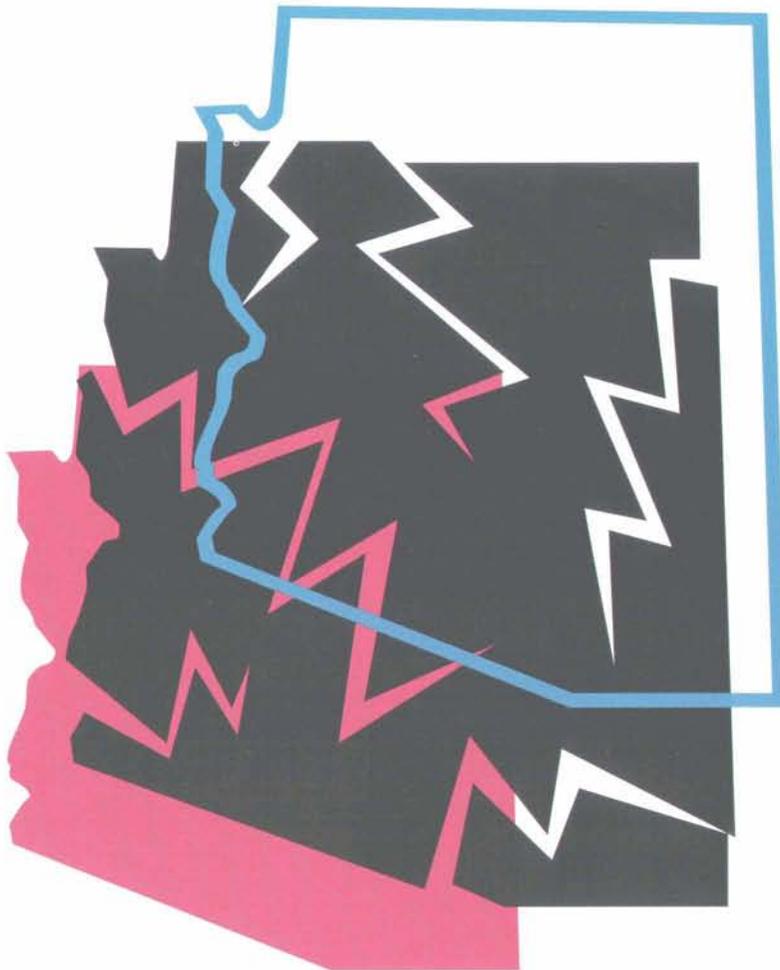


# Arizona At Risk

## An Urgent Call For Action

The Report of  
The Governor's Task Force  
on Higher Education

December 2000



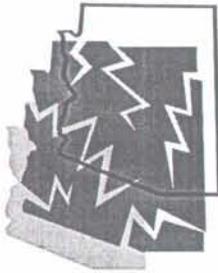
As we enter this era of  
knowledge-based industries and work,  
a strong system of higher education  
is absolutely vital to achieving  
a vibrant social and economic future  
for the State of Arizona.

I am delighted that policy makers,  
for years to come, will now have a  
comprehensive blueprint from which  
they can shape Arizona's university  
and community college system.

**Governor Jane Dee Hull**

This document outlines essential information related to  
the work of the Governor's Task Force on Higher Education.

A more detailed supplement is available at  
[WWW.GTFHE.STATE.AZ.US](http://WWW.GTFHE.STATE.AZ.US)  
or may be obtained by calling (602) 229-2516



## Governor's Task Force on Higher Education

Warren S. Rustand, Chairman

December 2000

The Honorable Jane Dee Hull  
Governor, State of Arizona  
1700 West Washington Street  
Phoenix, Arizona 85007

Dear Governor Hull:

As members of the Governor's Task Force on Higher Education, we accepted your charge to identify and address the higher education needs of Arizona through 2020. For more than a year, we have heard presentations, studied reports, and debated a great many issues concerning the future of postsecondary education in our state. The enclosed report represents the culmination of those efforts.

