a clinical scholar's circle, which brings together cross-disciplinary senior faculty mentors and clinician scholars in research collaborations.
- Improve K-12 science education by providing teachers and students hands-on experiences in 21st century biology.
- Facilitate interactions and collaborations between researchers and industry to foster the development of new companies in Arizona.
- Strengthen UA's clinical and translational research infrastructure, including core support for study design, data management and bioinformatics, contracts, and human subjects research (Institutional Review Board interface, patient management, long distance clinical collaboration, good clinical practice, and good laboratory practice).
- Enable a statewide clinical science and trial industry by facilitating the development of small businesses that will provide core services and management support to industrial and academic partners interested in performing clinical studies in Arizona.
- Organize conferences to promote collaborative research initiatives and education on the national and international level.

MANAGEMENT

BIO5 Director **Vicki Chandler** reports to Dr. Leslie Tolbert, Vice President for Research, Graduate Studies and Economic Development. Dr. Chandler has overall responsibility for the TRIF UA Bioresearch Program and directs BIO5; **Carol Barnes** directs the McKnight Brain Institute, and **M. Peter Lance** directs ACTREC.

BOARDS

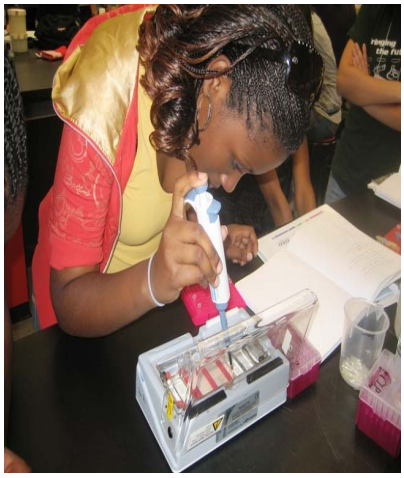
The TRIF Bioresearch Program has a single oversight board consisting of three business leaders in the biotechnology industry, which reviews the reports from each initiative advisory board(s) with the appropriate expertise for evaluating the initiative.

The Oversight Board for the UA TRIF Bioresearch Program consists of **Robert Morrison,** Executive Director, Desert Angels; **Jack Dean,** PhD, Past President of U.S. Science and Medical Affairs, Sanofi-Aventis Pharmaceuticals; **Joseph Jasinski,** PhD, Program Director, IBM Health Care & Life Sciences.

BIO5's External Business Advisory Board is comprised of 14 business leaders from the Tucson region, state and nation. The Science Advisory Board is comprised of six nationally renowned scientists in the fields of research represented at BIO5. BIO5's internal advisory committees are made up of Deans and faculty leadership from the colleges that partner with BIO5.

McKnight Brain Institute's external review group is the four Trustees of the McKnight Brain Research Foundation. Its Scientific Advisory Board is composed of seven scientists with expertise and significant research interests in aging and memory.

The UA ACTREC Advisory Board is composed of the Provost and Vice President of Research of the UA, the Director of BIO5 and the Deans of the seven colleges that carry out biomedical research.



LEARN MORE

- Contact **Dr. Vicki Chandler,** Director, Bioresearch Program and Director, BIO5, The University of Arizona, at chandler@ag.arizona.edu or 520-626-4272. Visit the BIO5 website at www.bio5.org
- Contact **Dr. Peter Lance,** Director, Arizona Clinical and Translational Research and Education Consortium, The University of Arizona, at plance@azcc.arizona.edu or 520-626-4492
- Contact **Dr. Carol Barnes,** Director, Evelyn F. McKnight Brain Institute, The University of Arizona, at carol@nsma.arizona.edu or 520-626-2312
- Contact **Dr. Leslie Tolbert,** Vice President for Research, Graduate Studies and Economic Development, The University of Arizona, at tolbert@email.arizona.edu or 520-621-3513

THE UNIVERSITY OF ARIZONA

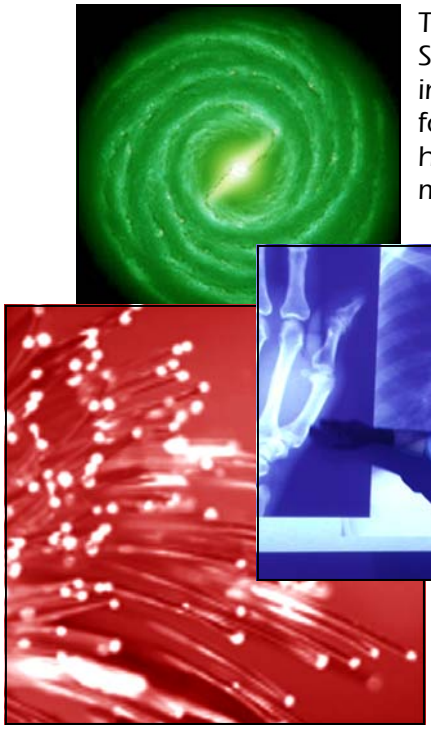
TECHNOLOGY AND RESEARCH INITIATIVE FUND

OPTICAL SCIENCES AND TECHNOLOGY PROGRAM

September 1, 2008

OPTICAL SCIENCES AND TECHNOLOGY INITIATIVE

The University of Arizona College of Optical Sciences is home to the TRIF Optical Sciences and Technology Program. The program is multidisciplinary, with the College of Optical Sciences forming the core of the initiative. Through joint faculty appointments, cooperative research initiatives, and multidisciplinary outreach events, the optics college partners with the College of Science, the College of Engineering, and the College of Medicine to develop new technologies that will power the future of nearly every field of science and technology.



The impact of optics on the economy of the State of Arizona and the country as a whole in the coming years is staggering. The market for optics in communication, medical care, heavy industry, sensing and security, and military exceeds $200 billion per year.

The mission of the TRIF Optical Sciences and Technology Program is to further enhance the University's international preeminent optics program through the development of novel initiatives in optics education, research, workforce development, and industry outreach.

The optics program is multidisciplinary, with the College of Optical Sciences forming the core. The program targets three critical areas: photonics (red), imaging (blue), and astronomical optics

Contents

James C. Wyant, Ph.D.
Dean, College of Optical Sciences

PERFORMANCE MEASURES

PERFORMANCE MEASURES ($ IN MILLIONS)	FY02 Actual	FY03 Actual	FY04 Actual	FY05 Actual	FY06 Actual	FY07 Proj	FY07 Actual	FY08 Proj	FY08 Actual	FY09 Proj	FY10 Proj	FY11 Proj
RETURN ON INVESTMENT												
Sponsored Awards	$11.325	$3.398	$19.94	$2.428	$9.677	$16.000	$21.749	$16.350	$31.042	$16.700	$17.050	$17.400
Gifts & Other Sources	$ 0.096	$0.019	$0.110	$0.019	$0.080	$ 0.017	$ 0.041	$ 0.034	$ 0.224	$ 0.228	$ 0.232	$ 0.236
Patent Royalty Income						$ 0.055	$ 0.050	$ 0.060	$ 0.102	$ 0.065	$ 0.070	$ 0.075
WORKFORCE CONTRIBUTIONS												
New Faculty Hires	3	6	0	1	1	2	3	2	1	2	2	2
Growth in optics-related undergraduate enrollment	12	25	44	25	(12)	4	(40)	6	(5)	4	6	4
Growth in optics-related graduate enrollment	30	15	21	0	23	3	15	4	(4)	3	4	4
Growth in optics-related distance learning enrollment	3	48	32	32	23	5	(8)	8	(34)	8	10	10
TECHNOLOGY TRANSFER & COLLABORATIONS												
New Start-up Companies	2	1	0	0	1	0	0	1	1	0	1	1
Patent Applications	15	15	10	17	23	7	21	8	45	15	17	20
Invention Disclosures						25	27	27	30	29	31	33
OUTREACH & EDUCATION												
Workshops, Seminars and Conferences Supported	7	5	6	6	15	5	17	5	8	5	6	6

Explanation of ROI Calculations:

ROI calculation for FY02 through FY06: Annual New federally funded major optics projects plus New industrial funded major optics projects plus New affiliate sponsors obtained (in $'s) divided by annual TRIF Optical Sciences and Technology Program Total Expenditures .

ROI calculation for FY07 to FY11: Annual Sponsored Awards plus Patent Royal income plus Gifts & Other Sources divided by annual TRIF Optical Sciences and Technology Program Total Expenditures. Sponsored Awards, Patent Royalty income and Gifts & Other Sources (i.e. Affiliates funding) included for university personnel receiving TRIF Optical Sciences and Technology Program funding as defined in the ABOR approved ROI Formula

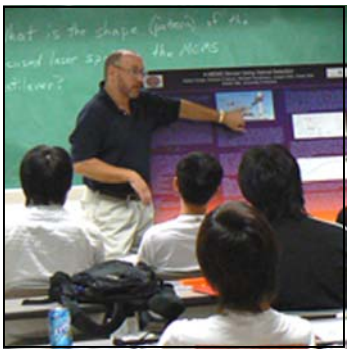
Note: Undergraduate enrollment decline is due to increased college admission requirements and large undergraduate graduating classes in FY08. The College of Optical Sciences admitted 61 graduate students for Fall 2008 which is above average enrollment.

PERFORMANCE ANALYSIS

Research and Technology Development portion of the TRIF Optical Sciences and Technology Program focuses on development of novel photonic and imaging/sensor components along with state of the art astronomical optics through the use of seed funding and matching funds for projects that are designed for prototyping and/or proof of concept for early stage technologies. The number of externally funded research awards and technology transfer transactions are direct measures of this activity.

Workforce Development is a major objective of the TRIF Optical Sciences and Technology Program at the University of Arizona. The measures of the optics workforce development include the development of two-year degree programs at community colleges, expansion of undergraduate/ graduate and distance learning programs, fellowships to support graduate research projects, development of new courses for industrial training purposes, and outreach to K-12.

Technology Transfer and Industry Outreach is defined by collaborations with our optics industry partners in the development and commercialization of new technology, affiliate sponsorships, development of industry related training courses and distance learning program, and new start-up companies.



OSC's Dr. Mike Nofziger hosts a week-long summer school for students from the University of Toyota.

Educational Outreach is intended to introduce students to various career opportunities in Optics through visits to K-12 and community colleges with a special focus on under-represented populations, workshops and optics summer camps, and symposiums in imaging and photonics.

FINANCIAL INFORMATION

	FY02 Actual	FY03 Actual	FY04 Actual	FY05 Actual	FY06 Actual	FY07 Actual	FY08 Revised Budget	FY08 Actual	FY09 Revised Budget	FY10 Revised Budget	FY11 Revised Budget
REVENUE											
Carry Forward	$ -	$ 1,535,952	$ 324,825	$ 366,298	$ 1,230,225	$ 135,586	$ 594,471	$ 594,471	$ 852,429	$ -	$ -
New TRIF Revenue	$ 4,395,646	$ 4,803,518	$ 4,521,523	$ 4,491,847	$ 4,047,769	$ 3,646,492	$ 3,755,667	$ 3,598,915	$ 3,476,034	$ 3,678,161	$ 3,825,288
TOTAL REVENUE	$ 4,395,646	$ 6,339,470	$ 4,846,348	$ 4,858,145	$ 5,277,994	$ 3,782,078	$ 4,350,138	$ 4,193,386	$ 4,328,463	$ 3,678,161	$ 3,825,288
EXPENDITURES											
Personal Services	$ 1,004,904	$ 1,781,270	$ 2,688,414	$ 2,209,066	$ 2,575,898	$ 2,143,214	$ 3,764,271	$ 2,143,012	$ 3,842,346	$ 3,266,294	$ 3,491,346
All Other Operating Expenses	$ 854,790	$ 3,233,375	$ 791,636	$ 418,854	$ 1, 566,510	$ 1,044,393	$ 585,867	$ 1,197,945	$ 486,117	$ 411,867	$ 333,942
Capital	$ 1,000,000	$ 1,000,000	$ 1,000,000	$ 1,000,000	$ 1,000,000	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL EXPENDITURES	$ 2,859,694	$ 6,014,645	$ 4,480,050	$ 3,627,920	$ 5,142,408	$ 3,187,607	$ 4,350,138	$ 3,340,957	$ 4,328,463	$ 3,678,161	$ 3,825,288
Return on Investment	4.0:1	0.6:1	4.5:1	0.7:1	1.9:1	6.8:1	3.8:1	9.4:1	3.9:1	4.7:1	4.6:1

Notes:

1) Return on investment (ROI) for FY 2007-2011 was calculated using a new methodology approved by the Arizona Board of Regents in March 2007, which is different from the ROI methodology used to calculate ROI in FY 2002-2006.

2) Funding of the Arizona Board of Regents' Technology and Research Initiative Fund (TRIF) is provided by a 0.6 percent increase in the Arizona sales tax rate approved by the voters through Proposition 301 on the November 2000 general election ballot.

GOALS

The TRIF Optical Sciences and Technology Program will promote the field of optics by:

- The development of new technologies in Photonics, Imaging and Sensors and Astronomical Optics
- Working closely with our industry partners and the University Office of Technology Transfer to identify research products that have potential for technology transfer
- Increasing the number of Optics related spin-off companies

(Continued on page 4)

GOALS

(Continued from page 3)

- Supporting workforce development through continued expansion of instructional and outreach programs in K-12 and community colleges, providing fellowships to support graduate student research in imaging and photonics, expansion of the graduate, undergraduate, and distance learning Optics programs, development of new course curriculums to meet industry needs, and further expansion of the MBA/Masters in Optics program
- Developing a special focus on under-represented populations to introduce them to optics careers
- Increasing the number of world-class faculty in optics and the number of major optics research projects

MANAGEMENT

Dr. James C. Wyant, Chair of the TRIF Optics Committee**,** reports to **Dr. Leslie Tolbert**, Vice President for Research, Graduate Studies and Economic Development, for the TRIF Optics Program.

ADVISORY BOARDS

TRIF Optics Committee

James C. Wyant (Chair): Dean and Professor; Optical Sciences, Professor; Electrical & Computer Engineering. **Arthur F. Gmitro:** Professor; Radiology and Optical Sciences. **Thomas Peterson:** Dean; Engineering, Professor; Chemical & Environmental Engineering. **Nasser Peyghambarian:** Professor; Optical Sciences, Materials Science & Engineering, Chair; Lasers & Photonics. **Joaquin Ruiz:** Dean; Science, Professor; Geosciences.

External Review Committee

Bruce Wright (Chair): UA Associate Vice President; Economic Development. **Robert Breault:** CEO; Breault Research Organization. **Richard Juergens:** Engineering Manager; Raytheon. **Glenn Sincerbox:** Professor Emeritus; Optical Sciences.

TRIF Astronomical Optics Faculty Advisory Committee

Peter Strittmatter (Chair): Department Head; Astronomy, Regents' Professor; Astronomy, Director; Steward Observatory. **J. Roger P. Angel:** Regents' Professor; Astronomy and Optical Sciences. **James H. Burge:** Associate Professor; Optical Sciences and Astronomy. **Jose Sasian:** Professor; Optical Sciences and Astronomy.

TRIF Optics/Imaging Faculty Advisory Committee

Arthur F. Gmitro (Chair): Professor; Radiology and Optical Sciences. **J. Roger P. Angel:** Regents' Professor; Astronomy and Optical Sciences. **Jennifer K. Barton:** Associate Professor; Biomedical Engineering, Electrical & Computer Engineering, Optical Sciences. **Robert H. Brown:** Professor; Planetary Sciences. **Eustace L. Dereniak:** Professor; Optical Sciences. **Michael R. Descour:** Associate Professor; Optical Sciences. **James T. Schwiegerling:** Associate Professor; Ophthalmology and Optical Sciences.

TRIF Optics/Photonics Faculty Advisory Committee

Nasser Peyghambarian (Chair): Professor; Optical Sciences, Materials Science & Engineering, Chair; Lasers & Photonics. **Neal R. Armstrong:** Professor; Chemistry and Optical Sciences. **Jerome V. Moloney:** Professor; Applied Mathematics and Optical Sciences. **Joseph Simmons:** Department Head and Professor; Materials Science & Engineering, Professor; Optical Sciences. **Masud Mansuripur:** Professor; Optical Sciences, Chair; Optical Data Storage Center.

LEARN MORE

- Contact **Dr. James C. Wyant**, Dean, College of Optical Sciences at jcwyant@optics.arizona.edu or 520-621-2448
- Contact **Dr. Leslie Tolbert,** Vice President for Research, Graduate Studies and Economic Development, at tolbert@email.arizona.edu or 520-621-3513
- Visit the College of Optical Sciences Website at www.optics.arizona.edu

THE UNIVERSITY OF ARIZONA

TECHNOLOGY AND RESEARCH INITIATIVE FUND (TRIF)

WATER AND ENVIRONMENTAL SUSTAINABILITY

THE UNIVERSITY OF ARIZONA
Arizona's First University

September 1, 2008

Arizona's natural resources, most critically its water supplies, are crucial to the state's economy and to the health and well-being of its residents. The most pressing environmental issues of our time are especially apparent in arid and semi-arid regions of the globe where population growth is most rapid and life-supporting resources are most limited. As the leading university in the world with expertise in water, as well as being in the forefront with regard to interdisciplinary work in the earth sciences and environmental studies, the University of Arizona's Water & Environmental Sustainability Program (WESP) is uniquely positioned to use its strengths to support university, industry, and government collaborations in research, technology, education, and outreach to resolve water and environmental resource challenges. The mission of the WESP is to provide science-based technical, economic, legal, and policy expertise, necessary for water and environmental sustainability in Arizona and other semi-arid regions facing increasing demands on natural resources and the uncertainties of environmental change. It is anticipated that the knowledge and techniques generated will have world-wide applications that will stimulate the economy and produce far-reaching societal benefits.

Together, the two components of WESP, the Water Sustainability Program (WSP) and the Translational Environmental Research (TER) initiative will create synergies for UA to be a world leader in interdisciplinary, cutting-edge water and environmental research and in applying results to resolve resource challenges at the state, national, and international level.

Contents

Sharon Megdal, Ph.D.
Director, Water and Environmental Sustainability Program
and
Director, Water Sustainability Program

	FY02 Actual	FY03 Actual	FY04 Actual	FY05 Actual	FY06 Actual	FY07 Proj	FY07 Actual	FY08 Proj	FY08 Actual	FY09 Proj	FY10 Proj	FY11 Proj
RETURN ON INVESTMENT												
Sponsored Awards: ($M)[1]	$ 1.9	$ 2.6	$ 2.4	$ 3.4	$ 3.33	$ 12.2	$ 10.51	$ 15.2	$ 14.7	$ 11.8	$ 12.8	$ 13.8
Gifts & Other Sources ($M)	$ 0.00	$ 0.012	$ 0.014	$ 0.042	$ 0.09	$ 0.00	$ 0.087	$ 0.085	$ 4.650	$ 0.09	$ 0.095	$ 0.1
TECHNOLOGY TRANSFER & COLLABORATIONS												
Licenses & Options[2]							1	1	0	2	4	6
Patent Applications[3]				4	4	3	3	2	1	2	2	2
WORKFORCE CONTRIBUTIONS												
Number of Graduate Students Enrolled[4]						10	28	38	33	38	38	48
Undergraduate Trainees[5]	0	9	22	40	40	42	52	43	64	43	46	46
Graduate Trainees[6]	1	16	54	75	89	85	68	95	98	95	98	98
Postdoctoral Trainees[7]	2	2	3	3	3	4	8	7	6	7	7	7
New Faculty Hires	1	0	1	1	4	9	9	2	3	2	2	2
CURRICULUM INNOVATIONS & STUDENTS SERVED												
Number of Newly Revised Courses Offered[8]						1	1	1	1	1	1	1
OUTREACH & EDUCATION												
Teachers/Educators Trained[9]	0	524	880	1,032	997	950	1,130	979	740	1,008	1,035	1,070
K-12 Students Benefiting & Participating[10]	0	26,890	29,530	34,745	39,270	29,500	36,182	30,600	32,120	31,700	32,800	33,900
Communities Assisted						5	7	10	9	10	10	10
Workshops, Seminars, & Conferences Supported[11]	1	1	1	1	2	4	5	6	13	6	6	6

[1] Total FY08 onward reflects combined total of Translational Environmental Research Initiative that began Jan/07 and the Water Sustainability Program awards previously broken out under Government Grants Received and Additional Funding Obtained. Awards to water centers retroactively added to Actuals prior to FY07. Merged metrics for Translational Environmental Research include Federal Grants received; Private Foundation/Gifts; Other Sources; and Training Grants.

[2] New metric from Translational Environmental Research initiative.

[3] Patent Applications was previously labeled Patent Applications in Process.

[4] Refers to graduate students enrolled in interdisciplinary environmental studies/earth sciences programs and the Graduate Water Policy Certificate program.

[5] Previously labeled Undergraduate Employment/Research Opportunities; includes undergraduate students working on water related TRIF funded research projects, internships, and fellowships.

[6] Previously labeled Graduate Employment/Research Opportunities; includes graduate students working on water related TRIF funded research projects, internships, and fellowships

[7] Previously labeled Postgraduate Employment/Research opportunities; includes postdoctoral candidates working on water related TRIF funded research projects

[8] Number of Newly Revised Courses Offered was formerly called New Water Related University Courses/Certificates/Degrees.

[9] Teachers/Educators Trained FY08 forward includes previous metrics Teachers Trained, Facilitators Trained, and Teachers involved in outreach activities related to water education.

[10] FY08 forward includes previous K-12 Students benefiting (in classrooms) metric, as well as K-12 Students Participating in Water Festivals, and K-12 Students participating in outreach activities (non-formal settings) metric.

[11] Workshops, Seminars & Conferences Supported, FY07 forward, is a combination of WSP and TER initiatives.

* Industry collaborators/Private sector collaborations/Public sector collaborations; Interdisciplinary curriculum modules developed; Communities participating in K-12 outreach activities; Publications produced; Other knowledge transfer products; and Presentations/exhibits metrics were discontinued.

PERFORMANCE ANALYSIS

Return on Investment (ROI): WESP centers, programs and projects are expected to receive sponsored awards and gifts from federal, state and county agencies, municipalities and the private sector, in excess of $10M/per year through FY2011. These funds provide an ROI of greater than 2:1 on the TRIF investment in water and the environment.

Technology Transfer & Industry Collaboration: WESP researchers work to develop and commercialize real world sustainable technologies, measured by licenses and options and patent applications facilitated by the UA Office of Technology Transfer.

Workforce Contributions. Undergraduate, graduate and post-doctoral students gain invaluable experience and career training through employment, assistantships, fellowships and internships. The Interdisciplinary Environmental Studies and Earth Sciences and Water Policy Certificate programs prepare motivated graduate students in specialized areas. New faculty hires help to strengthen UA's ability to tackle complex state water and environmental problems, train students, and compete for new research funds.

Curriculum Innovations: Each year WESP faculty develop new interdisciplinary course offerings to address pressing challenges in water and environmental resources.

Outreach & Education: Over 30,000 K-12 students and more than 700 teachers per year benefit from high quality water education programs across the state. Many workshops, seminars and conferences provide valuable means to disseminate knowledge to decision makers, professionals and the public. Arizona communities across the state benefit from tailored water management assistance.

Jonathan Overpeck, Ph.D.
Director, Translational
Environmental Research

GOALS

WESP's goal is to strengthen research, education, and outreach efforts in water and environmental resources at the University of Arizona to help ensure a sustainable, high-quality water supply for economic development and enhanced quality of life for all of Arizona.

WESP is leveraging its strengths in academia, research, and environmental technology to create several outcomes that include:

- practical education for grades K-12 to create general awareness of issues, problems, and career -related training;
- internationally recognized research and technology transfer initiatives;
- a thriving industry cluster, which includes both private sector and public sector entities, supported by a skilled workforce that is educated at the University of Arizona; and
- stronger relationships across disciplines within the University of Arizona, which will result in research innovations to create new business initiatives.

FINANCIAL INFORMATION

	FY02 Actual	FY03 Actual	FY04 Actual	FY05 Actual	FY06 Actual	FY07 Actual	FY08 Revised Budget	FY08 Actual	FY09 Revised Budget	FY10 Revised Budget	FY11 Revised Budget
REVENUE											
Carry Forward	$ -	$ 442,080	$ 95,320	$ 437,798	$ 595,950	$ 689,983	$ 1,861,545	$ 1,861,545	$ 853,293	$ -	$ -
New TRIF Revenue	$ 474,283	$ 480,352	$ 2,009,566	$2,460,948	$ 3,907,500	$ 4,645,467	$ 4,202,311	$ 3,993,114	$ 4,296,816	$ 4,563,963	$ 4,746,521
TOTAL REVENUE	**$ 474,283**	**$ 922,432**	**$ 2,104,886**	**$2,898,746**	**$ 4,503,450**	**$ 5,335,450**	**$ 6,063,856**	**$ 5,854,659**	**$ 5,150,109**	**$ 4,563,963**	**$ 4,746,521**
EXPENDITURES											
Personal Services	$ 28,757	$ 502,244	$ 1,135,364	$ 1,585,695	$ 1,917,386	$ 2,447,059	$ 5,417,072	$ 3,219,837	$ 4,642,826	$ 3,991,602	$ 4,169,695
All Other Operating Expenses	$ 3,446	$ 324,868	$ 531,724	$ 717,101	$ 1,336,400	$ 1,026,846	$ 501,164	$ 1,751,464	$ 507,283	$ 572,361	$ 576,826
Capital	$ -	$ -	$ -	$ -	$ 559,681	$ -	$ 145,620	$ 30,065	$ -	$ -	$ -
TOTAL EXPENDITURES	**$ 32,203**	**$ 827,112**	**$ 1,667,088**	**$ 2,302,796**	**$ 3,813,467**	**$ 3,473,905**	**$ 6,063,856**	**$ 5,001,366**	**$ 5,150,109**	**$ 4,563,963**	**$ 4,746,521**
Return on Investment	-	2.2:1	1.2:1	1.5:1	0.9:1	3.0:1	2.5:1	3.8:1	2.3:1	2.8:1	2.9:1

Notes:

1) Return on Investment (ROI) for FY 2007-2011 was calculated using a new methodology approved by Arizona Board of Regents in March 2007, which is different from the ROI methodology used to calculate ROI in FY 2002-2006.

2) Funding of the Arizona Board of Regents' Technology and Research Initiative Fund (TRIF) is provided by a 0.6 percent increase in the Arizona sales tax rate approved by the voters through Proposition 301 on the November 2000 general election ballot.

These efforts build on the extensive expertise in water resources and environmental and earth science by over 300 UA faculty and staff in 10 colleges and 60 departments and help to promote UA as a national and global leader in research and technology development.

WESP pursues these goals through a recruitment and research initiative; competitive grants program; student fellowships and internships; directed interdisciplinary initiatives; education and outreach programs; and the activities of the individual centers.

MANAGEMENT

Sharon Megdal serves as the Director of the Water and Environmental Sustainability Program (WESP) on behalf of Leslie Tolbert, Vice President for Research, Graduate Studies and Economic Development.

WATER SUSTAINABILITY PROGRAM EXECUTIVE COMMITTEE

Sharon Megdal, Director, WSP and Water Resources Research Center

Raina Maier, Associate Director, NIEHS Superfund Basic Research Program

Ian Pepper, Director, NSF Water Quality Center

Farhang Shadman, Director, SRC/Sematech Engineering Research Center for Environmentally Benign Semiconductor Manufacturing

Juan Valdes, Director, NSF Center for Sustainability of semi-Arid Hydrology and Riparian Areas

TRANSLATIONAL ENVIRONMENTAL RESEARCH

Jonathan Overpeck ,Director TER and Institute for the Study of Planet Earth

Barbara Morehouse, Deputy Director of Research

Gregg Garfin, Deputy Director of Outreach

ADVISORY BOARDS

The Water Sustainability Program and Translational Environmental Research initiative have independent advisory committees/boards. Each has an academic advisory committee and an external advisory committee. Two members of each external advisory committee represent TER and WSP on the WESP External Advisory Board.

LEARN MORE

- Contact Dr. Sharon Megdal, WESP and WSP Director, smegdal@cals.arizona.edu or 520-792-9591 X21. Visit the WSP website at: www.uawater.arizona.edu
- Contact Dr. Jonathan Overpeck, TER Director, jto@email.arizona.edu or 520-622-9065 Visit the TER website at: www.ispe.arizona.edu/resources/research/ter/about.html
- Contact Dr. Leslie Tolbert, Vice President for Research, Graduate Studies and Economic Development, at tolbert@email.arizona.edu or 520-621-3513

THE UNIVERSITY OF ARIZONA

TECHNOLOGY AND RESEARCH INITIATIVE FUND (TRIF)

EDUCATION AND INFRASTRUCTURE PROGRAM

THE UNIVERSITY OF ARIZONA
Arizona's First University

September 1, 2008

Critical to the economic viability of Arizona are highly trained workers, accessible quality healthcare, state-of-the-art information systems, and knowledge-based industries. In November of 2000, the Technology and Research Initiative Fund (TRIF) was created through Proposition 301 to support programs aimed at these and other educational needs.

Five initiatives comprise TRIF-funded Infrastructure programs. Individually, they have created new educational programs, expanded access to educational content, and built an infrastructure to move local research efforts to the market place. Combined, they are changing how knowledge is conceived and consumed – on and off campus – and are building bridges to educational, corporate, and health care entities throughout the state and beyond.

Workforce Initiative: The Educator Development Plan *(EDP)* addresses the shortage of highly trained math, science and agriculture science teachers by designing new curricula and supporting program graduates to remain in the state. Direct outcomes are an increase in teaching resources and a direct impact on K-12 students in classrooms with newly certified teachers.

In healthcare, service delivery systems have not kept pace with the explosion of information and technology. College of ***Nursing Online Graduate Degree and Certification Programs (NOP)*** expands access to high quality nursing education by delivering course content with distance learning, internet-related technology. The online Nursing Ph.D. program is the first of its kind. New degrees and certificates are being developed to meet the needs not only of students, but of residents throughout the state – particularly in rural areas.

Anyplace Access for Arizonans *(AAA)* responds to workforce and workplace needs by exploiting information and communication technologies to offer the best of public higher education and outreach activities to all Arizonans, regardless of place. Participants seek knowledge and information for use in work and life settings – knowledge that can increase lifelong earnings, improve productivity on the job, and solve practical problems in their daily lives.

Critical Core Infrastructure *(CCI)* centralizes support for selected high technology research fields that depend on laboratory facilities, advanced computing resources and high bandwidth connectivity. While TRIF investments in infrastructure were made throughout the first five years, these investments were made one initiative at a time. Investments in research buildings, assuring appropriate laboratory space, occur as debt service. Investments in computing and communications infrastructure occur within the central computing organization, UITS. The goal is to enable research, and by enabling research, to

Contents

Ronald Marx, Ph.D.
Dean, College of Education

PERFORMANCE MEASURES

	FY02 Actual	FY03 Actual	FY04 Actual	FY05 Actual	FY06 Actual	FY07 Proj	FY07 Actual	FY08 Proj	FY08 Actual	FY09 Proj	FY10 Proj	FY11 Proj
RETURN ON INVESTMENT ($ IN MILLIONS)												
Sponsored Awards	0.033	0.973	1.249	3.785	4.820	1.910	4.027	2.020	2.525	2.712	2.559	2.662
Gifts & Other Sources	0.069	0.277	0.357	0.485	0.781	0.883	0.753	0.943	1.068	0.841	0.923	1.016
Patent Royalty Income	0.714	1.08	1.010	1.176	1.689	1.520	1.223	1.670	0.690	1.820	1.970	2.110
TECHNOLOGY TRANSFER & COLLABORATIONS												
Invention Disclosures	109	111	95	102	88	135	104	114	99	114	119	124
Licenses & Options	18	24	25	32	26	38	30	36	39	36	40	45
Patent Applications	62	77	91	106	109	105	121	115	143	115	120	125
New Start-up Companies	10	1	7	9	6	14	3	5	5	5	6	7
Economic Impact Studies	0	0	1	1	0	1	2	1	0	1	1	1
WORKFORCE CONTRIBUTIONS												
Number of Graduate Students Enrolled			19	37	161	316	191	358	241	294	307	320
Number of Graduate Degrees Awarded						58	29	40	56	44	51	57
Teachers Certified in Undergraduate Level Math & Science	7	12	22	20	24	40	24	40	25	30	30	30
Teachers Certified in Master's Level Math & Science	28	25	26	40	24	30	24	30	14	25	25	25
Teachers Certified in Agriculture	8	13	16	16	12	15	11	17	13	19	20	20
Certificates granted for AAA + Nursing					9	50	0	58	85	84	105	128
CURRICULUM INNOVATIONS & STUDENTS SERVED												
Number of Newly Revised Courses Offered				8	10	14	48	8	14	10	11	16
Number of Online Courses Offered	0	10	19	28	28	37	16	9	19	8	4	3
OUTREACH & EDUCATION												
K-12 Students Benefitting & Participating	2,150	2,500	3,200	3,800	3,000	4,250	2,950	8,600	2,600	13,300	18,050	22,000
Workshops, Seminars, & Conferences Supported	0	0	1	1	2	2	4	0	0	0	0	0
Users of Extension & Workplace Resources	0	493	58,000	103,000	156,055	200,000	31,415	250,000	225,503*	300,000	350,000	400,000
Enrollments in Web & Hybrid Courses	0	20,450	24,528	35,353	77,557	39,373	104,715	41,085	2,154	2,404	2,654	2,904
DATA AND RESEARCH ACCESS & NETWORK												
Building Networks Brought to Standards						1	1	1	1	1	1	1
Supercomputer Usage						85-90%	90%	85-90%	78%	85-90%	85-90%	85-90%
Percentile-Ranked Access to Advanced Networks						75th or better	75th	75th or better	50th	75th or better	75th or better	75th or better

*Due to data limitations, approximately 100,000 of the "users" may be reflecting "hits," and we are unable to quantity sustained use.

contribute to regional economic development.

Technology Transfer Infrastructure Plan (TTIP) supports the UA as a driver of an Arizona knowledge-base economy by moving research to the market place, creating new knowledge-based industries, and bringing UA innovations into broad and public commercial uses. The initiative supports the collaborative environment for research within the UA exemplified by the TRIF Research Programs. Working together with those programs, the plan integrates their translational efforts with economic development and market activities driven by UA's Office of Economic Development (OED) and Office of Technology Transfer (OTT).

PERFORMANCE ANALYSIS

The *EDP* initiative was successful in producing over 350 certified teachers in math, science and agriculture science during the first five years. These teachers have been employed in schools throughout Arizona and have had a direct impact on K-12 students. We conservatively estimate each teacher will impact 50 students annually. An infrastructure is now in place to efficiently train new teachers and impact increasingly more students.

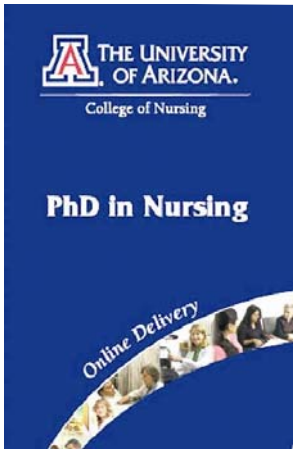
Presently, all College of Nursing graduate courses and one undergraduate course are deliverable in an electronic format. New courses are being developed for distance learning and content from original courses is being reformatted. Student enrollment has increased with production of new courses and external collaborations have been enhanced by the ability to teleconference and remotely monitor student progress in clinical settings. Teleconferencing and streaming video has enabled collaborations with rural and border-based health care delivery organizations.

During 2002-07, *AAA* recruited 12 technical experts with varied specialties needed for producing high quality distance education and high value information resources. Over $3.4 million was secured to support projects to preserve endangered Native American languages, improve science instruction, and develop health education programs. New tools for online learning were introduced that now support over 100,000 enrollments in more

than 2000 individual courses, including an online doctorate in Nursing, the first such program in the country.

Investments in *CCI* were made throughout fiscal years 2002 through 2006, funded through a proportional tax on the budgets of all other initiatives. These investments: (1) Completely renovated building network cabling and equipment for the Meinel Optical Sciences Building, (2) elevated UA Internet2 bandwidth from 155 Mbps to 1Gbps, (3) allowed The UA to join CENIC, a California based research and education network that provides access to National Lambda Rail, (4) doubled the UA's supercomputing capability, and (5) brought immersive 3D visualization technology to campus as a shared resource.

TTIP economic development measures are based upon start-ups licensing relevant UA technology, the number of those start-ups choosing to operate in Arizona, and the number of UA Technologies licensed by existing companies in Arizona. The TTIP plan metrics capture operational scope, efficiency and relevance of OTT. This includes agreements executed, patents and patent applications, and disclosures received. For some of the measures, no projections (N/P) were made in the original planning or metrics for the renewal are changing to better reflect the proposed activities. The Economic analysis by OED was designed to measure the effectiveness of the UA's TRIF initiatives as well as their economic impact on Arizona's economy and its industry clusters.



The "RangeView" website, one of many resources providing what Arizonans need when and where they need it.

dMetrix, a UA startup, is a Tucson-based developer of digital pathology instruments

GOALS

EDP – (1) To create seamless math and science programs from elementary through secondary school, (2) to support students to enter math, science, and agricultural science teacher preparation programs, (3) to graduate over 450 of these teachers and, (4) to support program graduates to teach locally.

NOP – (1) To increase the quality and years of healthy life for Arizona's populations and contribute toward eliminating health disparities, assuring quality safe health care, and improving the public health infrastructure and (2) to reduce health disparities among Arizona's populations, particularly rural, aging, border and minority populations.

AAA – (1) To make advanced degrees and certificates available at a distance from the campus, in such fields as Nursing, Public Health, Optical Sciences, Engineering, Biological Sciences and Biotechnology, Information Resources in Library Science, Business, Law, and Education and (2) to create information resources that can increase on-the-job productivity, in resources such as Electronic Agricultural Extension, Arizona Electronic Atlas, active learning objects for K12 teachers, online library reference and digital collections, and Ask-an-Expert web sites.

FINANCIAL INFORMATION

	FY02 Actual	FY03 Actual	FY04 Actual	FY05 Actual	FY06 Actual	FY07 Actual	FY08 Revised Budget	FY08 Actual	FY09 Revised Budget	FY10 Revised Budget	FY11 Revised Budget
REVENUE											
Carry Forward	$ -	$ 1,163,205	$ 565,018	$ 553,430	$ 463,409	$ 767,157	$ 557,442	$ 557,442	$ 621,658	$ -	$ -
New TRIF Revenue	$ 2,233,439	$ 2,305,689	$ 2,511,957	$ 2,616,912	$ 3,085,923	$7,951,221	$ 9,645,690	$ 9,164,277	$ 9,807,891	$10,329,865	$10,832,465
TOTAL REVENUE	**$ 2,233,439**	**$ 3,468,894**	**$ 3,076,975**	**$ 3,170,342**	**$ 3,549,332**	**$ 8,718,378**	**$10,203,132**	**$ 9,721,719**	**$10,429,549**	**$ 10,329,865**	**$10,832,465**
EXPENDITURES											
Personal Services	$ 415,210	$ 1,355,810	$ 1,628,344	$ 1,915,393	$ 1,760,808	$2,026,007	$ 2,797,873	$ 2,114,858	$ 3,112,603	$ 2,741,523	$ 2,951,357
All Other Operating Expenses	$ 655,024	$ 1,548,066	$ 895,201	$ 791,540	$ 1,009,036	$2,734,929	$ 2,908,638	$ 3,568,734	$ 2,573,011	$ 2,583,490	$ 2,600,990
Capital	$ -	$ -	$ -	$ -	$ 381,200	$3,400,000	$ 4,496,621	$ 3,416,469	$ 4,743,935	$ 5,004,852	$ 5,280,118
TOTAL EXPENDITURES	**$ 1,070,234**	**$ 2,903,876**	**$ 2,523,545**	**$ 2,706,933**	**$ 3,151,044**	**$8,160,936**	**$10,203,132**	**$ 9,100,061**	**$10,429,549**	**$10,329,865**	**$10,832,465**
ROI (See Note 2)	-	-	-	-	-	-	-		-	-	-

Notes:

1) Carry forward for FY 07 consists of the following: Carry forward of $172,938 from Technology Transfer Infrastructure; Carry forward of (3,253) from Anyplace Access for Arizonans; Carry forward of $228,603 from Educator Development Plan; Over-realized revenue of $350,000 for College of Nursing Online Programs; and a technical adjustment of $18,869 from FY 06 for Critical Core Infrastructure. The total technical adjustment was $74,891. $56,022 was recorded under the Venture Fund.

2) As a non-research initiative and pursuant to the new March 2007 Return on Investment (ROI) policy, ROI will not be calculated in FY 2007-2011.

3) Funding of the Arizona Board of Regents' Technology and Research Initiative Fund (TRIF) is provided by a 0.6 percent increase in the Arizona sales tax rate approved by the voters through Proposition 301 on the November 2000 general election ballot.

CCI – (1) To continuously upgrade Internet connectivity to research buildings, (2) to provide access for researchers to high performance networks such as CENIC, Internet2, and National Lambda Rail, (3) to provide more, better supercomputing capability, (4) to introduce important new technologies that enable cutting edge research, and (5) to develop new research space for TRIF activities.

TTIP – (1) To enhance the technology transfer infrastructure, (2) to increase significantly the level and breadth of technology transfer from the university, (3) to increase engagement in technology transfer by the faculty, staff and students, (4) to assist efforts to commercialize university technology and (5) to connect these efforts into both State and local community economic development efforts.

MANAGEMENT

Leslie Tolbert, Vice President for Research, Graduate Studies, and Economic Development, is responsible for overall management of the University's TRIF activities. Infrastructure initiatives are coordinated by **Ronald W. Marx,** Dean of the College of Education. Individual initiatives are overseen by the following in concert with faculty, staff, and professional support personnel particular to their area of technical expertise.

EDP – **Ronald W. Marx,** Dean, College of Education

NOP – **Carolyn Murdaugh,** Interim Dean, College of Nursing

AAA – **Michael Proctor,** Senior Associate Vice President for University Outreach and International Programs

CCI – **Michele Norin,** Chief Information Officer and Executive Director, University Information Technology Services

TTIP – **Bruce Wright,** Associate Vice President for Economic Development, and **Patrick Jones,** Director of Technology Transfer

ADVISORY BOARDS

Each initiative has established Advisory Boards that provide input, review planning and operations and, more importantly, serve as a mechanism for building relationships between the UA and educational, health, science, technology, and corporate entities.

3D data visualization — a critical new tool — in use to examine the physics of dust storms

EDP – Representatives from the Professional Preparation Board (PPB) include administrators from Pima College, all Tucson school districts, and faculty from all UA colleges engaged in and related to teacher preparation.