The report is based on the belief that Arizona faces a grave risk if it fails to become a leader in the new global, knowledge-based economy. The citizens of the State of Arizona will surely be left behind if we are not prepared to contribute to, and benefit from, the changes that lie ahead. The Task Force is convinced that the public and private institutions of higher education in Arizona are the keys to developing the workforce and to strengthening our economy. Because time is of the essence in addressing these issues, our report is issued as an urgent call for action.

The Task Force recommends three strategies for achieving the outcomes we all desire for Arizona. These are (1) to increase student participation in higher education, (2) to increase the research and business development provided by higher education, and (3) to increase the capacity and productivity of our institutions of higher education. These strategies are mutually interdependent, but none can be implemented without an increased commitment to investment, outcomes, and accountability.

The report is focused upon the most important higher education issues in Arizona for the next twenty years. It describes specific initiatives that represent the best thinking of our public and private sectors. Additional concerns and suggestions will surely emerge over time, but the recommendations we propose address crucial, fundamental issues that must be resolved as we move into the 21st century.

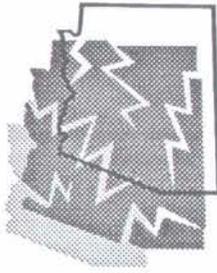
As members of the Governor's Task Force on Higher Education, we are proud to fulfill our charge by submitting this report to you and to the citizens of Arizona.

Sincerely,

Warren S. Rustand

Enclosure: *Arizona at Risk: An Urgent Call for Action*  
Copy To: Citizens of Arizona





# ***Governor's Task Force on Higher Education***

**Warren S. Rustand, Chairman**

## **SUMMARY OF RECOMMENDATIONS**

### **The urgent need for action**

The State of Arizona should compete in the new, global, knowledge-based economy by adopting and supporting a plan of action that recognizes the central role of higher education in the preparation of the workforce and the development of innovation. The governor's task force recommends the following strategies and initiatives:

### ***Strategy I: Increase Participation***

#### **Universal Continuing Access**

- Increase programs of early awareness and outreach through state matching funds for federal grants.
- Provide ACE (Arizona College Education) grants for high school graduates who are going to community colleges, or completing 2-year programs, or unconditionally admissible and going to in-state public or private universities.
- Provide full support services for Arizona students transferring from a community college to a university.

#### **An Excellent System of Higher Education**

- Redirect some baccalaureate degree-seeking students within the university system.
- Direct some baccalaureate degree-seeking students through the community colleges.
- Maintain open admission to community colleges for Arizona high school graduates.

#### **Workforce Development Through Learner-centered Academic Programs**

- Enhance adult education by transferring programs to the community colleges and increasing funding.
- Provide New Economy Training for Gainful Employment ("NET-Gain!") through the community colleges.
- Prepare a globally competent workforce by internationalizing learning at the community colleges.
- Strengthen the math and science teacher pipeline through financial incentives, matching grants and e-learning programs.
- Increase workforce development in engineering and science through financial incentives and public relations.

### ***Strategy II: Increase Research and Business Development***

#### **Preparation for the New Economy**

- Strengthen tri-university initiatives on bioscience and biotechnology.
- Strengthen tri-university initiatives on information science and information technology.
- Strengthen ASU initiatives on materials science and manufacturing.
- Strengthen NAU initiatives on environmental engineering and environmental sciences.
- Strengthen UA initiatives on water sustainability and optics.
- Enhance the Community College Small Business Development Center Network.
- Expand state tax credits for employee-training costs incurred by small businesses.

*—continued*

### ***Strategy III: Increase Capacity and Productivity***

#### **Enhancement of Human Resources**

- Raise university faculty salaries to the 50<sup>th</sup> percentile of each university's Board-approved peer institutions.
- Increase the number of full-time faculty at the community colleges and make community college faculty salaries more competitive.