NOP – Representatives from the Arizona Rural Health Association, Area Health Education Centers, Border Health Initiatives, hospitals, Community Health Centers, long term and chronic care facilities, emphasizing rural and border areas within the state as well as individuals associated with agencies promoting distance learning for minority students.

AAA – Advisory groups include the Deans' Advisory Committee, Initiative-wide Advisory Board, Project-specific Advisory Boards, and Project and Technical Support Teams as needed.

CCI – There is no external advisory board for the *CCI*, since these investments are in service of initiatives with their own advisory boards. All IT projects are managed within University Information Technology Services, under the direction of Bob Lancaster for network projects and under the direction of Jim Austin for computing projects, both Directors of UITS reporting to the CIO. Guidance on broad strategic decisions is provided by the TRIF Executive Committee and on more tactical decisions by the Campus IT Advisory Boards.

TTIP – Four committees comprised of faculty, corporate, and technology personnel: TTIP Review Committee, Technology Transfer Advisory Committee, Arizona Center for Innovation Advisory Board, and Intellectual Property Committee.

LEARN MORE

- Contact **Dr. Ronald W. Marx,** Dean, The University of Arizona College of Education, at ronmarx@email.arizona.edu or 520-621-1081.
- Contact **Dr. Leslie Tolbert,** Vice President for Research, Graduate Studies and Economic Development, The University of Arizona, at tolbert@email.arizona.edu or 520-621-3513.

THE UNIVERSITY OF ARIZONA

TECHNOLOGY AND RESEARCH INITIATIVE FUND

UA-ASU SOLAR ENERGY INITIATIVE

THE UNIVERSITY OF ARIZONA.
Arizona's First University.

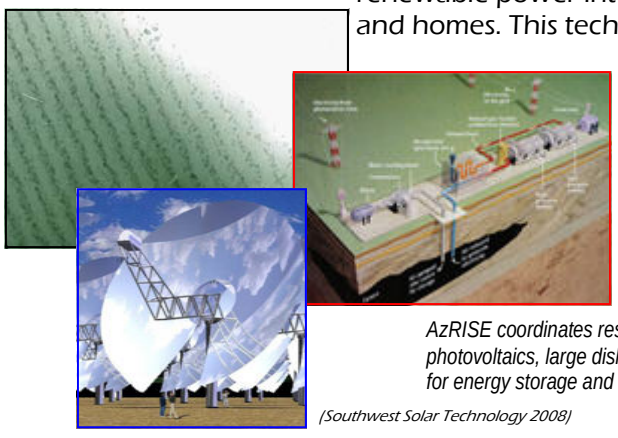
September 1, 2008

AZRISE
The Arizona Research Institute for Solar Energy

The UA-ASU Solar Energy Initiative funds the Arizona Research Institute for Solar Energy (AzRISE). AzRISE joins faculty from science, engineering, optical science, architecture, business and agriculture to pursue development of interdisciplinary revolutionary programs in Research and Development and public policy for the widespread utilization of solar energy.

Through coordination, guidance and stimulated solar energy activities in (1) research and development, (2) economic and public policy analysis, (3) education and (4) outreach, the institute supports competitive and peer reviewed projects in all four areas, putting special emphasis on innovative R&D and on economic analyses that can guide both technical IP development and public policy.

The vision is to establish a world-renown, highly interdisciplinary environment and structure that develops and translates research into useful applications in solar renewable energy. Close synergy among academia, industry, power utilities and policy will accelerate the creation and adoption of distributed renewable power integrated into the electric grid and homes. This technological and societal transformation will achieve an energy-secure, environmentally-sound 21st Century.



AzRISE coordinates research in nanostructured materials for photovoltaics, large dish concentrator optics, and various options for energy storage and desalination.

(Southwest Solar Technology 2008)

Contents

Joseph H. Simmons, Ph.D.
AzRISE Director
Department Head, Materials Science and Engineering

PERFORMANCE MEASURES

	FY08 Proj	FY08 Actual	FY09 Proj	FY10 Proj	FY11 Proj
RETURN ON INVESTMENT ($ in millions)					
Sponsored Awards: ($M)	$ 1.17	$ 2.18	$ 1.75	$ 2.20	$ 5.80
Federal Awards	$ 0.10	$ 1.08	$ 0.80	$ 1.00	$ 3.00
Industrial Awards	$ 0.02	$ 0.05	$ 0.25	$ 0.40	$ 1.00
Other Awards	$ 1.05	$ 1.05	$ 0.70	$ 0.80	$ 1.80
Gifts & Other Sources	$ 0.00	$ 0.05	$ 0.30	$ 0.60	$ 1.00
TECHNOLOGY TRANSFER & COLLABORATIONS					
Licenses & options	2	2	2	2	2
New Start-up Companies	0	0	1	2	3
Patent Applications	0	0	2	4	6
Invention Disclosures	0	0	4	8	12
WORKFORCE CONTRIBUTIONS					
Number of graduates in solar energy	4	2	10	20	30
Number of undergraduates in solar energy	20	20	26	26	26
Number of post doctoral associates	1	0	2	4	6
CURRICULUM INNOVATIONS & STUDENTS SERVED					
Number of newly revised courses offered	0	0	20	100	300
Number of Online Courses Offered	1	1	2	4	10
OUTREACH & EDUCATION					
Workshops, seminars and conferences supported	2	5	4	4	4

Federal Grants Obtained:

Two DOE proposals were funded with matching funds:

1) SEEDpod Proposal for the Solar Decathlon ($100K DOE with $100K from the UA program)

2) Solar concentrators ($980K from DOE and $102K from the UA program)

PERFORMANCE ANALYSIS

The **Research and Technology Development** portion of AzRISE focuses on development of novel nanostructured materials for photovoltaics, organic photovoltaic technologies, large dish concentrator optics, solar PV reliability and various options for energy storage and desalination through the use of seed funding and matching funds for projects that are designed for prototyping and/or proof of concept for early stage technologies. The number of projected externally funded research awards and technology transfer transactions are direct measures of this activity.

Workforce Development is a major objective of AzRISE. The workforce development effort will consist of increasing the numbers of graduate and undergraduate students doing research and taking courses in solar energy-related topics. Additional focus will be on postdoctoral associates in solar energy research and on students in solar energy courses onsite and offered through distance learning.

Technology Transfer and Industry Outreach is defined by collaborations with our industry partners in the development and commercialization of new technology, affiliate sponsorships, fee for service work, development of industry related training courses and distance learning program, and new start-up companies.

AzRISE Solar Racing Car Team

GOALS

AzRISE will promote solar energy through research, education and strategic partnerships to:

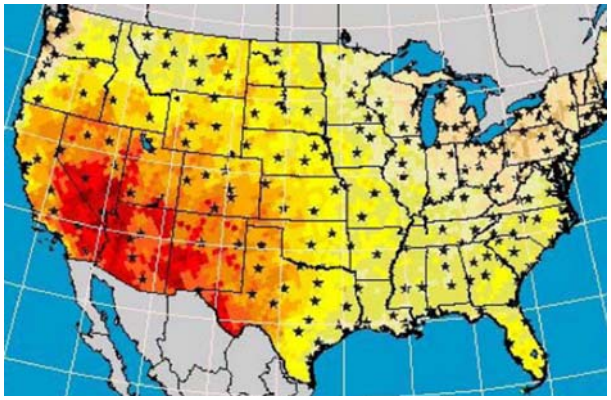
- Discover, innovate and develop to market evolutionary and revolutionary science and technology in solar energy utilization
- Develop the local economy by providing technology solutions and economic incentives/ drivers that are transitioned to partner companies and industries, as well as support an environment that stimulates and nurtures startup efforts.
- Educate the next-generation workforce and prepare citizens for the renewable energy society.

FINANCIAL INFORMATION

	FY07 Actual	FY08 Revised Budget	FY08 Actual	FY09 Revised Budget	FY10 Revised Budget	FY11 Revised Budget
REVENUE						
Carry Forward	$ —	$ 979,762	$ 979,762	$ 825,124	$ —	$ —
New TRIF Revenue	$ —	$ 70,238	$ 70,238	$ 700,000	$ 800,000	$ 800,000
TOTAL REVENUE		**$ 1,050,000**	**$ 1,050,000**	**$ 1,525,124**	**$ 800,000**	**$ 800,000**
EXPENDITURES						
Personal Services	$ —	$ 1,050,000	$ 148,944	$ 1,525,124	$ 800,000	$ 800,000
All Other Operating Expenses	$ —	$ —	$ 75,932	$ —	$ —	$ —
Capital	$ —	$ —	$ —	$ —	$ —	$ —
TOTAL EXPENDITURES	**$ —**	**$ 1,050,000**	**$ 224,876**	**$ 1,525,124**	**$ 800,000**	**$ 800,000**
Return on Investment	-	N/A	N/A	1.3:1	3.5:1	8.5:1

MANAGEMENT

Dr. Joseph H. Simmons, Director of AzRISE, reports to **Dr. Leslie Tolbert**, Vice President for Research, Graduate Studies, and Economic Development, for the TRIF Solar Energy Program.



ADVISORY BOARDS

Dean's Advisory Committee
Leslie Tolbert, Vice President for Research, Graduate Studies, and Economic Development; **Thomas Peterson**, Dean, College of Engineering, Professor, Chemical & Environmental Engineering; **Joaquin Ruiz**, Dean, College of Science, Professor, Geosciences.

Technical Review Committee
Roger Angel, Regents' Professor, Astronomy, and Optical Science; **Neal Armstrong**, Professor Chemistry and Optical Sciences, **Ardeth Barnhart**, Associate Director, AzRISE; **Eric Betterton**, Head and Professor, Atmospheric Sciences; **Dale Clifford**, Assistant Professor Architecture; **Nasser Peyghambarian**, Professor; Optical Sciences, Materials Science & Engineering, Chair; Lasers & Photonics; **B.arrett Potter**, Associate Professor, Materials Science and Engineering

External Advisory Committee
John Madocks, President, General Plasma, Inc.; **Adam Honea**, Provost, University of Phoenix; **Herb Hayden**, President, Southwest Solar Technologies; **Sarah Kurtz**; National Renewable Energy Laboratory; **Jim Gentile**, Director, Research Corporation; **Dick Hayslip**, Associate General Manager, Salt River Project.

AzRISE / Tucson Electric Power (TEP) Solar Test Yard, an interdisciplinary research project to acquire and distribute data in the measurement of solar panel performance, PV production models and studies in techniques that increase the energy yield from PV systems.

LEARN MORE

- Contact **Dr. Joseph H. Simmons**, Director, AzRISE, and Department Head, Materials Science and Engineering, at *simmonsj@email.arizona.edu* or 520-621-6070
- Contact **Dr. Leslie Tolbert,** Vice President for Research, Graduate Studies, and Economic Development, at *tolbert@email.arizona.edu* or 520-621-3513
- Contact **Ardeth Barnhart**, Associate Director, AzRISE, at *ardethb@email.arizona.edu* or 520-322-2970
- Visit the AzRISE Website at *www.AzRISE.org*

THE UNIVERSITY OF ARIZONA

TECHNOLOGY AND RESEARCH INITIATIVE FUND (TRIF)

HIGHER EDUCATION IN RURAL SOUTHERN ARIZONA

THE UNIVERSITY OF ARIZONA.
Arizona's First University.

September 1, 2008

The Higher Education in Rural Southern Arizona TRIF Initiative was funded in December 2007 from the Regents TRIF Innovation Fund (TIF) to address the special needs of Southern Arizona as a distinct economic region, with significant industry common to the area. The initiative's primary goal is to develop a network of highly accessible and technologically adept faculty, as well as a broad repertoire of high-demand electronic courses to be distributed through a regional content network. The efforts of this initiative are focused on three interdependent legs of an economic development stool: teacher education, commerce/entrepreneurship, and information-science based science relevant to regional industry ranging from defense and intelligence to import/export and logistics.

Based on initial research on how best to provide this educational content across Southern Arizona, the initiative is focusing on hybrid educational products, taught in part by live faculty and partially online, with costs being reduced via four mechanisms: 1) significant community investment in infrastructure (for example, delivering teacher education after hours in local high schools); 2) reliance on a small number of dedicated, specialized and technologically savvy faculty living in target communities or traveling there regularly for teaching duties related to live content; 3) focusing our investment on a small number of high-demand, high-quality degree programs allowing for consistent content growth and economies of scale; and 4) working closely with our community college partners. This model allows all students to have regular access to live faculty, though those faculty may travel from main campus or serve multiple communities, and each community has access to online content created by faculty in other communities for a broader menu offering than would normally be available in each community.

Contents

Mike Proctor
Senior Associate Vice President
for University Outreach and
International Programs

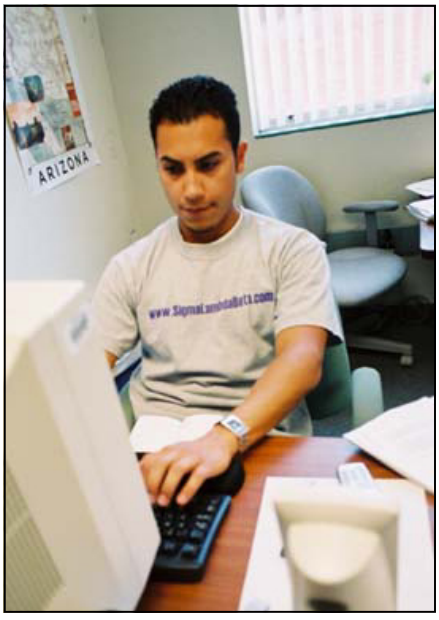
PERFORMANCE MEASURES

	FY08 Projected	FY08 Actual	FY09 Projected	FY10 Projected	FY11 Projected
RETURN ON INVESTMENT					
Sponsored Awards	$0	$0	$100,000	$150,000	$150,000
Gifts & Other Sources	$0	$0	$200,000	$300,000	$400,000
WORKFORCE CONTRIBUTIONS					
Number graduate students enrolled within initiative	0	0	2	4	8
Number graduate degrees awarded	0	0	1	2	4
Number of undergraduate degrees awarded	0	0	0	20	30
Number undergraduates enrolled	0	0	30	40	50
Total student credit hours produced	0	0	300	400	500
Number certificates granted for Higher Ed	0	0	15	30	45
Number new certificates offered	0	0	2	2	2
CURRICULUM INNOVATIONS AND STUDENTS SERVED					
Number of newly revised courses offered	0	0	2	4	6
Number new online courses offered	0	0	15	15	15
OUTREACH AND EDUCATION					
Teachers/Educators Trained	0	0	12	18	24
Number enrollments in web & hybrid courses	0	0	30	80	120

Note: Proposal projections for FY 08 have been shifted to FY 09 due to fund timing issues. Although funds were approved in December '07, expenditures will not occur prior to Regents approval of business plan in August '08.

PERFORMANCE ANALYSIS

Our earliest measures of success will become available in Fall 2008. We plan to enroll a dozen students in our teacher education cohort. We also expect to increase enrollment in related business courses by approximately 20 students in Spring 2009. We will also enroll additional education students by Spring 2009. By the end of academic year 2008-2009, we should be able to hit projected enrollment of 40 new students. Through leveraging these funds against additional resources, online content will expand dramatically through Fall 2008 and Spring 2009, significantly increasing access for time and place-bound students throughout the region.



GOALS

The goal of this initiative is to provide, through 2 + 2 programs involving our community college partners, teacher education and commerce/entrepreneurship degrees and certificates throughout Southern Arizona in a revenue-positive and sustainable fashion. We expect enrollment to increase by an average of 40 students per year to a minimum of 120 students region-wide within three years. We expect that this large increase in students will lead to a measurable increase in the number of certified teachers entering the workforce, and will make a significant contribution to meeting the demand for business-related degrees. We also expect to contribute significantly to defense, intelligence and security programs available throughout the region.

FINANCIAL INFORMATION

	FY07 Actual	FY08 Budget	FY08 Actual	FY09 Revised Budget	FY10 Revised Budget
REVENUE					
Carry Forward	$ -	$ -	$ -	$ 500,000	$ -
New TRIF Revenue	$ -	$ 500,000	$ 500,000	$ 310,594	$ 250,000
TOTAL REVENUE		$ 500,000	$ 500,000	$ 810,594	$ 250,000
EXPENDITURES	$ -				
Personal Services	$ -	$ 500,000	$ -	$ 810,594	$ 250,000
All Other Operating Expenses	$ -	$ -	$ -	$ -	$ -
Capital	$ -	$ -	$ -	$ -	$ -
TOTAL EXPENDITURES	$ -	$ 500,000	$ -	$ 810,594	$ 250,000
ROI (See Note 1)	-	-	-	-	-

1) As a non-research initiative and pursuant to the new March 2007 Return on Investment (ROI) policy, ROI will not be calculated in FY 2008-2010.

2) Funding of the Arizona Board of Regents' Technology and Research Initiative Fund (TRIF) is provided by a 0.6 percent increase in the Arizona sales tax rate approved by the voters through Proposition 301 on the November 2000 general election ballot.

MANAGEMENT

Leslie Tolbert, Vice President for Research, Graduate Studies, and Economic Development, is responsible for the overall management of the University's TRIF activities. Direct oversight of this initiative is assigned to **Mike Proctor**, Senior Associate Vice President, University Outreach and International Programs and Associate Dean, College of Agriculture and Life Sciences.

ADVISORY BOARDS

Immediate initiative oversight is provided by the Vice President for Outreach's advisory board, a mix of internal and external individuals who are charged with evaluating the broad strategy of the Outreach Office. A subcommittee of that board is evaluating the business plan for this initiative.

In addition, this board will rely on input from a small group of deans and department heads focused on academic content, and on local advisory councils in Pinal and Santa Cruz Counties established by the locally embedded Outreach Coordinators. Ultimate financial and administrative oversight is the responsibility of the Vice President for Outreach.

Advisory Board Members:

Iman Hakim, Dean, Public Health

Sherry Hoskinson, Director, McGuire Center for Entrepreneurship

Bob Lusch, Department Head, Marketing

Rick Myers, Retired IBM Executive, Former Southern Arizona Leadership Council Chairman

Dave Naugle, Administrator/Corporate Public Affairs, Southwest Gas Corporation

David Smallhouse, Real Estate and Business Ventures

Telly Stanger, Manager of Economic Development, Sulphur Springs Valley Electric Cooperative

Mary Staugaard, Associate Director, Credit Programs, University of Arizona Outreach College

LEARN MORE

- Contact **Mike Proctor,** Senior Associate Vice President, University Outreach and International Affairs, The University of Arizona, at mproctor@arizona.edu or 520-621-7687.
- Contact **Dr. Leslie Tolbert,** Vice President for Research, Graduate Studies, and Economic Development, The University of Arizona, at tolbert@email.arizona.edu or 520-621-3513.
- Visit www.vpr.arizona.edu for more information on the individual initiatives.

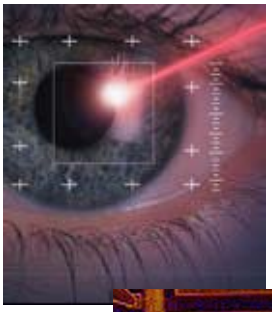
THE UNIVERSITY OF ARIZONA

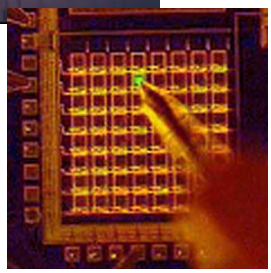
TECHNOLOGY AND RESEARCH INITIATIVE FUND (TRIF)

VENTURE FUND

THE UNIVERSITY OF ARIZONA.
Arizona's First University.

September 1, 2008





In 2006, the Venture Fund was established to create a mechanism for supporting new projects with compelling strategic need or opportunity and exceptional opportunities for strong return-on-investment (ROI). Each new project must be related to the theme of an existing University of Arizona TRIF initiative and is administered through that initiative. Venture Funds are distributed annually on a competitive basis as a way of enhancing the scope of the individual initiatives in strategically selected areas.

The Venture Fund is overseen by the Executive Vice President and Provost and the Vice President for Research, Graduate Studies, and Economic Development of the University.

Contents

Meredith Hay, Ph.D.
Executive Vice President and Provost

GOALS

The purpose of the Venture Fund is to ensure that the University becomes more nimble in addressing needs and increasing ROI in ways consonant with TRIF requirements and objectives.

The goals of the Fund are to:

- support the creation of novel projects, each of which is closely related to one of the existing TRIF initiatives
- bring these novel projects to successful competition for major external funding
- provide exceptional potential for translation of activities to practical application.

Leslie P. Tolbert , Ph.D.
Vice President for Research, Graduate Studies, and Economic Development

PROJECTS FUNDED IN FY 2008

The following new projects (and the initiatives with which they are associated) were selected for funding:

- Biodiversity Informatics (Bioresearch); $300,000
- Microbial Diversity & Pathogenesis (Bioresearch); $250,000
- McKnight Hire & Institute Support (Bioresearch); $320,000
- Personal Finance Education: Outreach & Online (Education & Infrastructure); $44,000
- Enhancing Agricultural Productivity Through Educational Partnerships: Biotechnology & Telecommunications for Healthy Plants (Education & Infrastructure); $125,000
- TRIF BIO5 & CCI High Performance Cluster Computer Expansion (Education & Infrastructure); $150,000
- College of Nursing Online Education (Education & Infrastructure); $61,000
- AZ Solar as a National Resource for Energy (Optical Sciences & Tech.); $250,000
- High Sensitivity Terahertz Receiver Seed Funds (Optical Sciences & Tech.); $100,000
- High Resolution Imaging with Tomographic Laser-Guided Adaptive Optics (Optical Sciences & Tech.); $130,000
- Sustainable Industrial & Manufacturing Base for Arizona (Water & Env. Sustainability Program);$325,021
- New Water Center (Water & Env. Sustainability Program); $125,000

FINANCIAL INFORMATION

	FY05 Actual	FY06 Actual	FY07 Actual	FY08 Revised Budget	FY08 Actual	FY09 Revised Budget	FY10 Revised Budget	FY11 Revised Budget
Carry Forward	$ -	$ 68,123	$ 487,543	$ 172,779	$ 172,779	$ 143,603	$ -	$ -
New TRIF Revenue	$ 68,123	$ -	$ 714,079	$ 608,264	$ 430,455	$ 126,514	$ 320,593	$ 712,112
TOTAL REVENUE	**$ 68,123**	**$ 68,123**	**$1,201,622**	**$ 781,043**	**$ 603,234**	**$ 270,117**	**$ 320,593**	**$ 712,112**
EXPENDITURES								
Personal Services	$ -	$ -	$ 891,417	$ 781,043	$ 457,864	$ 270,117	$ 320,593	$ 712,112
All Other Operating Expenses	$ -	$ 68,123	$ 137,426	$ -	$ 1,767	$ -	$ -	$ -
Operations	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL EXPENDITURES	**$ -**	**$ 68,123**	**$1,028,843**	**$ 781,043**	**$ 459,631**	**$ 270,117**	**$ 320,593**	**$ 712,112**

*$1,500,000 of FY06 over-realized was added to FY07 Venture Fund.

The measure of impact of Venture Fund investments is the same as for all other TRIF investments, and is incorporated into the impact metrics of the TRIF initiatives to which the Venture Fund allocations are made.

*Venture fund budget and expenditures are shown in the individual initiatives financial information table.

Funding of the Arizona Board of Regents' Technology and Research Initiative Fund (TRIF) is provided by a 0.6 percent increase in the Arizona sales tax rate approved by the voters through Proposition 301 on the November 2000 general election ballot.

LEARN MORE

- Contact Dr. Leslie P. Tolbert, Vice President for Research, Graduate Studies, and Economic Development, at tolbert@email.arizona.edu or 520-621-3513

- Visit the University of Arizona TRIF website at www.vpr.arizona.edu/trif

The University of Arizona

FY 2007-2011 ASU-UA Joint Biomedical Research Fund

September 1, 2008

Arizona State University and The University of Arizona jointly administer the TRIF-funded *Collaborative on Biomedical Research Grant Program* with awards totaling $2,000,000 ($1,000,000 each) in FY07 and $1,000,000 ($500,000 each) per year in FY08-FY11.

These projects are collaborative in nature and may also include other biomedically oriented organizations such as the Translational Genomics Research Institute (T-Gen), the Critical Path Institute (C-Path), the many health-related institutions in the state, and Northern Arizona University. This investment will accelerate development of the research enterprise associated with The University of Arizona College of Medicine-Phoenix, in partnership with Arizona State University and the state-wide development of biomedical research. The funds are targeted to support joint research ventures among the institutions, and translating from basic to clinical research.

The main objectives of the program are to provide seed funding to:

1. Support the development and strengthening of collaborative research ties between ASU and UA as a basis for enhancement of state-wide interaction among research institutions; and,

2. Support the development and submission of proposals for external funding of research from competitive granting agencies (e.g., NSF, NIH, DOE, etc.) and industry.

To administer these funds, ASU and UA have established a coordinating committee to set the scientific and technical criteria for selection and to make the awards. The coordinating committee includes the Presidents and Vice Presidents for Research from ASU and UA. Review of proposals includes input from faculty at these universities. While some projects in the first year were selected specifically to enhance collaborative ties between ASU's Biodesign Institute and UA's BIO5 Institute, as a general practice, projects are solicited through a broad Request for Proposals, and are selected according to the following criteria:

- Scientific excellence
- Collaboration of faculty members from more than one institution as principal investigators
- Likelihood of success in securing long-term, significant federal or other (e.g., Science Foundation Arizona) funding
- Clear demonstration of the value-added significance of the inter-institutional collaboration required
- Potential for significant impact on our understanding of basic biomedical mechanisms or translation of research results to the clinical setting
- Potential for impact on overall State-wide strength in the biomedical sciences.

Thus far the program has awarded $1,999,977 in FY07 and $1,000,000 in FY08 for the following projects:

Title	**FY07**	**FY08**
Proteomic and Metabolomic Biomarker Investigation of Type 2 Diabetes	$250,000	
Geno- and Immuno-Signatures in Acute Asthma	$297,977	
Development of a Rapid Immunosignature Diagnostic Test for Valley Fever	$320,000	
Molecular Therapeutics Collaborative Program between BIO5 and BioDesign Institutes	$325,000	
Rapid Biomarker Analysis for Emergency Medicine	$157,141	$196,682
A Network-Science Approach to Normal- Tissue Organization and Carcinogenesis	$141,562	$180,468
A Digital Media Based Biofeedback System for Neural Rehabilitation	$147,309	$184,057
Evaluating the Role of VDR Polymorphisms and B-Catenin Signaling in Colorectal Adenoma Risk	$65,414	$81,642
Selective Modulation of Basal Ganglia Excitability: A Potential Gene Therapy for Parkinson's Disease	$151,685	$178,441
Novel Superluminescent LEDs and Ultrahigh-resolution for OCT for Medical Imaging Applications	$143,889	$178,710

We plan to postpone the next round of awards until FY10 and use unspent funds from FY 08 and/or revenue from FY09 ($500,000 from each university) to offset the current TRIF revenue shortfall, using the funds to cover existing TRIF programs. We propose to announce consideration of proposals for FY10 in the spring of 2009. We would fund those new projects for two years, which would take us through the current five-year funding cycle.

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The University of Arizona
Expansion of the Phoenix Biomedical Campus

1. COM Phoenix Lease

   Lease costs of $1,140,000 for the lease of the renovated Phoenix Union High School for the College of Medicine-Phoenix were paid in FY 2007. Starting in FY 2008, this lease was covered by State appropriations to the College of Medicine-Phoenix and "lease" funds were used to covering growing operations and maintenance costs through Critical Core Infrastructure and Expansion of the Phoenix Biomedical Campus (#2 below).

2. COM Phoenix Operating, Maintenance, and Utility Costs

   Operating, maintenance, and utility costs of $833,000 were paid for the College of Medicine – Phoenix in FY 2007. These costs escalated in FY 2008 with the opening of Arizona Biomedical Collaborative building 1. In FY 2008, funds in the amount of $1,141,000 were allocated to cover increased operating, maintenance, utility, and research compliance costs including Risk Management and Radiation Safety. State appropriations allocated to the College of Medicine-Phoenix will cover some of these growing costs starting in FY 2009.

3. Pharmacy Match

   Funds in the amount of $100,000 were allocated for each of three years to match proposed allocations of $200,000 annually for three years by the Arizona Pharmacy Board. The purpose was to fund planning costs for the College of Pharmacy in Phoenix. These funds have been used to support the salary of the experimental education director for the Phoenix program, who coordinates the fourth-year training of pharmacy students completing rotations in the greater Phoenix area, develops new clinical training sites, and oversees the community outreach/health education programs there, including programs with the City of Phoenix.

4. COM Phoenix Internet Connection - $72,000:

   An allocation of $72,000 was budgeted in FY 2007 as a one-time expense to provide internet connectivity for the College of Medicine – Phoenix complex. Funds are being expended through the University Information Technology Services (UITS) to lease communications services to connect the College of Medicine - Phoenix to the UA Tucson via the Sterling Telecom Hotel. An additional $72,000 was provided through the Venture Fund in FY 2008 to cover this expense.

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PLANNING FOR PHOENIX BIOMEDICAL CAMPUS (PBC)

Status Report on Activities Related to the
Health Sciences Education Building (HSEB), Arizona Biomedical Collaborative II (ABC II), and the Phoenix Biomedical Campus Comprehensive Development Plan

September 1, 2008

1. Project Status:

Planning for the Phoenix Biomedical Campus (PBC) projects has progressed considerably over the past year, with the guidance and participation of representatives from The University of Arizona, Arizona State University, Northern Arizona University, the Arizona Board of Regents, the City of Phoenix, and other stakeholders. Following is a summary of related events and accomplishments:

- In June 2008, the Arizona Legislature approved the Stimulus Plan for Economic and Education Development (SPEED) initiative that will provide $470 million of funding for the PBC projects. This funding will allow both the HSEB and ABC II projects to move forward;

- CO Architects, in association with Ayers Saint Gross, the master planners for the site, were selected as the Design Consultants for the PBC project. They are working with the Executive Committee and user groups to refine the project space program that will form the basis of the project design;

- The selection process has begun for the Construction Manager at Risk (CMR) for the project. We hope to have the CMR under contract and ready to work with the design team by early September;

- The University of Arizona (UA) will have primary responsibility for project administration with regard to project contracting and financial management. The UA will provide project management support as needed to Dave Harris, who will lead the overall on-site PBC project management team; and,

- The PBC projects were included in the June, 2008 Capital Development Plans of each of the three universities and were approved by the Board of Regents. We expect SPEED project funding approval at a July 24th Board meeting.

2. Proposed Schedule:

- Programming for the project is scheduled for completion in the fall of 2008. Schematic design will begin as the programming is being completed. We will expedite the remainder of the design process to allow construction to begin as soon as possible. The construction documents may be prepared in as many as six separate bid packages to allow for the most effective fast-tracking process.

- We currently anticipate that construction will begin as soon as July 2009, with required site preparation and utilities work. Considering the size and complexity of these projects, we anticipate that construction of the HSEB building will be completed in the spring of 2012, and that the ABC II building will be completed in the spring of 2013. We will review and confirm these dates with the construction manager upon his selection.

3. Issues to be Resolved:

- Role of private sector in developing the PBC campus;

- Funding or financing of the needed parking structure; and,

- Funding, financing and cash flow strategies for the 20% portion of this SPEED funded project that the universities must provide.

4. Use of $1.5 Million in ABOR Planning Funds:

ASU and UA were each allocated $750,000 in TRIF planning funds by the Arizona Board of Regents. In FY 2007, $344,300 was expended. In FY 2008, $972,700 was spent on construction manager fees, consultant fees, and project management fees. We will utilize the remaining $183,000 of TRIF funding for the next steps of programming and design of the MEB and ABC II projects until the SPEED project funding becomes available.

ABOR CENTRAL OFFICE

TECHNOLOGY AND RESEARCH INITIATIVE FUND (TRIF)

FY 2008 ACTUAL / FY 2009 - 2011 BUDGETS

SUMMARY

	FY 2007 ACTUAL	*FY 2008 REVISED BUDGET*	*FY 2008 ACTUAL*	*FY 2009 REVISED BUDGET*	*FY 2010 REVISED BUDGET*	*FY 2011 REVISED BUDGET*
REVENUE						
Carryforward	$ 1,277,429	$ 1,273,710	$ 1,280,867	$ 985,092	$ 27,921	$ 27,921
TRIF Revenue	4,916,171	2,175,000	2,050,760	1,675,000	1,753,750	1,836,438
TOTAL REVENUE	**$ 6,193,600**	**$ 3,448,710**	**$ 3,331,627**	**$ 2,660,092**	**$ 1,781,671**	**$ 1,864,359**
EXPENDITURES						
OPERATING BUDGET						
Personal Services	$ 154,893	$ 149,437	$ 131,974	$ 155,000	$ -	$ -
ERE	42,970	39,757	39,445	45,000	-	-
All Other Operating	63,849	177,564	162,185	176,574	-	-
TOTAL OPERATING BUDGET	**261,712**	**366,758**	**333,604**	**376,574**	**-**	**-**
GRANTS/PROJECTS						
Regents Innovation Fund	1,119,236	1,924,286	1,207,048	1,661,385	1,153,750	1,236,438
Arizona Regents Reach Out (ARRO) Grants	443,404	819,150	495,289	594,211	600,000	600,000
TRIF Strategic Investments (TSI) Carryforward to FY 2010/2011	250,000				27,921	27,921
TOTAL GRANTS/PROJECTS	**1,812,640**	**2,743,436**	**1,702,337**	**2,255,596**	**1,781,671**	**1,864,359**
EXPENDITURES GRAND TOTAL	**$ 2,074,352**	**$ 3,110,194**	**$ 2,035,941**	**$ 2,632,170**	**$ 1,781,671**	**$ 1,864,359**

SUMMARY BY INITIATIVE						
Regents Innovation Fund[1]	$ 1,265,329	$ 2,194,286	$ 1,434,503	$ 1,925,959	$ 1,153,750	$ 1,236,438
Arizona Regents Reach Out (ARRO) Grants	559,023	915,908	601,438	706,211	600,000	600,000
TRIF Strategic Investments (TSI)[2] Carryforward to FY 2010/2011	250,000				27,921	27,921
EXPENDITURES GRAND TOTAL	**$ 2,074,352**	**$ 3,110,194**	**$ 2,035,941**	**$ 2,632,170**	**$ 1,781,671**	**$ 1,864,359**

[1] To avoid double counting, above amounts do not include $500,000 of Regents Innovation Fund revenue and expenditures in FY 2008-2011 that were/will be allocated to UA for HRAA CTSA and are included in UA's reports. This $500,000 is included, however, on the Emerging Issues page in the Regents Innovation Fund section.

[2] TSI funds were allocated to the universities in FY 2008 and will be allocated to the universities in FY 2009-2011. Therefore, TSI revenues and expenditures and not included in these ABOR central office numbers but will be included in the universities' reports.

ABOR CENTRAL OFFICE

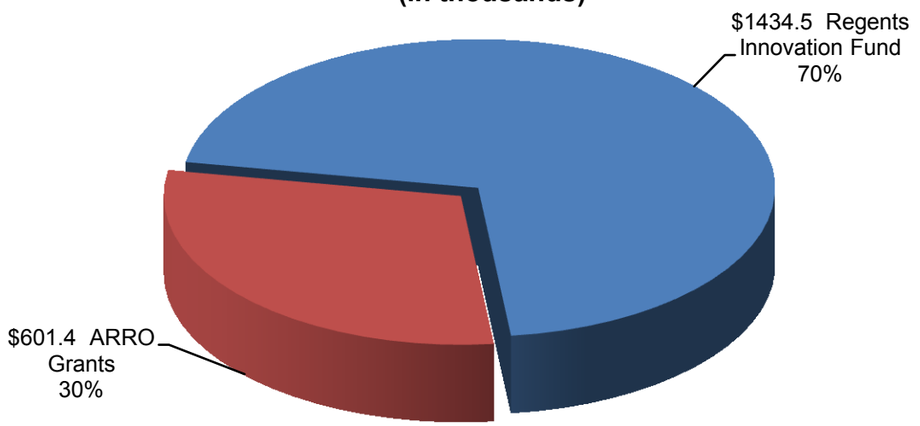
TECHNOLOGY AND RESEARCH INITIATIVE FUND (TRIF)

FY 2008 BUDGET / ACTUAL

SUMMARY BY PROGRAM AREA

	FY 2008 REVISED BUDGET	*FY 2008 ACTUAL*
REVENUE		
Carryforward	$ 1,273,710	$ 1,280,867
TRIF Revenue	2,175,000	2,050,760
TOTAL REVENUE	**$ 3,448,710**	**$ 3,331,627**
EXPENDITURES		
OPERATING BUDGET		
Personal Services	$ 149,437	$ 131,974
ERE	39,757	39,445
All Other Operating	177,564	162,185
TOTAL OPERATING BUDGET	**366,758**	**333,604**
GRANTS/PROJECTS		
Regents Innovation Fund	1,924,286	1,207,048
Arizona Regents Reach Out (ARRO) Grants	819,150	495,289
TOTAL GRANTS/PROJECTS	**2,743,436**	**1,702,337**
EXPENDITURES GRAND TOTAL	**$ 3,110,194**	**$ 2,035,941**

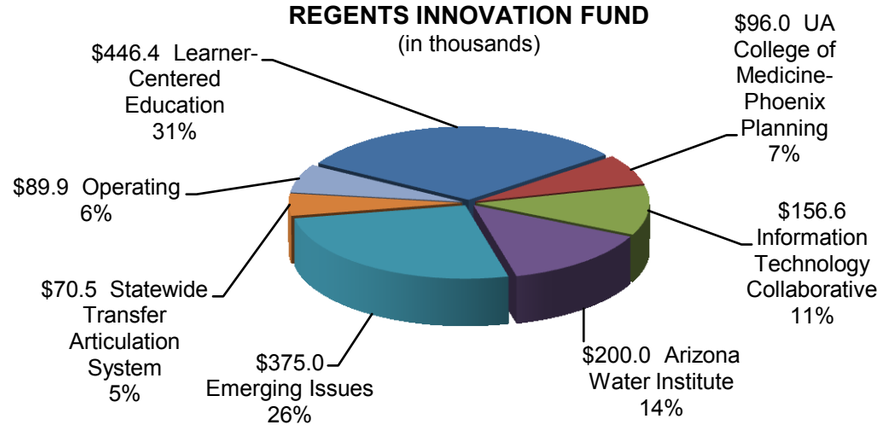
FY 2008 CENTRAL OFFICE ACTUAL TRIF EXPENDITURES
(in thousands)



Regents Innovation Funds do not include $500,000 allocated to UA for HRAA CTSA.

SUMMARY BY INITIATIVE		
Regents Innovation Fund:		
Learner-Centered Education	$ 860,000	$ 446,446
UA College of Medicine-Phoenix Planning	250,000	96,000
Information Technology Collaborative	250,000	156,646
Arizona Water Institute (AWI)	200,000	200,000
Operating	110,000	89,911
Statewide Transfer Articulation System	125,000	70,500
Emerging Issues	399,286	375,000
Total Regents Innovation Fund	2,194,286	1,434,503
Arizona Regents Reach Out (ARRO) Grants	915,908	601,438
EXPENDITURES GRAND TOTAL	**$ 3,110,194**	**$ 2,035,941**

REGENTS INNOVATION FUND
(in thousands)



ABOR CENTRAL OFFICE

TECHNOLOGY AND RESEARCH INITIATIVE FUND (TRIF)

FY 2008 ACTUAL / FY 2009 BUDGET

REGENTS INNOVATION FUND SUMMARY

	FY 2008 REV BUDGET	*FY 2008 ACTUAL*	*FY 2009 BUDGET*
REVENUE			
Carry Forward	$ 619,286	$ 619,286	$ 850,959
TRIF Revenue	1,575,000	1,491,176	1,075,000
TOTAL REVENUE	**$ 2,194,286**	**$ 2,110,462**	**$ 1,925,959**
EXPENDITURES			
OPERATING BUDGET			
Personal Services	$ 79,939	$ 61,666	$ 80,000
ERE	22,383	15,108	20,000
All Other Operating	167,678	150,681	164,574
Subtotal Operating Budget	**270,000**	**227,455**	**264,574**
GRANTS/PROJECTS:			
Learner-Centered Education	700,000	308,902	645,426
The University of Arizona College of Medicine-Phoenix Planning	250,000	96,000	110,000
Information Technology Collaborative	250,000	156,646	255,000
Arizona Water Institute (AWI)	200,000	200,000	100,000
Statewide Transfer Articulation System	125,000	70,500	50,000
Emerging Issues	399,286	375,000	500,959
Subtotal Grants/Projects	**1,924,286**	**1,207,048**	**1,661,385**
EXPENDITURES GRAND TOTAL	**$ 2,194,286**	**$ 1,434,503**	**$ 1,925,959**
SUMMARY BY INITIATIVE			
Learner-Centered Education	$ 860,000	$ 446,446	$ 800,000
The University of Arizona College of Medicine-Phoenix Planning	250,000	96,000	110,000
Information Technology Collaborative	250,000	156,646	255,000
Arizona Water Institute (AWI)	200,000	200,000	100,000
Operating	110,000	89,911	110,000
Statewide Transfer Articulation System	125,000	70,500	50,000
Emerging Issues	399,286	375,000	500,959
EXPENDITURES GRAND TOTAL	**$ 2,194,286**	**$ 1,434,503**	**$ 1,925,959**

ABOR CENTRAL OFFICE

TECHNOLOGY AND RESEARCH INITIATIVE FUND (TRIF)

FY 2008 ACTUAL / FY 2009 BUDGET

REGENTS INNOVATION FUND

Learner Centered Education Course Redesign Initiative (LCE-CRI)

	FY 2008 REV BUDGET	*FY 2008 ACTUAL*	*FY 2009 BUDGET*
REVENUE			
Carry Forward	$ 418,027	$ 418,027	$ 300,000
TRIF Revenue	441,973	428,222	500,000
TOTAL REVENUE	**$ 860,000**	**$ 846,249**	**$ 800,000**
EXPENDITURES			
OPERATING BUDGET			
Personal Services	$ -	$ -	$ -
ERE	-	-	-
All Other Operating (NCAT Contract)	160,000	137,544	154,574
Subtotal Operating Budget	**160,000**	**137,544**	**154,574**
GRANTS/PROJECTS:			
FY 2009 LCE Grants			300,000
FY 2008 LCE Grants	500,347	345,426	345,426
FY 2007 LCE Grants	110,634	-	-
FY 2002-2006 LCE Grants	89,019	(36,524)	-
Subtotal Grants/Projects	**700,000**	**308,902**	**645,426**
EXPENDITURES GRAND TOTAL	**$ 860,000**	**$ 446,446**	**$ 800,000**

TECHNOLOGY AND RESEARCH INITIATIVE FUND (TRIF)

LEARNER CENTERED EDUCATION

September 2008

LEARNER CENTERED EDUCATION (LCE) INITIATIVE

In 2001, the Arizona Board of Regents authorized $500,000 of the TRIF Regents Innovation Fund from Proposition 301 monies for grants to faculty to improve and expand learner-centered education throughout the university system.

The purpose of learner-centered education is to change the dynamics of student-faculty interaction to optimize student learning and learning outcomes (focusing on what is learned rather than on what is taught); to utilize technology to create opportunities for student learning; to utilize student peer interaction (collaborative learning); and to create more active learning venues for students beyond the standard lecture and discussion method.

Learner-Centered Education Grants: The First Five Years

Over five funding cycles from 2002 through 2006, 11 to 20 grants were awarded annually to faculty for projects which addressed learner-centered education in the areas of faculty development; course or program modification; assessment; or research. Funding for the last year of this five-year period culminated in September 30, 2007. Examples of these projects include:

- The Writing Network (UA), in which undergraduate English education majors, Writing Center tutors, and composition students worked with high school students on the skills they need to pass the AIMS test;
- Learner-Centered Assessment tools (ASU Poly and ASU West), which created a comprehensive library of online tools for developing, assessing, and improving learner-centered education; and
- TIMES (Training Engineering and Math for Engineering Success, NAU), which tested a set online training activities and tools designed to improve student performance in their entry-level engineering foundation courses.

The Tri-University collaboration on learner-centered practice (2004).

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Contents

LEARNER-CENTERED EDUCATION AWARDS, 2002-2009

LCE PROJECTS AWARDED 2002-2006

	2006		2005		2004		2003		2002		TOTAL	
	#	$	#	$	#	$	#	$	#	$	#	$
ASU	2	$49,911	4	$120,432	3	$99,690	8	$214,191	4	$90,000	**21**	**$574,224**
NAU	5	165,536	4	124,888	5	104,985	2	60,319	7	141,922	**23**	**597,650**
UA	3	84,948	4	97,916	6	141,139	5	125,930	8	195,137	**26**	**645,070**
NAU/UA	0	0	0	0	0	0	1	24,883	0	0	**1**	**24,883**
ASU/UA	1	48,871	0	0	0	0	00	0	0	0	**1**	**0**
NAU/ASU	0	0	0	0	1	49,400	1	50,000	0	0	**1**	**99,400**
TRI-U	0	0	2	195,700	1	99,997	1	95,555	1	100,000	**5**	**540,123**
TOTALS:	11	$349,266	14	$538,936	16	$495,211	18	$570,878	20	$527,059	**79**	**$2,481,350**

2007-2009 LCE COURSE-REDESIGN INITIATIVE PROJECTS

	Course(s) to be Redesigned	2-YR Budget	Enrollment	Annual Projected Savings*	Average Reduction in Cost Per Student
ASU	ACC 230: Uses of Accounting Information I	$50,285	1,800	$108,000	**33%**
ASU	CHM 101: General Chemistry	$100,000	4,500	$149,000	**16%**
ASU	College Algebra	$50,000	1,700	$249,900	**36%**
ASU	CSE 180: Computer Literacy	$51,763	2,200	$26,400	**24%**
ASU	GLG 101 Introduction to Geology I, Physical	$52,911	2,200	$52,800	**26%**
ASU	MGT 300 Organizational Behavior and Leadership	$49,665	270	$57,780	**57%**
ASU	CMN 225: Public Speaking	$41,178	200	$40,000	**58%**
ASU	WST 100 Women and Society WST 300 Women in Contemporary Society	$45,218	2,400	$50,400	**27%**
NAU	BIO 181 Introductory Biology	$49,518	975	$86,775	**34%**
NAU	PSY 101 Introduction to Psychology	$49,992	1,925	$26,950	**23%**
UA	MCB 181: Introductory Biology	$50,000	1,800	$244,800	**51%**
UA	CHEM 103/104: Fundamentals of Chemistry	$49,911	4,000	$68,000	**9%**
UA	NATS 101 A Geological Perspective	$50,331	1,200	$302,400	**58%**
	TOTALS:	**$690,772**	**25,170**	**$1,463,205**	**38% (avg)**

***NOTE:** Overall savings calculations are based on reductions in cost per student at original (pre-redesign) enrollment levels. However, cost-per-student reduction may also come through an increase in the total enrollment capacity at no or minimal increase in overall instructional cost. In one case, enrollment capacity is expected to increase 300%.

Learner-centered education has been a high priority for the Arizona Board of Regents, as reflected in the Arizona University System's Strategic Directions.

FINANCIAL INFORMATION

	FY 2002 ACTUAL	FY 2003 ACTUAL	FY 2004 ACTUAL	FY 2005 ACTUAL	FY 2006 ACTUAL	FY 2007 ACTUAL	FY 2008 REV. BUDGET	FY 2008 ACTUAL	FY 2009 BUDGET
REVENUE									
Carry Forward	-	$ 297,864	$ 307,772	$ 293,560	$ 18,965	$531,621	$ 418,027	$ 418,027	$ 300,000
TRIF Revenue	969,239	560,008	16,500	500,000	101,428	300,000	441,973	428,222	500,000
TOTAL REVENUE	$ 969,239	$ 57,872	$ 824,272	$ 93,560	$ 820,393	$831,621	$ 860,000	$ 846,249	$ 800,000
EXPENDITURES									
OPERATING BUDGET									
Personal Services	$ 3,133	$ 2,962	$ 9,365	$ 5,180	$ 9,959	$ 8,397	-	-	-
ERE	744	2,461	1,491	828	2,502	2,064	-	-	-
All Other Operating	2,469	5,254	2,121	1,575	831	60,307	160,000	137,544	154,574
Subtotal Operating Budget	$ 6,326	$ 0,677	$ 2,977	$ 7,583	$ 13,292	$ 40,768	$ 160,000	$ 137,544	$ 154,574
GRANTS/PROJECTS:									
FY 2002-2006 LCE Grants	$ 567,107	$ 554,488	$ 14,212	$ 454,666	$ 264,880	$339,360	$ 89,019	$ (36,524)	-
FY 2007 LCE Grants	-	-	-	-	-	-	110,634	-	-
FY 2008 LCE Grants	-	-	-	-	-	-	500,347	345,426	345,426
FY 2009 LCE Grants	-	-	-	-	-	-	-	-	300,000
Subtotal Grants/Projects	$567,107	$ 554,488	$ 514,212	$ 454,666	$ 264,880	$339,360	$ 700,000	$ 308,902	$ 645,426
EXPENDITURES, GRAND TOTAL	**$ 573,433**	**$ 575,165**	**$ 527,189**	**$ 462,249**	**$ 278,172**	**$410,128**	**$ 860,000**	**$ 446,446**	**$ 800,000**

Funding of the Arizona Board of Regents' Technology and Research Initiative Fund (TRIF) is provided by a six-tenths cent increase in the Arizona sales tax rate approved by the voters through Proposition 301 on the November 2000 general election ballot.

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Consistent with other TRIF projects, an evaluation of the LCE grant program was conducted in 2006 to provide direction for the program's future. The resulting important information on both project design and project management informed the decision to build on the past program and bring the LCE grant program to a new, higher level of institutional engagement, a new level of impact, and a new level of accountability.

LCE COURSE REDESIGN INITIATIVE

As a result of the study, the LCE Course Redesign Initiative (CRI), based on the highly-successful model of the National Center for Academic Transformation (NCAT), was launched in January 2007. NCAT is nationally known for its course redesign model for improving learning in large enrollment courses, incorporating technology and maximizing resources.

The Arizona Board of Regents' LCE CRI focuses on the redesign of large-enrollment, multi-section "gateway" or key undergraduate courses, using technology-supported active learning strategies.

The overall goal: To achieve improvements in student learning outcomes as well as efficiencies in instructional costs.

The LCE CRI program runs through September 2009 and is funded through the Regents Innovation Fund for the 2007-11 funding period. Two years of funding ($500,000 per year, FY 2007-08 and FY 2008-09), or a total of $1,000,000, has been designated for these projects.

2007-09 LCE CRI Funded Projects

From February through July 2007, project teams consisting of faculty and administrators at each of the three Universities went through a structured series of steps that called on them to do intensive analysis and planning as the foundation for their final redesign proposals.

A total of 13 projects were selected and announced in August 2007, representing a wide diversity of academic areas and course redesign strategies. Among the highlights of the 2007-09 projects:

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- The total amount awarded for the 13 projects is $690,772 over the two-year cycle.
- Total enrollment for all the redesigned courses is estimated at over 25,000 students annually.
- Project teams estimate a total annual savings of over $1.4 million, averaging $58 per student.
- Other expected outcomes: Increased enrollment capacity; reduction in bottleneck courses; and reductions in drop-fail-withdraw rates.

The project teams worked with NCAT to pilot their redesigned courses in Spring 2008. Even at this early, experimental stage, significant results were posted:

- Some teams produced equivalent learning outcomes at a reduced cost;
- At least two saw gains in students' scores on common exams;
- Others saw an increase in the course completion rate.

Looking Ahead . . .

The 13 projects will be implemented course-wide during the 2008-2009 academic year, followed by program evaluation and dissemination. The two-year cycle of LCE funding concludes in September 2009, with an assessment provided by NCAT.

Faculty participating in this initial LCE CRI grant cycle expect to gain the knowledge and skills to provide leadership to other departments in their institutions to apply the NCAT redesign model to additional courses. Expanding the model to other courses is, in turn, likely to generate greater savings in instructional costs, beyond the estimated $1.4 million in annual savings from the initial redesign projects.

PERFORMANCE MEASURES / DELIVERABLES	2002	2003	2004	2005	2006	2007 –2009 PROJECTED
Number of courses modified to LCE focus	95	123	104	68	72	17
Faculty addressing curriculum through LCE grants	188	147	111	141	133	65
Students affected by LCE grant projects	14,000	5,362	6,392	8,491	10,500	25,000-30,000 annually

Oversight of the LCE Program

ABOR Academic Affairs Committee (AAC) provides oversight for the LCE program, approves funding for grants and approves substantive changes to grant process/criteria.

2008-09 members: Regents Dennis DeConcini (chair), Bob McLendon, and David Martinez; the three university provosts: Betty Capaldi, ASU; Liz Grobsmith, NAU; and Meredith Hay, UA; ex-officio members Joel Sideman, ABOR; JC Mutchler, faculty; and Alysssa McKinley, NAU.

The LCE Advisory Council provides operational support and recommends projects for funding to the AAC.

2008-09 members: *Provost Appointees*: Arthur Blakemore, ASU; Don Carter, NAU; and Juan Garcia, UA. *Arizona Faculties Council:* William Verdini, ASU; Charles Connell, NAU; and JC Mutchler, UA.

For More Information:

- Visit the LCE link on the home page of the Arizona Board of Regents website, at www.azregents.edu.
- Contact Maryn Boess, Grants Program Manager, Arizona Board of Regents, 2020 N. Central Ave., Suite 230, Phoenix, AZ 85004, (602) 229-2560 , maryn.boess@azregents.edu

ABOR CENTRAL OFFICE

TECHNOLOGY AND RESEARCH INITIATIVE FUND (TRIF)

FY 2008 ACTUAL / FY 2009 BUDGET

REGENTS INNOVATION FUND

The University of Arizona College of Medicine-Phoenix, in partnership with Arizona State University-Planning

	FY 2008 BUDGET	*FY 2008 ACTUAL*	*FY 2009 BUDGET*
REVENUE			
Carry Forward	$ -	$ -	$ -
TRIF Revenue	250,000	242,222	110,000
TOTAL REVENUE	**$ 250,000**	**$ 242,222**	**$ 110,000**
EXPENDITURES			
OPERATING BUDGET			
Personal Services	$ -	$ -	$ -
ERE	-	-	-
All Other Operating	-	-	-
Subtotal Operating Budget	**-**	**-**	**-**
GRANTS/PROJECTS:			
Molera Alvarez Group	100,000	96,000	110,000
To be determined	150,000	-	-
Subtotal Grants/Projects	**250,000**	**96,000**	**110,000**
EXPENDITURES GRAND TOTAL	**$ 250,000**	**$ 96,000**	**$ 110,000**

THE UNIVERSITY OF ARIZONA COLLEGE OF MEDICINE-PHOENIX, IN PARTNERSHIP WITH ARIZONA STATE UNIVERSITY

FY 2008 RESULTS AND ACCOMPLISHMENTS

FY 2008 funds were expended in support of the planning for the development of The University of Arizona College of Medicine-Phoenix, in partnership with Arizona State University on the Phoenix Biomedical Campus (PBC). At present, the PBC comprises the Translational Genomics Research Institute (TGen) research building; and Phase One of the College of Medicine-Phoenix consisting of the three former PUHS buildings, the center one housing the Virginia G. Piper Auditorium, and the first Arizona Biomedical Collaborative research building (ABC 1).

Researchers from The University of Arizona and Arizona State University began moving into ABC 1 in July 2007. In an unprecedented partnership, researchers from ASU's Department of Biomedical Informatics fill the first two floors, while UA researchers fill the wet lab space on the top two floors. During Phase One, the College of Medicine-Phoenix partnered with Catholic Healthcare West for a 5-year lease on space at St. Joseph's Medical Center and Barrow Neurological Institute (BNI) for the Clinical Anatomy course. BNI provides the space, lab, and staff support for this required training for every medical student.

The Phase One facilities on the PBC support the inaugural College of Medicine-Phoenix class of 24 and will accommodate the larger class of 48 first-year medical students who entered in July 2008. Phase Two facilities will be necessary to expand the College of Medicine-Phoenix class size beyond initial levels.

During its recent session, the Legislature authorized $1 billion for new construction and building renewal at ASU, NAU, and the UA. The Stimulus Plan for Economic and Educational Development (SPEED) will provide $470 million for two new buildings on the PBC. These Phase Two projects will provide teaching space needed to expand the College to its full capacity of 150 first-year students each year. However, Phase Two research space for the College of Medicine-Phoenix is not expected to meet all future needs. The campus will continue to grow, with additional research space and clinical space required to accommodate expanding faculty appointments.

The Phase Two plan for expansion of the PBC provides a Health Sciences Education Building (HSEB); a second research building (ABC 2), which includes dedicated research space, shared core research support, and space for the National Institutes of Health (NIH) Clinical and Translational Science Award (CTSA) effort; and structured parking for at least 1,000

cars. The total estimated square footage for Phase Two is approximately 620,000 GSF, not including parking. Site work construction will begin in the summer of 2009. Completion of the HSEB is planned for the fall 2012 academic term. Construction of ABC 2 and the research cores will be completed about a year later.

The team of CO Architects and Ayers Saint Gross is proceeding with the detailed programming requirements of the education and research facilities. Meeting with some dozen user groups and oversight committees, the project team is verifying and refining requirements, as well as determining with the users how facilities and services might be shared among programs. Schematic design is under way, with completion anticipated early in 2009.

Health Sciences Education Building (HSEB)

The Health Sciences Education Building (HSEB) will include classrooms, a state-of-the-art simulation center, pre-clinical training suites, anatomy laboratories, library and learning resource center, and faculty offices for UA, ASU, and NAU. The facility will provide a unique opportunity to train healthcare professionals in an integrated environment, empowering them to become national leaders in interprofessional education and ultimately, delivery of healthcare. Estimated square footage for the HSEB is 308,000 GSF. Site work construction will begin in Summer 2009 with completion planned for Fall 2012 occupancy.

Arizona Biomedical Collaborative 2 (ABC 2) Research Building

Arizona Biomedical Collaborative 2 (ABC 2) will accommodate approximately 50 principal investigators from UA, ASU, and NAU. Its core facilities will support the researchers in ABC 1 and 2 and, potentially, research organizations based on the Phoenix Biomedical Campus, such as TGen. This facility will focus on disease-based translational research in the areas of cancer, neuroscience, diabetes, and cardiovascular disease. Dedicated laboratory space will be augmented with the shared research core that will include a vivarium, advanced imaging modalities, data center, and other infrastructure necessary to support an active research agenda. Estimated square footage for ABC 2 is 375,000 GSF. Completion is planned for 2013 occupancy.

Space will be dedicated for the work of the Health Research Alliance Arizona (HRAA). This will include clinical research space designed to support a statewide application for the collaborative Clinical and Translational Science Award (CTSA) grant application that will be submitted to the NIH in October 2008. The HRAA space will link clinical research and education. Advances then can be delivered to the community in the form of improved medical care, treatment, and prevention. Estimated square footage for the HRAA space is 21,000 GSF.

Results

The expansion of the College of Medicine-Phoenix class size to 150 students will be accommodated by the planned Health Sciences Education Building. The expanded class size will require additional basic science faculty, many of whom will be housed in ABC 2, and will also require a cadre of clinical faculty physicians, both employed by the UA and volunteers from our teaching faculty in the greater Phoenix area.

FY 2009 OVERVIEW

Next Steps

Developing a truly integrated and interprofessional campus will create a shared core of education and student support spaces supplemented by spaces dedicated to specific colleges or programs. Where this model has been implemented on other medical school campuses, some strategies employed have included:

- Highly flexible spaces with limited fixed furniture
- Ample “small group” sized rooms (10-30 students per)
- Large spaces that can be subdivided to accommodate different group sizes
- All classrooms and lecture halls to be centrally scheduled
- Shared use, e.g., by the College of Medicine, ASU College of Nursing & Healthcare Innovation, and the UA College of Pharmacy, of specialized facilities, such as clinical skills exam rooms
- Centralized classroom support staff for maintenance, audio-visual (AV), and information technology (IT)
- Flexibility in class scheduling for maximum utilization of all classrooms

A study addressing the capacity of the Phoenix Biomedical Campus site, and the adjacencies of the facilities and other healthcare components of an academic health science center, including a teaching hospital, clinical enterprises, and essential infrastructure, has been completed.

FY 2009 GOALS/OBJECTIVES

1. Complete planning, programming, and design of Health Sciences Education Building (HSEB).
2. Complete planning, programming, and design of ABC 2.

FY 2008 ACTUAL/FY 2009 PROJECTED PERFORMANCE MEASURES/DELIVERABLES

		FY 2008 Projected	FY 2008 Actual	FY 2009 Projected
	Return on Investment			
1.	Complete planning, programming, and design of HSEB.	Completed	In progress	Completed
2.	Complete planning, programming, and design of ABC 2.	Completed	In progress	Completed
3.	Complete master plan for PBC.	Completed	-	-
	Partnerships/Collaborations			
4.	Continue collaborative effort among UA, ASU, and NAU.	Ongoing	Ongoing	Ongoing
5.	Continue collaborative effort with City of Phoenix.	Ongoing	Ongoing	Ongoing

ABOR CENTRAL OFFICE

TECHNOLOGY AND RESEARCH INITIATIVE FUND (TRIF)

FY 2008 ACTUAL / FY 2009 BUDGET

REGENTS INNOVATION FUND

Information Technology Collaborative

	FY 2008 REV BUDGET	*FY 2008 ACTUAL*	*FY 2009 BUDGET*
REVENUE			
Carry Forward	$ -	$ -	$ 75,000
TRIF Revenue	250,000	242,222	180,000
TOTAL REVENUE	**$ 250,000**	**$ 242,222**	**$ 255,000**
EXPENDITURES			
OPERATING BUDGET			
Personal Services	$ -	$ -	$ -
ERE	-	-	-
All Other Operating	-	-	-
Subtotal Operating Budget	**-**	**-**	**-**
GRANTS/PROJECTS:			
Fred Estrella Consulting	5,000	4,707	-
Darel Eschbach Contract	1,000	706	-
SharePoint Project	35,000	34,956	-
Network Management System	-	(723)	-
Collaborative Supercomputing	150,000	75,000	75,000
AZ Tri-university Identity Federation Development	42,000	42,000	-
Projects to be determined	17,000	-	180,000
Subtotal Grants/Projects	**250,000**	**156,646**	**255,000**
EXPENDITURES GRAND TOTAL	**$ 250,000**	**$ 156,646**	**$ 255,000**

FY 2008 Actual / FY 2009 Budget
Regents Innovation Fund
Information Technology Collaborative

FY 2008 INITIATIVE OVERVIEW

Collaborative Information Technology (IT) projects that can improve service and/or result in cost savings continue to be of particular interest to the Regents. A consultant has been engaged to facilitate ASU's implementation of its HR and Student Information Systems (OASIS), which is a version of PeopleSoft. SharePoint for the central office continues to be implemented, and conversion to the next generation of SharePoint is underway. Numerous possibilities exist for the efficient and effective use of seed money, such as the continued use of a consultant to maintain and support the architecture for planning future IT development at the three universities and to monitor the ASU OASIS project.

FY 2008 GOALS/OBJECTIVES

1. Continue implementation of SharePoint.
2. Oversee ongoing IT Architecture development.
3. Oversee consultant for OASIS implementation at ASU.
4. Tri-University Identity Federation (ATIF) for Arizona University System consulting report will be reviewed and next steps identified.
5. Support collaborative university IT projects identified in the Moran Technology Consulting report.
6. Start implementing three collaborative projects including various IT security areas from the Moran Technology Consulting report.

FY 2008 PERFORMANCE MEASURES/DELIVERABLES

		Projected	*Actual*
	Return on Investment		
1.	Continued oversight of IT Architecture development.	On Schedule	Completed
2.	Implementation of major central office functions using SharePoint.	On Schedule	Completed and Ongoing
	Partnerships/Collaborations		
3.	Consulting on Tri-University Identity Federation.	On Schedule	On Schedule
4.	Moran Consulting on university collaborations.	On Schedule	Completed
5.	OASIS consulting report to the Technology Oversight Committee.	On Schedule	Completed

RESULTS AND ACCOMPLISHMENTS

1. The Architectures were important to demonstrate guidelines, standards, and best practices as the State Auditor General conducted an IT security performance audit of the three universities.
2. SharePoint sites have been implemented for the Legal, Audit, Capital, Technology Oversight, and Programs committees. In addition, the Regents Resource Center, master calendar and numerous other sites have been developed. A major conversion to the lasted version of SharePoint (MOSS 2007) was successfully completed. This virtual private network is a continuous process as additional Board of Regents and central office processes are refined and automated.
3. A consulting report was accepted and the Identity Federation project was funded by the Technology Oversight Committee.
4. The Moran report was completed and accepted by the Board. Seven of the eleven recommendations have either been completed or are underway. The recommendations include UA using the Oracle/PeopleSoft system for its HR and student systems; developing a website

for the universities to share their supercomputers; and purchasing IT Vulnerability Scanning/Management Solution project software packages for all three universities.

5. A consultant was retained and reported quarterly to the Technology Oversight Committee on the status of the ASU OASIS systems. A final report was received along with a checklist to use for future consulting engagements.

FY 2009 INITIATIVE OVERVIEW

A consultant to monitor UA's $90 million implementation of its Enterprise Resource Planning systems including HR and student information, financial and other management systems has been engaged for a three-year period. SharePoint for the central office continues to be implemented and will need modest additional financial support for training and enhancements. Numerous possibilities exist for the efficient and effective use of seed money for collaborative IT projects.

FY 2009 GOALS/OBJECTIVES

Additional goals and objectives will be provided when final IT projects are selected.

1. Continue implementation of SharePoint.
2. Oversee consultant for monitoring the UA ERP systems implementation.
3. Reporting on the Tri-University Identity Federation (ATIF) for Arizona University System project, the collaborative university supercomputing project, and the IT vulnerability scanning/management Solution project.

FY 2009 PERFORMANCE MEASURES/DELIVERABLES

		Projected
	Return on Investment	
1.	Implementation of major central office functions using SharePoint, including Regents Resource Center.	On Schedule
2.	Oversee consultant for monitoring the UA ERP systems implementation.	On Schedule
	Partnerships/Collaborations	
3.	Report on Tri-University Identity Federation.	On Schedule
4.	Report on the collaborative university supercomputing project	On Schedule
5.	Report on the IT vulnerability scanning/management solution project	On Schedule

ABOR CENTRAL OFFICE

TECHNOLOGY AND RESEARCH INITIATIVE FUND (TRIF)

FY 2008 ACTUAL / FY 2009 BUDGET

REGENTS INNOVATION FUND

Statewide Transfer Articulation System

	FY 2008 REV BUDGET	*FY 2008 ACTUAL*	*FY 2009 BUDGET*
REVENUE			
Carry Forward	$ -	$ -	$ 50,000
TRIF Revenue	125,000	121,111	-
TOTAL REVENUE	**$ 125,000**	**$ 121,111**	**$ 50,000**
EXPENDITURES			
OPERATING BUDGET			
Personal Services	$ -	$ -	$ -
ERE	-	-	-
All Other Operating	-	-	-
Subtotal Operating Budget	**-**	**-**	**-**
GRANTS/PROJECTS:			
Software interface	28,000	28,000	50,000
ATASS Web Design	42,500	42,500	-
Projects to be determined	54,500	-	-
Subtotal Grants/Projects	**125,000**	**70,500**	**50,000**
EXPENDITURES GRAND TOTAL	**$ 125,000**	**$ 70,500**	**$ 50,000**

STATEWIDE TRANSFER ARTICULATION SYSTEM

FY 2008 INITIATIVE OVERVIEW

In May 2007 a report was issued on a study of Arizona's transfer articulation system for community college students transferring to one of the public universities. Prepared by Hezel Associates of Syracuse, New York, Arizona was given generally high marks; however, one area identified for significant needed improvement was online services for transfer students. Students, faculty, academic advisors, and staff need easy access to information on transfer to support accurate decision-making, but the current system was given poor ratings for ease of use. As a result, the Arizona Board of Regents approved a one time allocation $125,000 of FY 2008 TRIF Regents Innovation Funds for improvements. The funds will support two major projects: 1) An upgrade to the navigation, layout, and design of the Arizona Transfer Articulation Support System (ATASS) website; and 2) the implementation of an automated system which will allow students to easily upload their completed courses to determine how credits will apply to major requirements at the universities; this system will provide students and advisors with a very tailored, easy-to-access academic plan for successful transfer.

FY 2008 GOALS/OBJECTIVES

1. Issue an RFP for a consulting firm to redesign the ATASS website (October 2007).
2. Implement the new design by May 2008.
3. Install software at all 10 community college districts and 3 universities for transcript upload (May 2008).

FY 2008 PERFORMANCE MEASURES/DELIVERABLES

Elements of the Hezel Study will be replicated, such as a satisfaction survey, once the new systems are in place and enough time has passed to determine their impact.

	Return on Investment	*Projected*
1.	Increased use of ATASS website	TBD
2.	Better student, staff, faculty, and advisor satisfaction with website	TBD
3.	Students better prepared to transfer to the universities	TBD

FY 2009 INITIATIVE OVERVIEW

ATASS Website:

A contract was issued to the design company, Cricket Contrast, to redesign the website in January 2008, and the new site is expected to be launched in Fall 2008, following a testing period with several classes of community college students. The new look and improved navigation is expected to increase the use and satisfaction with the website.

Software to Upload Courses

The community colleges and universities were notified in the Fall 2007 that the Arizona Board of Regents was funding the licensing and installation of software to make it easier for students upload their courses to see how they transfer to other institutions. Institutions were given 18 months, or through December 2008, in which to participate. The progress on this project has been much slower than expected. ASU will go 'live' in August 2008. Four community colleges have indicated their interest in installing the software but have not pursued the specific arrangements. All community colleges will be notified again this fall and it will be promoted at a meeting of the community college chief academic officers, also scheduled for this fall.

FY 2009 GOALS/OBJECTIVES

1. Implement the new design by September 2008.
2. Install software at all 10 community college districts and 3 universities for transcript upload (December 2008).

FY 2009 PERFORMANCE MEASURES/DELIVERABLES

	Return on Investment	*Projected*
1.	Increased use of ATASS website	TBD
2.	Better student, staff, faculty, and advisor satisfaction with website	TBD
3.	Students better prepared to transfer to the universities	TBD

ABOR CENTRAL OFFICE

TECHNOLOGY AND RESEARCH INITIATIVE FUND (TRIF)

FY 2008 ACTUAL / FY 2009 BUDGET

REGENTS INNOVATION FUND

Arizona Water Institute (AWI)

	FY 2008 REV BUDGET	*FY 2008 ACTUAL*	*FY 2009 BUDGET*
REVENUE			
Carry Forward	$ -	$ -	$ -
TRIF Revenue	200,000	200,000	100,000
TOTAL REVENUE	**$ 200,000**	**$ 200,000**	**$ 100,000**
EXPENDITURES			
OPERATING BUDGET			
Personal Services	$ -	$ -	$ -
ERE	-	-	-
All Other Operating	-	-	-
Subtotal Operating Budget	**-**	**-**	**-**
GRANTS/PROJECTS:			
The University of Arizona	200,000	200,000	100,000
Subtotal Grants/Projects	**200,000**	**200,000**	**100,000**
EXPENDITURES GRAND TOTAL	**$ 200,000**	**$ 200,000**	**$ 100,000**

ARIZONA WATER INSTITUTE (AWI)
FY 2007 ACTUAL / FY 2008 BUDGET

	FY 2005 Actual (*)	FY 2006 Actual (**)	FY 2007 Actual	FY 2008 Budget	FY 2008 Actual	FY 2009 Budget***
REVENUE						
Carry Forward	$ -	$ -	$ 58,000	$ 48,490	$ 48,490	$ 57,394
NEW TRIF Revenue	$ 37,500	$ 150,000	$ 200,000	$ 200,000	$ 200,000	$ 100,000
Total Revenue	**$ 37,500**	**$ 150,000**	**$ 258,000**	**$ 248,490**	**$ 248,490**	**$ 157,394**
EXPENDITURES						
Personnel Services	$ -	$ 84,200	$ 192,310	$ 210,600	$ 181,080	$ 157,394
Other Operating	$ 37,500	$ 7,800	$ 17,200	$ 20,000	$ 10,016	$ -
Total Expenditures	**$ 37,500**	**$ 92,000**	**$ 209,510**	**$ 230,600**	**$ 191,096**	**$ 157,394**

* FY 2005 TRIF funds were allocated to Arizona Department of Commerce (not to AWI) to fund development of AWI business plan by Battelle Institute.

Administrative Associate.

***ABOR funds will be supplemented with funds from other sources to pay the Director's and Admin Support salaries and operating costs for FY 2009

Innovation

Building a Community

AWI is about people building collaborative, multidisciplinary solutions to water management challenges. One of AWI's most significant contributions is facilitating collaborations involving citizens, water managers, agencies, and policy makers and Arizona's universities. It is only through such collaborations that we can develop sustainable water management solutions.

Future of AWI

AWI is currently supported by the Arizona Board of Regents and the state general fund through an appropriation to the three universities. The universities also provide financial and operational support through other funding sources. AWI plans to be increasingly self-sustaining through federal grants, foundation support, project-related income, and private donations.

Partnership Opportunities

Multiple ways to partner with AWI

- **Sign up for our newsletter:** Contact polms@email.arizona.edu
- **Become a Sponsor:** Individuals and organizations can join AWI to support our efforts to resolve Arizona's water issues and to develop international water sustainability solutions. We have non-profit tax status so that any gifts are tax deductible.
- **Become an AWI Faculty Affiliate:** Faculty affiliates are faculty and staff members who are engaged in AWI research projects or are willing to help with new projects on a time-available basis.
- **Become a Partner:** AWI serves as an information broker, connecting water quality and water supply issues with appropriate solutions. We can help to find funding for projects as well as work collaboratively to develop research teams and proposals. Our partnerships can be built around individual projects or longer-term programs.

Institute Sponsors

APS
Arizona Water and Pollution Control Association
Central Arizona Project
City of Chandler
City of Phoenix
City of Scottsdale
City of Tucson
Global Water Resouces, LLC
National Water Research Insitute
Pima County Wastewater District
Salt River Project
Tucson Electric Power Company/Unisource
United States Bureau of Reclamation

Binational Institute for Water and Renewable Energy

The Binational Institute is a joint effort of the states of Arizona and Sonora to enhance water and energy sustainability in the U.S.-Mexico border region. AWI is coordinating the efforts of U.S. partners and Consejo Estatal de Ciencia y Tecnología de Sonora is coordinating the Sonoran partners.

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4th Edition, August2008

ARIZONA WATER INSTITUTE

A consortium of Arizona's three universities focused on water sustainability through research, technical assistance, education and technology.

ASU | The University of Arizona Tucson Arizona | Northern Arizona University

www.azwaterinstitute.org

Background

Arizona's three state universities —

Arizona State University, Northern Arizona University, and The University of Arizona — have formed a partnership that will position the state as a world leader in water resources management and technology. The primary driver for this initiative is sustaining Arizona's water supply, which is crucial to the state's economy, the health and well-being of its residents, and its natural environment.

Arizona is known worldwide for its innovative water management activities. Although the water issues facing the state are daunting, the state's commitment to long-term water supply availability has resulted in billions of dollars in investment for renewable supplies, innovative regulatory programs, and development of significant institutional capacity.

The Arizona Water Institute (AWI) combines the expertise of Arizona's water managers with the resources of the three universities to support water resources management and technology development in real-world applications. This unique partnership — which also includes three state agencies, Water Resources (ADWR), Environmental Quality (ADEQ), and Commerce (ADoC) — was formed to provide access to hydrologic information, support communities, and develop technologies to promote water sustainability. AWI founding partners also include Intel Corporation and the Salt River Project.

AWI: Water sustainability through collaborative partnerships among Arizona's three universities, state agencies, the private sector and communities

Mission & Structure

Arizona Water Institute's Mission

- AWI serves as a hub of research, community assistance, and analytical support to ensure clean and sustainable water resources;
- AWI provides education, training, and professional capacity building to citizens and state, local, and tribal government decision makers about conserving and managing water in arid/semi-arid environments;
- AWI serves as a driver of economic opportunity by developing water products and services.

AWI Structure

The Executive Committee provides direction and oversight of AWI activities. It is comprised of:

- the Vice-Presidents for Research at the three universities;
- a representative of the Governor's office;
- the chair of a 40-member external advisory committee made up of diverse water interests; and
- the Director of ADWR (a rotating position among the three agencies).

The Executive Director reports to the committee. Faculty coordinators on each campus help match resources within the three institutions to AWI projects and ensure the timely completion of projects. Associate Directors located in ADWR, ADEQ, and ADoC ensure that AWI provides the agencies with timely and appropriate support by working on projects and providing technical assistance.

Photo of Roosevelt Dam: Salt River Project

Collaborative Research

AWI initiatives focus on broad areas of interest critical to governments, industries, and communities:

- Web-based access to water information through the Arizona Hydrologic Information System;
- Capacity building/watershed research and support;
- Climate change, drought, and adaptation;
- Emerging contaminants and treatment technologies;
- Salinity management and technologies; and
- Water and energy strategic research.

Services

AWI provides services to stakeholders, industry, agencies, and communities:

- Water-related data access and retrieval;
- Projects focused on real world solutions;
- Presentations for groups and events;
- Planning support and meeting facilitation for water-related applications;
- Workshops and research proposal development; and
- Technology development and commercialization.

Collaborative teams of university researchers and stakeholders in government, industry, tribes, water companies, watershed alliances, agriculture, and other organizations work to solve the critical water issues facing Arizona and other semi-arid and arid environments.

Accomplishments

In its first year, AWI funded 18 collaborative projects and 15 more in its second year. A key focus is the Arizona Hydrologic Information System (AHIS). Working with partners such as ADWR, ADEQ, and the Salt River Project, AWI is developing the tools to store, access, retrieve, and analyze water information to support water-related decisions. Other projects include:

Arizona Wells interface with AHIS
www.sahra.arizona.edu/wells/

Water quality/treatment
- Testing of electrocoagulation technology in semiconductor manufacturing
- Analysis of emerging contaminants in water
- Removal of estrogenic compounds at wastewater treatment plants
- Development of a sensor for disinfection byproducts in drinking water
- Development of a drought indicator and trigger for community water systems
- Increasing water recovery during reverse osmosis treatment of CAP water

Tribal support
- Assessment of the Navajo Nation's hydroclimate network
- Development of plans with Intertribal Council of Arizona for tribal water management in Arizona

Watershed Assistance and Facilitation
- Scenario development and visualization for East Valley Water Forum drought planning
- Review of ADWR Management Plan effectiveness
- Assessment of environmental flow requirements of the Verde River
- Development of integrated riparian area monitoring
- Identification/characterization of heritage waters
- Evaluation of irrigation controller technologies

Water/energy sustainability
- Evaluation of regional water and energy needs

ABOR CENTRAL OFFICE

TECHNOLOGY AND RESEARCH INITIATIVE FUND (TRIF)

FY 2008 ACTUAL / FY 2009 BUDGET

REGENTS INNOVATION FUND

Emerging Issues

	FY 2008 REV BUDGET	*FY 2008 ACTUAL*	*FY 2009 BUDGET*
REVENUE			
Carry Forward	$ 701,259	$ 701,259	$ 425,959 [1]
TRIF Revenue	198,027	198,027	575,000
TOTAL REVENUE	**$ 899,286**	**$ 899,286**	**$ 1,000,959** [2]
EXPENDITURES			
OPERATING BUDGET			
Personal Services	$ -	$ -	$ -
ERE	-	-	-
All Other Operating	-	-	-
Subtotal Operating Budget	**-**	**-**	**-**
GRANTS/PROJECTS:			
Beat the Odds Institute (CFA)	250,000	250,000	250,000
Arizona Academic Scholars Program (ABEC)	75,000	75,000	75,000
Health Research Alliance Arizona CTSA (UA) [3]	500,000	500,000	500,000
ASU Decision Theater (Strategic Plan)	50,000	50,000	-
Algebra II Assessment Pilot	15,000	-	15,000
Projects to be determined	9,286	-	160,959
Subtotal Grants/Projects	**899,286**	**875,000**	**1,000,959**
EXPENDITURES GRAND TOTAL	**$ 899,286**	**$ 875,000**	**$ 1,000,959**

[1] Pursuant to ABOR direction in June 2008, $175,000 of Arizona Regents Reach Out (ARRO) funds were transferred into the Regents Innovation Fund to address emerging issues in FY 2009.

[2] $840,000 of this amount has been committed by prior ABOR actions, leaving $160,595 uncommitted at July 1, 2008, and available for emerging issues in FY 2009.

[3] HRAA CTSA funds were/will be allocated to UA and are included in UA's reports. The amounts here are for informational purposes only and are not carried forward to the Regents Innovation Fund Summary page or to the Central Office Grand Summary page.

ARIZONA BUSINESS AND EDUCATION COALITION (ABEC)
ARIZONA ACADEMIC SCHOLARS INITIATIVE

TECHNOLOGY AND RESEARCH INITIATIVE FUND (TRIF)
FY 2008 ACTUAL / FY 2009 BUDGET

FY 2008 INITIATIVE OVERVIEW

The goal of the Arizona Academic Scholars Initiative is to build community-based partnerships around the goal of preparing our high school graduates for both careers and postsecondary training and education. The Arizona Business & Education Coalition (ABEC) just completed the second year of three-year funding from the Arizona Board of Regents TRIF grant to support the Arizona Academic Scholars Initiative. The focus of activity for FY 2008 was to expand the Initiative beyond the initial 8 pilot districts and their communities.

In May 2007, the State Board of Education (SBE) passed a resolution to "support the Arizona Scholars Initiative as a means of encouraging students to engage in a rigorous course of study so that they are adequately prepared for work and post-secondary education in the 21st century". In December 2007, the SBE approved increased high school graduation requirements effective in 2012 and 2013. These graduation requirements include increased math and science credits. The Scholars course of study is seen as an interim step toward the implementation of these more rigorous graduation requirements.

Allowing each community to work together as business and education partners in support of encouraging a Scholars high school course of study with rigor in math and science, along with additional academic areas, allows for the flexibility to make each partnership successful. The collaboration between the State Board of Education and the Arizona Business & Education Coalition serves as a model for business and education partnerships to better prepare students and communities for the academic rigor which is necessary for success in today's postsecondary education and global economy.

FY 2008 GOALS / OBJECTIVES

1. Continue to expand the Arizona Academic Scholars Initiative beyond the original 8 pilot districts, in partnership with the State Board of Education.

2. Increase the number of high school students successfully completing an academically rigorous curriculum.

3. Advocate for increased rigor in math and science as part of increased high school graduation requirements.

4. Decrease the number of students requiring remediation in the community college and university systems.

5. Encourage businesses to provide incentives and/or academic support to high school students to continue on the Scholars course of study.

FY 2008 PERFORMANCE MEASURES / DELIVERABLES

		FY 2008 ACTUAL
1	Increase presentations of the Arizona Academic Scholars Initiative statewide	• Multiple presentations were given to Superintendents, key educators, School Boards and business organizations in order to finalize the 8 additional Scholars partnerships
2	Increase the number of high school students graduating as Arizona State Scholars	• Approximately 1450 more Academic Scholars medallions were ordered in 2008 as compared to 2007 for seniors graduating as Arizona Academic Scholars. These figures do not include Mesa Public Schools (have chosen not to use medallions) • District final reports indicate a total of 5302 students in the 16 districts would graduate as Arizona Academic Scholars
3	Increase the number of $8^{th}/9^{th}$ graders receiving presentations regarding the Scholars course of study	• Approximately 745 Scholars presentations were given to $8^{th}/9^{th}$ grade students in the 16 districts. Many of these presentations were held in classrooms and some in an assembly format with an estimated total of 23,500 students receiving Scholars information

FY 2008 RESULTS AND ACCOMPLISHMENTS

1. The total number of districts who signed letters of commitment to become Arizona State Scholar partnerships doubled in the year, going from a total of 8 pilot districts to a total of 16 participating districts.

2. New marketing materials were developed to achieve optimum ease of use for each district and give the products a more appealing look. Brochure messaging was targeted to four different audiences: education/business leaders, parents, students and teachers/counselors. Each brochure is available electronically so that it may be printed as often and in the quantity which best meets the needs of each district. In addition, the parent brochure is available in Spanish to allow as many families as possible to understand the Scholars message and the importance of academic rigor in order to be more successful in both postsecondary education and future careers.

3. Each district Superintendent was asked to identify a district coordinator for the Scholars program. Both the coordinator and the Superintendent were advised of their responsibility to complete a simple final report at year-end in order to more accurately track the success and measurable outcomes of each district.

A summary of this report is attached at the end of this report. In order to compensate for the time required for this additional work, a $1000 stipend was offered to the district coordinator (if approved by their Superintendent). A total of 10 coordinators received this compensation.

4. The number of medallions ordered by the districts to recognize seniors graduating as Arizona Academic Scholars increased by almost 1500 from the prior year (both years exclude Mesa Public Schools because they have so far chosen not to use medallions as a form of recognition). The cost of these medallions was covered through the ABOR grant and through funding from UnitedHealthcare for the districts in Pima County.

5. According to the final reports from each district, the total number of seniors graduating as Arizona Academic Scholars was anticipated to be 17,479 statewide. This represents 30% of the total number of anticipated seniors graduating from these districts statewide.

6. Approximately 23,500 students in 8^{th}/9^{th} grade received the Arizona Academic Scholars presentation showing the importance of academic rigor for success in postsecondary education and their future careers. Though Arizona Academic Scholars is most directed to the middle 50% student, it is open to all students with the anticipation both they, and their families, need to better understand the realities of the global economy in the 21^{st} century.

7. In part due to the influence of ABEC and its commitment to more academic rigor for our high school students, the SBE approved increased high school graduation requirements starting in the years 2012 and 2013. These requirements will include increased math and science. The Arizona Academic Scholars Initiative is now viewed as an effective interim step toward helping prepare students for this increased rigor. As a result, the Scholars course of study has been increased for the graduating students of 2013 and beyond to reflect rigor beyond the basic requirements. The final determination of this course of study was made with input from key educators and business leaders statewide.

8. A dinner meeting with available district coordinators took place in June, 2008 in conjunction with the ABEC annual conference. It was evident from this meeting that among some of the original Scholars pilot districts, the power to influence students, parents, educators and the general public as to the importance of academic rigor has become reality. As the coordinator from one district reported, the increased high school graduation requirements would have met with great distress in their community had the Scholars initiative not been strongly in place.

9. Presentations have been made to key educators and business leaders who have shown interest in participating in the Scholars Initiative as we move into the new academic school year. Working with Chambers of Commerce or other business organizations continues to be a very viable option to encourage businesses and their local school districts to work together as a community to implement the Initiative.

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FY 2009 INITIATIVE OVERVIEW

The goal of the FY 2009 Arizona Academic Scholars Initiative remains centered on the commitment to build community-based partnerships to prepare our state's high school graduates for both careers and postsecondary training and education. The goal of allowing each community to work together as business and education partners in support of encouraging a Scholars high school course of study with rigor in math and science, along with additional academic areas, allows for the flexibility to make each partnership successful.

The collaboration between the State Board of Education and the Arizona Business & Education Coalition serves to more quickly spread the Initiative statewide as an interim step in preparing for the increased high school graduation requirements which become effective in 2012 and 2013.

It is important to use this year to help the participating districts become self-sustaining. With the updated marketing materials, student presentations and an updated website, it is hoped this can done without causing undo stress or cost to each district. It will be important for the Scholar districts to recognize the value of having business partners to help deliver the Scholars message and supply incentives as may be appropriate (may be in the form of "prizes" and/or tutoring, mentoring, etc.). It is always valuable to have students hear from business leaders the importance of preparation for the workplace of the 21st century. In addition, business partners can help defray the cost of printing, medallions or other needs as they may arise.

FY 2009 GOALS / OBJECTIVES

1. Continue to expand the Arizona Academic Scholars Initiative beyond the 16 current districts.

2. Increase the number of high school students successfully completing an academically rigorous curriculum.

3. Continue to increase the number of 8th/9th grade students introduced to the Arizona Academic Scholars initiative and encourage them to take the Scholars course of study.

4. Complete the update of Scholars materials so it is easy to access, appealing to each audience and is current. Updating the Scholars website is part of this process.

5. Encourage districts to include their business partners in carrying out the Scholars initiative and to achieve greater support of all types.

FY 2009 PERFORMANCE MEASURES / DELIVERABLES

		FY 2008 PROJECTED
1	Increase the number of Arizona Academic Scholars district statewide	TBD
2	Increase the number of high school students graduating as Arizona State Scholars	TBD
3	Increase number of 8th / 9th graders receiving presentations regarding the Scholars course of study	TBD

Arizona Academic Scholars

Statewide Summary
2008

Total number Scholar District/Community Partnerships:	**16**
Amphitheater	Payson
Apache Junction	Peoria
Chandler	Sahuarita
Flagstaff	Snowflake
Flowing Wells	Sunnyside
Higley	Tanque Verde
Marana	Tucson
Mesa	Vail
Total number of new district Scholar partnerships this year:	**8**
Total number 8th/9th grade Scholar presentations given:	**745**
Total number 8th/9th grade students receiving Scholar presentations:	**21,543**
Total number Scholars presentations given by educators:	**693**
Total number Scholars presentations given by business/community members:	**52**
% of 8th/9th grade Scholar presentations given by business/community members:	**7.5%**
Number of Scholar districts using business partners:	**5**
Total number of graduating seniors in Scholar districts:	**17,479**
Total number of graduating seniors identified as Arizona Academic Scholars:	**5302**
% of seniors graduating as Scholars in Scholar districts:	**30%**
Approximate % of minority students graduating as Scholars	**27%**
Number of Scholar districts reporting this figure	**10.5**

ARIZONA BUSINESS EDUCATION COALITION (ABEC)
ARIZONA ACADEMIC SCHOLARS INITIATIVE
TECHNOLOGY AND RESEARCH INITIATIVE FUND (TRIF)
FY 2008 Actual / FY 2009 Budget

	FY 2007 ACTUAL	FY 2008 BUDGET	FY 2008 ACTUAL	FY 2009 BUDGET
REVENUE				
Carry over from prior year		$ 71,484		$ 57,542
TRIF Grant	$ 75,000	75,000		75,000
TOTAL REVENUE	**$ 75,000**	**$ 146,484**	**$ 146,484**	**$ 132,542**
EXPENDITURES				
SALARY				
Project Manager				
Support Staff		5,000	5,289	7,000
OPERATING				
Meeting Expenses			34	300
Postage & Delivery	22	1,500	32	300
Printing & Reproduction	12	1,500	1,988	2,500
Scholar Recognition		14,000	11,413	18,000
Stipends		15,000	10,000	15,000
Supplies	20	1,000	206	800
TRAVEL				
Airfare	507	2,500		1,500
Auto/Mileage	237	2,500	728	2,500
Event Registration		2,000	125	800
Lodging		2,500	118	800
Meals		1,500	76	800
CONTRACTUAL				
Accounting				
Intern(s)		8,000		500
Marketing/Communications		12,000	20,576	25,300
State Program Director	2,625	30,000	37,941	45,000
Temp Services	83	1,000	416	500
Web Services & Support	10	1,000		2,500
Web/Graphic Design		15,000		7,942
Other Contracted Services		3,000		500
TOTAL EXPENDITURES	**$ 3,516**	**$ 119,000**	**$ 88,942**	**$ 132,542**

FY 2009 Budget Narrative:

Scholar Recognition: Includes medallions for seniors graduating as Scholars.

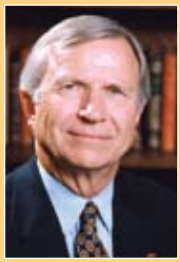
Stipends: Provides $1,000 to each participating school district's primary coordinator if approved by district superintendent.

IDEAS AT WORK

CENTER FOR THE FUTURE OF ARIZONA

DEDICATED TO IMPROVING THE QUALITY OF LIFE FOR ALL ARIZONANS

AUG 2008



Dr. Lattie F. Coor
Chairman and CEO

Dr. Sybil Francis
Executive Director

TECHNOLOGY AND RESEARCH INITIATIVE FUND (TRIF)

CONTENTS

The Center for the Future of Arizona was created to improve the quality of life for all Arizonans. As a "do tank" emphasizing action and results, the Center keeps important issues in public view by providing focused attention and thoughtful action on pressing problems. One of the most important issues of our time is access to high quality education for all Arizonans. The Beat the Odds project is an example of the Center's "do tank" role and an early indicator of its intention to use electronic communication tools for collaborative, thoughtful action to improve education in Arizona.

The Center's Beat the Odds (BTO) Institute was created to serve as the umbrella organization for all activities designed to implement the findings and recommendations of a landmark Arizona study, "Why Some Schools with Latino Children Beat the Odds…and Others Don't." The study is important because it found 12 Arizona schools that were successfully serving mostly poor, mostly Latino students. It demonstrates clearly that "demography is not destiny," that all children can learn, and that our schools can be transformed to meet the human and social needs of the 21st century.

The Institute's goal is to implement the "six keys to success" identified in the study by helping school leaders embed the principles into their culture and operating behavior.

The Six Keys to Success

Disciplined Thought
1. Clear Bottom Line - focus on achievement per student.
2. Ongoing Assessment - use data in the classroom to improve student achievement.

Disciplined People
3. Strong and Steady Principal - not too rigid, not too flexible.
4. Collaborative Solutions - share the responsibility for success.

Disciplined Action
5. Stick with the Program - pick a good one and stick with it.
6. Built to Suit - customize instruction; one size does not fit all.

The establishment of the BTO Institute represents a major commitment by the Center to further disseminate the study and implement its findings at the school and district level. In so doing, the Institute is mobilizing Arizona around a new goal – significantly improving "achievement per student" in all schools.

The central thrust of the BTO Institute is the BTO School Partners Program, described below, and a key to the success of both is the online resource center—the sophisticated, highly interactive website funded by the Arizona Board of Regents Technology and Research Initiative Fund (TRIF) Regents Innovation Fund. The resource center provides users with an online forum for discussion and dialogue and provides access to practical techniques for improving achievement per student, as well as evaluation, planning and training tools, new research, directories and links to other organizations actively engaged in education reform including the state universities. Significant progress in developing and expanding the Partners Program and enhancing the website has been made in FY 2008, the second year of TRIF funding.

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Performance Analysis

Enhancement of Online Resource Center/Website

Phase 1 of the Beat the Odds website has been completed. Phase 2 is underway and one major part—constructing the policy/legislation tracking functions—has also been completed. The next phase is the continued development and enhancement of the site to adapt it to the needs of the BTO Partners through the continued refinement and customization of tools and resources.

During FY 2009, the student program to support the ongoing research content of the website will be implemented. Also planned is the addition of e-commerce capability to support the addition of significant training and implementation tools, including a BTO Handbook now in development. Visit http://www.beattheoddsinstitute.org to view the site.

Partnerships

The Beat the Odds Website Initiative has been a powerful catalyst in building a network of partnerships.

- **Schools – The Beat the Odds Partners Program**

  Twenty-seven Elementary, Middle School and High School principals from 12 districts and one charter school were recruited as the first cohort of the Beat the Odds Partners Program during FY 2008 and most are continuing into FY 2009. Through the program, experienced principals act as mentors to the partner principals and both participate in monthly leadership training seminars on key aspects of the BTO principles, receiving and sharing practical advice on topics such as data analysis and ongoing assessment, collaboration, high stakes testing and parent empowerment. The success of the program to date has led us to add 30 new schools for the coming school year, a step that will more than double the number of participating schools to a total of approximately 55 schools in the program.

  Each cohort is expected to continue for three years as participants work toward designation as a Beat the Odds School as measured by improvements in performance similar to the successful schools cited in the original study.

- **Organizational Partners**

  Numerous organizations are working with CFA to integrate BTO principles into their professional training programs and to support statewide implementation in Arizona schools. Program partners include Greater Phoenix Leadership Council, Teach for America, the Pew Center for the States, WestEd, the Governor's P-20 Council, Arizona's three public universities, the Arizona Latino Research Enterprise and all major Arizona education associations. The website provides links to all partner organizations.

- **Funding**

  The $250K annual TRIF funds have enabled us to leverage other support for the BTO project at a rate of nearly 3:1. Funding partners include the Arizona Community Foundation ($100K), Stardust Foundation ($250K), the Salt River Pima Indian Community ($450K), the University of Phoenix ($500K over 3 years) and the Helios Foundation ($66K) as well as a major gift from Rusty and Rosie Lyon ($100K).

Collateral Activities

- Even as implementation of the TRIF project proceeds, the Center continues to actively disseminate the BTO findings. For example, in October the Beat the Odds keys to success were shared with approximately 1,000 teachers from the Cartwright School District. Similarly, the Center presented the BTO principles in Tucson for the Amphitheater District leadership team, and to all of Yuma County's schools administrators and teachers at their annual Professional Development Day. In December an in depth discussion was held with teachers at Larry C. Kennedy and Excelencia Schools in the Creighton School District. Presentations were also made to the Arizona Charter School Association, the Gear Up Conference (a national college access program) hosted in Arizona by NAU, to Hispanic legislators as part of a meeting of the National Conference of State Legislators and to a variety of local service groups.

- A comprehensive assessment and evaluation program has been developed and is in use for all activities related to Beat the Odds, including the website.

- Several mentors for the BTO Partners Program have been recognized recently for their performance. One mentor was named a Rodel Exemplary Principal, one of only four named state-wide, another was a finalist, and a third was nominated for the honor. Another was honored as a National Distinguished Principal. Two are principals of "Excelling" schools and another of an A+ school. One of the mentors earned his doctorate at ASU this past year.

Goals & Results

The mission of the Beat the Odds Institute and its online resource center is to improve "achievement per student" by working collaboratively with K-12, community college and university educators, and with policy makers and funders to embed BTO principles in Arizona's K-12 schools and beyond.

Financial Information

Fiscal year ending June 30, 2008

	FY 2007 Actual	FY 2008 Budget	FY 2008 Actual	FY 2009 Budget
REVENUE				
Carry Forward	$ 0	$69,850	$69,850	$10,000
New TRIF Revenue	$250,000	$250,000	$250,000	$250,000
TOTAL REVENUE	$250,000	$319,850	$319,850	$260,000
OPERATING BUDGET				
Personal Services	$75,695	$168,305	$138,000	$150,000
Outside Vendors	$97,520	$87,480	$161,850	$62,000
All Other Operating	$6,935	$12,065	$10,000	$8,000
Student Program		$52,000		$40,000
TOTAL EXPENDITURES	**$180,150**	**$319,850**	**$309,850**	**$260,000**

Indicative Results in FY 2008 (year 2)

1. RETURN ON INVESTMENT: Grants and gifts to date leverage TRIF funds at the rate of 3:1. It is anticipated that the rate will continue in FY 2009 as funding is secured to expand the work of the Beat the Odds Institute. To further leverage TRIF funding, an agreement has been signed with the ASU School of Public Affairs for four undergraduate students (with preference given to Doran Scholars) and one graduate student to engage with the Center and the BTO Institute on the various projects highlighted in this report. The students will be making active use of the website and will develop materials that will enhance it. A School of Public Affairs faculty member will be a liaison with the students and the Center.

2. KNOWLEDGE TRANSFER: In addition to ongoing dissemination of the BTO study, approximately 55 schools in Maricopa County have signed formal agreements with the Institute to pursue designation as a Beat the Odds School, which requires schools to achieve performance criteria similar to those schools in the original study. That number will continue to grow in FY 2009 as the program implements additional expansion strategies.

3. WORKFORCE DEVELOPMENT: With support from the Regents Innovation Fund, the Center will continue to focus on embedding key concepts from the Beat the Odds study in Arizona schools. By building on the knowledge gained, the Center will expand its impact more broadly on education reform, first by collaboratively exploring new pathways to post secondary education with K-12 schools, community colleges and our state universities. Another example is the Center's partnership with Greater Phoenix Leadership and its partner organizations statewide that provides ongoing opportunities to connect BTO and other Center activities to the efforts of the business sector to achieve the skilled workforce Arizona needs for the future. The Center's work to date in developing the Beat the Odds online resource center provides the opportunity to extend this capacity to other strategically important State initiatives, such as the creation of a common vision for Arizona—"The Arizona We Want".

4. EDUCATION OUTREACH: The BTO website currently averages about 11,000 hits per month, indicating the extent to which the site enables useful outreach and communication. In addition to the numerous partnerships that have been developed with schools, foundations, professional associations and organizations committed to educational success for Arizona, the Institute has developed a BTO instructional video available online and on DVD. Links to all the partner organizations also are available on the website. Additionally the original study is available online, as is a Spanish translation of the key findings of the report. As well, a Handbook for BTO implementation is being developed as an additional expansion strategy to enable broader use of the Beat the Odds concepts by schools and districts throughout Arizona, and will be piloted on the website. The Institute will continue pursuing both "top-down" and "bottom-up" strategies during FY 2009 to expand the network of BTO partnerships and to develop linkages to other important Center initiatives.

Management

Center for the Future of Arizona
Lattie F. Coor, Ph.D., Chairman & CEO
Sybil Francis, Ph.D., Executive Director
Marjorie A. Kaplan, Ph.D., Beat the Odds Institute Director

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TECHNOLOGY AND RESEARCH INITIATIVE FUND (TRIF)

REGENTS INNOVATION FUND FY 2008 REPORT

Funds to Build the Infrastructure for Health Research Alliance Arizona (HRAA)

The Arizona application for a Clinical and Translational Science Award (CTSA), entitled Health Research Alliance Arizona (HRAA), was submitted to the National Institutes of Health in November 2007. The application was well received, but as is typical for first time applications to the NIH, was not in the fundable range (In the 2007 submission cycle no first time submissions were awarded). The HRAA Leadership is revising the 2007 proposal in light of the reviewers' summary statements and plans to submit a new CTSA proposal on October 21, 2008. One of the important elements of that 2008 submission will be a comprehensive discussion of what Arizona institutions and HRAA have already implemented. This will arguably be the most critical factor in the upcoming review, since it will demonstrate that the ambitious goals of HRAA are being achieved. The TRIF funds are vital in that effort, as the primary source allowing HRAA to build success in three critical areas: programs in clinical and translational science education; the web portal which serves as the virtual home of HRAA and its diverse members; and translational research that brings collaborators together across HRAA member organizations and tests the models being developed to access HRAA resources.

The Flagstaff Office for HRAA was established in February, 2008. With the multi-institutional partners the HRAA Curriculum Committee has created three web based courses for Responsible Conduct of Science. The first *Rules, Principles, and Regulations* is a basic foundation course on the responsible conduct of science, including the guiding principles, regulatory issues, IRB training, etc. required by NIH. The other two are one credit hour courses, *Cross Cultural and International ethical issues for the Responsible Conduct of Science* and *Diversity, Disparities, and Vulnerable Populations and the Responsible Conduct of Science,* each act as one of two options for completion of the NIH required responsible conduct of science curriculum for HRAA. The detailed syllabi for three one credit hour courses on the responsible conduct of science will be submitted to the ASU, NAU, and UA Graduate Curriculum Committee for adoption (Fall 2008). The HRAA Responsible Conduct of Science courses will be transformed into web based (Vista Blackboard) course content shells for e-learning delivery state wide. Each of the three courses has been constructed as a web based (Vista Blackboard) course that includes 1) syllabi, 2) learning objectives, 3) lectures, 4) readings, 5) on-line discussion topics for each unit, 6) exercises, 7) tests, 8) and written assignments. Once each course is accepted by the university curriculum committee, it will be made available on the web through AZUN.

A key functionality in the CTSA application is the development of the infrastructure and resources to support an HRAA portal. This portal will serve to integrate database resources, support collaboration between researchers, and dissemination information across the HRAA project. In the next CTSA application, informatics will need to span

the key functions in the CTSA, including research support, collaboration, education, and dissemination of information. To be successful, the HRAA Biomedical Informatics team has identified three key areas of activities. First, additional technical resources have been deployed to develop the technical infrastructure and web portal to support the HRAA project. This includes both a systems architect to develop the larger information system architecture to support the goals of the HRAA project, and a content manager to help curate, disseminate, and manage the web resources. Second, the software engineering requirements have been gathered from HRAA members (users), and these needs describe the design of the portal. Finally, a pilot implementation of the HRAA portal has occurred and is being used to develop additional requirements and to evaluate the technical and organizational infrastructure needed for a successful web portal. After evaluating different content management systems, Drupal (www.drupal.org), an open source, content management system that emphasizes collaboration and structured taxonomies for organizing information was chosen as the prototype. Drupal provides a suite of integrated modules that provide specific functionality for web portal development. The portal will continue to be revised and expanded as the needs of the users are clarified with actual interface with the application. The portal will be described in the submission and will be key to showing continued development and success of the HRAA proposal.

The final component of the TRIF funds for HRAA is the creation of a new structure to join the clinical research activities of participating HRAA institutions into a virtual clinical research center (CRC). HRAA launched a clinical project that will serve as a test case for this virtual CRC, while simultaneously approaching a health issue of tremendous importance for the state of Arizona – identification of diabetes and pre-diabetes in individuals primarily of Hispanic origin who have not been previously diagnosed with either condition. Much progress has been made on the Maricopa Virtual CRC and Oral Glucose Tolerance Test, including taking advantage of the new reciprocity agreements that were signed in May 2008 by the ASU, NAU, and UA Institutional Review Boards (IRBs). Further, the necessary research staff were hired and the database is being developed with assistance of the ASU Biomedical Informatics Department.

The above accomplishments have been achieved in a short period of time (since funding was approved in mid-year), and using borrowed resources, pending completion of the appropriate subcontracts between UA and ASU, NAU. Hence, most of the funds will be carried over into FY2008-09, and used to fund projects in arrears.
All efforts will continue to strengthen both HRAA position for the 2008 NIH CTSA submission and the environment to foster clinical and translation research and education in the state of Arizona. As stated from the outset, this initiative, while ultimately supported by NIH funds, is of broad benefit immediately, and is already being implemented.

Performance Measures HRAA TRIF Funds

	FY08 Proj	FY08 Actual	FY09 Proj	FY10 Proj	FY11 Proj
RETURN ON INVESTMENT					
Sponsored Awards ($ in millions)			$5	$7	$10
Grants Received			3	5	9
Grants proposals submitted to funding agencies	1	1	8	16	32
PARTNERSHIPS AND COLLABORATIONS					
Research Projects Started	1	1	6	8	8
New Collaborations Between HRAA Members (Universities, Research Institutions, Hospitals, Health Plans, Healthcare Providers)	30	40	60	80	100
New Industry-University Collaborations Developed			6	6	8
New University-Government Collaborations Developed	2	2	3	4	6
Web Portal Hits and Links	100	100	1000	10000	50000
CURRICULUM INNOVATIONS					
Courses Developed	6	6	8	8	8
Education Programs Approved			2	2	2
Dollars generated by curriculum ($ in thousands)			$10	$20	$20

ARIZONA STATE UNIVERSITY DECISION THEATER SUPPORT FOR SYSTEM STRATEGIC PLAN

The Arizona Board of Regents is developing a strategic plan that aligns the demands in higher education, requirements for workforce development, and institutional capacity in Arizona. The ASU Decision Theater has developed a preliminary decision support system based on previous modeling and data collection efforts conducted under the auspices of the Governor's P-20 Council.

While the previous work provides a solid foundation for educational planning in the state, the Decision Theater approach offers the ability to improve on currently available information and processes through a combination of systematic stakeholder processes, model development, and collaborative decision support. Board staff and Decision Theater staff have discussed appropriate next steps to develop a decision support system for the System Strategic Plan:

- Conduct a series of facilitated sessions with key decision makers and stakeholders to identify critical issues within Arizona's higher educational system that are central to long-term planning goals;
- Collect additional data and generate specific forecasts necessary to develop analytical tools;
- Integrate the corpus of information into a holistic decision support model; and
- Work with decision makers and key stakeholders through scenario-based processes to develop the System Strategic Plan.

Upon approval of this funding request, the Decision Theater will develop a detailed timeline that can support completion of the Strategic Plan by August 2008. Approximately one month will be dedicated to facilitated group meetings with ABOR staff, university personnel, and key stakeholders; data collection and model architecture; generation of additional forecasts; model and visualization development; and planning sessions. The final project aims to integrate three planks of success for Arizona higher education:

1. Education throughput: How can educational infrastructure best close the gaps among age, race, and geographic populations?
2. Economic sustainability: How can Arizona stimulate demand in specific occupations necessary for economic growth in the state?
3. Cost: What are the financial constraints and opportunities that depend on student enrollment?

The ABOR Strategic Planning process may depend heavily on the forecasts, models, and decision support tool developed for use in the Decision Theater. Additionally, planning efforts will adapt to the needs and requirements of members of the planning group. The Decision Theater estimates that $50,000 will be required to produce a project plan, begin preliminary modeling work, and conduct sessions with a core workgroup to undertake the planning process. If required, the Theater will continue on a time-and-materials basis with oversight by ABOR.

Final deliverables, including the scenario-based simulation model, all accompanying datasets, and assessments from collaboration decision sessions will be transferred to the Arizona Board of Regents by the ASU Decision Theater.

Support in the amount of $50,000 for the ASU Decision Theater Support for System Strategic Plan is available from the Emerging Issues line item in the FY 2008 TRIF Regents Innovation Fund budget. The support provided by the Decision Theater in ongoing into FY 2009.

ARIZONA ALGEBRA II END-OF-COURSE ASSESSMENT PILOT

In June 2007 the Arizona Board of Regents hosted a joint meeting with the Governor's P-20 Council. A topic of discussion at that meeting was the possibility of Arizona's joining a nine-state consortium to develop and implement a common Algebra II end-of-course assessment for high school students. At its own separate meeting held later that day, the P-20 Council voted unanimously to join this consortium.

The Algebra II End-of-Course Assessment is in the first stages of implementation, with a Spring 2008 pilot across the nine participating states planned. The P-20 Council has been working with the Arizona Department of Education and the state procurement office to achieve Arizona's participation in this pilot.

The P-20 Council has proposed a 1,000-student pilot in Arizona, at a cost of approximately $30,000. Financial support in the amount of $15,000 is being requested from the Arizona Board of Regents, along with matching funds from two foundation partners.

The objectives of the Algebra II End-of-Course Assessment are:

- *To align with the P-20 Council's math alignment work.* The P-20 Council and the Arizona Department of Education have been working together, under the guidance of Achieve, Inc.'s American Diploma Project, to increase the rigor of the Arizona Mathematics Standard as it relates to the State Board of Education's recently implemented higher graduation requirements; and to better align the content with the expectations of university faculty and employers. (Achieve, Inc. is a coalition of 31 states dedicated to aligning K-12 curriculum, standards, assessments, and accountability policies with the demands of university and work);

- *To improve curriculum and instruction.* The assessment results will help high school classroom teachers focus on the most important concepts and skills in Algebra II and identify areas where the curriculum needs to be strengthened;

- *To help postsecondary institutions determine if students are ready to do credit-bearing work.* Depending on the outcomes of this pilot, the assessment is intended to measure certain skills that students need to prepare for basic university-level, credit-bearing math courses. Postsecondary institutions should be able to use the results to advise high school students of content and skill gaps that need to be addressed before enrolling;

- *To compare performance and progress among the participating states.* Having agreed on the core content expectations of Algebra II, states are interested in tracking student performance over time. Achieve, Inc. will issue a report each year comparing performance and progress among the participating states.

Support in the amount of $15,000 for the Arizona Algebra II End-of-Course Assessment Pilot is available from the Emerging Issues line item in the FY 2008 TRIF Regents Innovation Fund budget. The ABOR central office did not receive the invoice for these test instruments until July 2008; therefore, this $15,000 expenditure will be reported as an FY 2009 TRIF Regents Innovation Fund expenditure.

ABOR CENTRAL OFFICE

TECHNOLOGY AND RESEARCH INITIATIVE FUND (TRIF)

FY 2008 ACTUAL / FY 2009 BUDGET

REGENTS INNOVATION FUND

Operating

	FY 2008 REV BUDGET	*FY 2008 ACTUAL*	*FY 2009 BUDGET*
REVENUE			
Carry Forward	$ -	$ -	$ -
TRIF Revenue	110,000	110,000	110,000
TOTAL REVENUE	**$ 110,000**	**$ 110,000**	**$ 110,000**
EXPENDITURES			
OPERATING BUDGET			
Personal Services	$ 79,939	$ 61,666	$ 80,000
ERE	22,383	15,108	20,000
All Other Operating	7,678	13,137	10,000
Subtotal Operating Budget	**110,000**	**89,911**	**110,000**
GRANTS/PROJECTS:			
Subtotal Grants/Projects	**-**	**-**	**-**
EXPENDITURES GRAND TOTAL	**$ 110,000**	**$ 89,911**	**$ 110,000**

The Operating budget supports implementation of Regents Innovation Fund and TRIF Strategic Investments (TSI) projects, as well as administration of the system's TRIF fund, including budget preparation, accounting, and reporting functions.

ABOR CENTRAL OFFICE

TECHNOLOGY AND RESEARCH INITIATIVE FUND (TRIF)

FY 2008 ACTUAL / FY 2009 BUDGET

TRIF STRATEGIC INVESTMENTS (TSI) SUMMARY

	FY 2008 REV BUDGET	*FY 2008 ACTUAL*	*FY 2009 BUDGET*
REVENUE			
Carry Forward	$ 2,742,506	$ 2,912,015	$ 338,515
TRIF Revenue	2,000,000	1,999,927	2,000,000
TOTAL REVENUE	**$ 4,742,506**	**$ 4,911,942**	**$ 2,338,515**
EXPENDITURES			
OPERATING BUDGET			
Personal Services	$ -	$ -	$ -
ERE	-	-	-
All Other Operating	-	-	-
Subtotal Operating Budget	**-**	**-**	**-**
GRANTS/PROJECTS:			
AZ Biomedical Research Commission (CTSA)	-	(26,574)	-
Solar Energy Initiative (ASU, UA)	2,100,000	2,100,000	1,400,000
Higher Education in Rural Southern AZ (UA)	500,000	500,000	310,594
Statewide Expansion at NAU-Yuma (NAU)	2,000,000	2,000,000	-
Promoting Forest Health in AZ (NAU)	-	-	350,000
Carryforward to FY 2010	-	-	277,921
Subtotal Grants/Projects	**4,600,000**	**4,573,426**	**2,338,515**
EXPENDITURES GRAND TOTAL	**$ 4,600,000**	**$ 4,573,426**	**$ 2,338,515**

TSI funds were allocated to the universities beginning in December 2007 consistent with the FY 2008-2011 TSI budget approved by ABOR in December 2007. With the exception of a projected carryforward amount of $27,921 into FY 2010 reported on the Central Office Summary page, all TSI revenue and expenditure numbers are included in the universities' reports and are shown on this page for informational purposes only.

ABOR CENTRAL OFFICE

TECHNOLOGY AND RESEARCH INITIATIVE FUND (TRIF)

FY 2008 ACTUAL / FY 2009 BUDGET

ARIZONA REGENTS REACH OUT (ARRO) GRANTS SUMMARY

	FY 2008 REV BUDGET	*FY 2008 ACTUAL*	*FY 2009 BUDGET*
REVENUE			
Carry Forward	$ 315,908	$ 323,065	$ 106,211 [1]
TRIF Revenue	600,000	559,584	600,000
TOTAL REVENUE	**$ 915,908**	**$ 882,649**	**$ 706,211**
EXPENDITURES			
OPERATING BUDGET			
Personal Services	$ 69,498	$ 70,308	$ 75,000
ERE	17,374	24,337	25,000
All Other Operating	9,886	11,504	12,000
Subtotal Operating Budget	**96,758**	**106,149**	**112,000**
GRANTS/PROJECTS:			
FY 2009 Grants			200,000
FY 2008 Grants	500,000	316,143	121,143
FY 2007 Grants	255,070	153,031	91,900
FY 2006 Grants	64,080	26,115	-
Projects to be determined	-	-	181,168
Subtotal Grants/Projects	**819,150**	**495,289**	**594,211**
EXPENDITURES GRAND TOTAL	**$ 915,908**	**$ 601,438**	**$ 706,211**

[1] Pursuant to ABOR direction in June 2008, $175,000 of ARRO funds were transferred to the Regents Innovation Fund to address emerging issues in FY 2009.

ARIZONA REGENTS REACH OUT (ARRO)
FY 2008 Year-End Report

A. Program Overview:

The Arizona Regents Reach Out (ARRO) grant program was first authorized in spring 2005 and issued its first grant awards in November 2005, with funding starting January 1, 2006. ARRO awards support innovative e-learning or distance-learning projects from faculty and staff at all three universities, with an emphasis on projects that address a significant workforce development need and are collaborative, transferable, portable, shareable, and scalable.

New rounds of ARRO grants were awarded in 2007 and 2008, and the 2009 process opened in July 2008 with the distribution of the Request for Proposals, with projects due to begin January 2009.

Throughout, the following overall program goals and objectives of ARRO funding have remained essentially unchanged, except for an added emphasis on inviting proposals that address the issue of teacher preparation and/or certification in science, technology, engineering, and mathematics (STEM):

- Address a clearly identified and demonstrated workforce demand or need in Arizona;
- Promote rapid development of high-quality online, distance-learning or technology-assisted projects;
- Will have a significant and demonstrable impact on workforce development in Arizona;
- Demonstrate feasibility;
- Are transferable, portable, sharable and scalable and have significance beyond the grant period;
- Leverage scarce resources through collaboration with other departments, universities, or other entities and securing matching funds;
- Address a program or course of study, rather than an individual course only.

B. 2006 ARRO Projects:

In the initial 2006 funding round, nine project grants totaling $457,535 were awarded, out of 60 total proposals received. These projects ran from January 1, 2006, through July 31, 2007. Several projects were issued no-cost extensions into the fall 2007 semester. During FY 2008 all 2006 project accounts were reconciled and the books closed in January 2008.

C. 2007 ARRO Projects:

Nine project grants totaling $489,860 were awarded in the 2007 ARRO funding round. The projects began January 1, 2007, and most ended on June 30, 2008, though four have requested and been granted no-cost extensions to allow the teams to complete the planned activities.

In April and May 2008, ABOR's grant program manager conducted "desk reviews" with all 2007 project leaders to check that the projects are moving toward a successful conclusion and to identify and address any final budgetary or programmatic issues that may have come up.

Final reports for those projects ending on June 30 are due by July 31, 2008.

D. New Awards in FY 2008:

Seven new ARRO grants were awarded during FY 2008, in two funding rounds. Projects started January 1, 2008, and will run through June 30, 2009. The first interim progress reports are due July 31, 2008.

Following is a brief description of the intent and priorities for each funding round; project details are contained on the attached table.

- ***2008 "Step-Up" Projects.*** Based on the promise shown in their final project reports, six of the 2006 ARRO project teams were invited to apply in fall 2007 for new "Step-Up" funding, designed to bring their successful 2006 ARRO projects to full implementation, to the next level of development, or into new customer markets. All four proposals received were funded, at a total of $123,277.

- ***2008 Regular-Round Projects.*** In alignment with the interests of the Governor's P-20 Council, the 2008 ARRO grant process especially invited proposals that, in addition to meeting the required program characteristics, also address the issue of teacher preparation and/or certification in science, technology, engineering, and mathematics (STEM).

  Of the five eligible proposals received, two proved to be a good fit for funding through the federal "Improving Teacher Quality" (ITQ) program, which ABOR administers on behalf of the Arizona Department of Education. These two proposals – one each from Arizona State University and University of Arizona -- focus directly on preparing K-12 teachers to take and pass newly mandated state subject-area certification exams. To maximize the use of federal dollars and conserve ARRO funds for other projects, the ARRO review panel approved converting these two proposals over to ITQ funding.

The remaining three ARRO proposals were awarded a total of $119,008, with two from Northern Arizona University and one from University of Arizona.

E. Special 2008 Allocation:

In April 2008, the Technology Oversight Committee approved an immediate allocation from FY 2008 ARRO funds of $195,000 for the Tri-University Vulnerability Scanning/Management Solution. This initiative includes three software packages that will be implemented at each of the universities that help address information technology (IT) security issues and partially respond to recommendations in a recent Auditor General IT Security Performance Audit. This was also a recommendation of the Moran Technology Consulting report on IT collaboration opportunities.

F. 2009 ARRO Grant Round:

The Request for Proposals for 2009 ARRO projects was released in early July 2008, with proposals due October 6 and project funding to run from January 5, 2009, through June 30, 2010.

Total funding available for 2009 awards is $200,000. Proposals are invited of up to $50,000 for single-university projects and $100,000 for multi-university collaborations. For the second year, the ARRO process seeks to align with the interests of Governor Janet Napolitano's P-20 Council by inviting proposals that address the issue of teacher preparation and/or certification in science, technology, engineering, and mathematics (STEM). In addition, the ARRO review committee will give preferential consideration to projects that:

- Do not duplicate higher-education resources already available in Arizona;
- Address educational resources that are in short supply but are needed for graduation;
- Apply technology or curriculum innovations in new areas; and
- Explore opportunities for competency-based or performance-based assessment.

FY 2008: NEW ARRO PROJECT AWARDS
January 1, 2008-June 30, 2009

Institution/ Department	Project Title	Approved Funding	Project Summary
2008 Step-Up Awards:			
NAU	Stepping Up By 2s: Implementing and Evaluating an Upside-Down 2+2 Allied Health Professional Preparation Model	$39,638	The initial ARRO grant supported development and implementation of a unique educational pathway for allied health practitioners in five specific disciplines. A new faculty member has been hired, and 25 students are currently enrolled. The "step-up" funding will be used to conduct initial marketing efforts for the new programs and also establish an evaluation plan to guide recruitment, retention, administration, and curricular activities
NAU	Stepping Up the Native Voice in ANT 205: Native Peoples of North America	$24,000	The initial ARRO grant created a series of online, interactive learning activities for ANT 205: "Native Peoples of North America," that increase the presence of "Native voices" and increases diversity awareness, student learning, and Native American recruitment. The "step-up" grant will create a variety of interactive multimedia activities to improve students' understanding of the content as well as develop their diversity awareness.
NAU	On-Line Science and Mathematics Teacher Certification Program	$35,695	Initial ARRO funding created the Secondary On-Line Integrated Science Teacher Certification (SOLISTC) program, targeting career-changing individuals with degrees in science, engineering, and related fields to receive graduate-level coursework for teacher certification. "Step-up" funding will support a Master's degree program and expand the use of on-line courses for alternative certification partnerships that have been developed by the Arizona Department of Education.
UA	UA ArizonaNativeNet Introduction to Federal Indian Law: The Discovery Doctrine, Tribal Sovereignty, and the Treaty Tradition	$23,944	The initial ARRO grant created the ArizonaNativeNet Tribal Leadership Distance Learning Project, which developed two integrated distance-learning courses produced especially for Arizona's Native American leadership. "Step-up" funding will enhance these two courses, bring them to the pilot-testing stage, and market nationwide to entities that wish to augment existing coursework in Native American law and policy; government; and American Indian studies.

2008 ARRO Regular-Round Awards:			
NAU	Curriculum Development for Distance-Learning Program: MA in English-General Studies	$33,248	This award will expand online course offerings in the MA in English-General Studies degree program at NAU. The graduate program, the only distance-learning Master's degree in Arizona that focuses on both literature and writing, is an essential source of training for 6-12 teachers and community college instructors. The grant will fund the rapid development of three online courses, each of which is needed to fill gaps in distance-learning curricular offerings for English teachers: American literature, literary theory, and introductory creative writing.
NAU	Online Speech-Pathology Leveling Courses	$35,760	This project is designed to increase the number of qualified Speech-Pathologists in Arizona, especially in underserved areas. Four new online courses will be developed which, combined with three existing courses, will complete a full 21-credit online "leveling" curriculum. Students will now be able to complete requirements for a bachelor's degree totally online, preparing them for master's-level certification in speech-pathology or, alternatively, to immediately begin working under a provisional license in underserved areas of the state.
UA	Using Distance Learning to Extend Mathematics Outreach to Rural Teachers	$50,000	This project addresses the problem of retention of middle-school mathematics teachers in rural/high-needs schools by enhancing professional development opportunities for these teachers. Specifically, the project will develop and implement three distance-delivery mathematics courses foundational to UA's master's degree for middle-school mathematics teachers. A cadre of UA mathematics faculty will be built who are knowledgeable in developing online courses and motivated to use distance learning to further reach out to rural/high-needs teachers.
Special FY 2008 Allocation:			
Tri-U	Tri-University Vulnerability Scanning/Management Solution	$195,000	These include three software packages that will be implemented at each of the universities that help address IT security issues and partially respond to recommendations in a recent Auditor General IT Security Performance Audit. This was also a recommendation of the Moran Technology Consulting report on IT collaboration opportunities.
TOTAL AWARDS APPROVED IN FY 2008:		**$437,285**	

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APPENDIX

Arizona Board of Regents Policy 3-412

Policy Number: 3-412	Policy Name: Administration of Technology and Research Initiative Fund
Policy Revision Dates: 3/01	Page 1

3-412 Administration of Technology and Research Initiative Fund

A. Authority

As authorized by Proposition 301 approved by the voters in November 2000, the Board shall establish and administer a technology and research initiative fund (TRIF), beginning July 1, 2001. The TRIF will consist of sales tax revenues generated through Proposition 301 and other private or public sources of funding which are received by the Board for purposes which are consistent with the proposed uses described herein.

B. Funding Criteria

The TRIF will be used to support projects and initiatives that meet one or more of the following criteria:

1. Promote university research, development and technology transfer related to the knowledge based global economy;

2. Expand access to baccalaureate or post-baccalaureate education for time-bound and place-bound students;

3. Implement final recommendations from the Governor's Task Force on Higher Education and/or the Arizona Partnership for the New Economy.

4. Develop programs that will prepare students to contribute in high technology industries located in Arizona.

C. Calendar and Guidelines

The Board shall establish an annual calendar for the allocation of Proposition 301 funding, including guidelines for the submission and evaluation of proposals, and final decisions by the Board. The calendar will incorporate a process to receive and consider input from the Arizona Partnership for the New Economy (APNE) or a successor agency as may be designated by the Governor.

D. Formats for Submission of Proposals

Rev. 12/02

Funding requests shall be submitted by the university Presidents, or prepared by the Central Office on behalf of the Board, in a format to be approved by the Executive Director, to include the following elements:

1. A description of the proposed need, purpose and goals for each proposed project or activity, an explanation as to the ways in which the project promotes the purposes of the legislation, and/or an explanation of the relationship of the proposed project or activity to the foundation or clusters which are part of the state's overall economic development program;

2. The requested duration of the proposed project or activity;

3. Proposed detailed performance measures, desired outcomes, and proposed methodology for evaluating progress in attaining the desired outcomes; and

4. A detailed budget for each proposed project or activity, including the identification of funds which are intended to be either continuing, multi-year, or one time only.

E. Special Factors

The Board shall take into account several additional factors in determining its allocations from this fund:

1. Priority shall be given to proposals that involve collaboration between and among the universities and/or collaboration with private industry or public sector agencies.

2. The Board may authorize awards for an annual or multi-year basis, but in no event will the Board make an award on a multi-year basis without incorporating specific requirements regarding periodic review and assessment or progress in implementing the proposed project or activity and in attaining the desired outcomes.

3. Funding may be used to pay salaries only for persons directly involved in projects or activities funded under this program that

would otherwise not be funded through general fund appropriations.

4. The Board may allocate up to 20% of annual funding for capital projects relating to new economy initiatives, including the payment of debt service; capital projects must be clearly identified with each university's submission of proposals.

5. The Board will honor the legislative intent as described in Proposition 301 that a portion of the revenues in the fund shall be allocated on an annual basis to pay Certificates of Participation costs for lease-purchase of buildings and associated infrastructure at ASU East and West campuses.