#### **Management of Capital Assets**

- Eliminate the university backlog of deferred maintenance and increase capacity for education and research.
- Increase support for community college state aid capital funds to repair and maintain state-owned buildings.

#### **Enhancement and Utilization of Information Technology**

- Continue to expand the community college Arizona Learning Systems to increase access to distance learning.
- Develop the university information technology infrastructure to enhance delivery of instruction.
- Make critical information technology staff salaries more competitive at all institutions of higher education.
- Establish the Arizona Regents University to enhance the workforce through technology-delivered education.
- Strengthen cooperation throughout public higher education in offering e-learning to citizens of the state.

### ***The Need for Investment, Accountability and Outcomes***

#### **Improved Funding Mechanisms**

- Revise funding formulas and incentive mechanisms to strengthen public higher education in Arizona.
- Enhance support from multiple revenue streams for all public institutions of higher education.

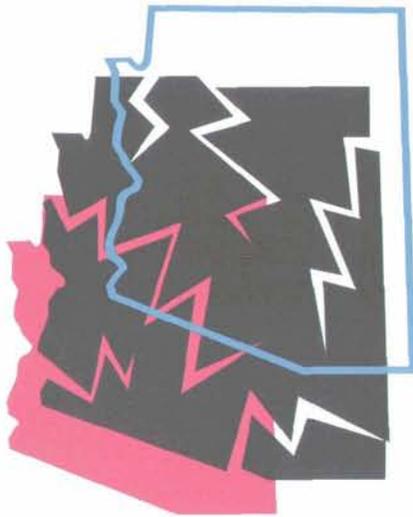
#### **Collaboration Between Education Sectors**

- Develop an articulated master plan for public education, as recommended by the Arizona Town Hall.
- Review current governance structures and relationships to determine their adequacy for implementing the articulated master plan for public education in Arizona.

#### **Accountability and Continued Contribution to the Productivity of the State**

- Refine, adopt and publish performance measures for each major initiative in this plan of action.

DECEMBER 2000



# Arizona at Risk

## An Urgent Call For Action

The Report of  
The Governor's Task Force on  
Higher Education

December 2000

### Task Force Members

Warren Rustand, *Task Force Chairman*  
*Managing Partner of Harlingwood*  
*Capital Partners*

Nicholas S. Balich  
*Member, State Board of Directors*  
*for Community Colleges of Arizona*

Raúl Cárdenas (10/99 - 6/00)  
*Interim Chancellor,*  
*Maricopa Community Colleges*

Patrick Carlin  
*Chairman, State Board of Directors*  
*for Community Colleges of Arizona*

Lattie F. Coor  
*President, Arizona State University*

Fred Gaskin (7/00 - 11/00)  
*Chancellor, Maricopa Community Colleges*

Chris A. Herstam  
*Member, Arizona Board of Regents*

Gherald L. Hoopes, Jr.  
*President, Eastern Arizona College*

Robert D. Jensen  
*Chancellor, Pima Community College*

Peter W. Likins  
*President, The University of Arizona*

Frederick D. Lockhart  
*Executive Director, Arizona Private School*  
*Association*

Clara M. Lovett  
*President, Northern Arizona University*

Jaime Molera  
*Executive Assistant to the Governor,*  
*Office of the Governor*

Kathryn L. Munro  
*Chairman/CEO, BridgeWest*

John F. Oppedahl  
*Publisher and CEO, The Arizona Republic*

Richard Silverman  
*General Manager, Salt River Project*

Don Ulrich  
*President, Arizona Board of Regents*

### Table of Contents

<b>Governor's Letter to the Citizens of Arizona</b>	2
<b>Arizona at Risk</b>	3
The Urgent Need for Action	4
<b>The Plan for Higher Education</b>	6
<b>Strategy I: Increase Participation</b>	7
Universal Continuing Access	7
An Excellent System of Higher Education	9
Workforce Development through Learner-Centered Academic Programs	11
<b>Strategy II: Increase Research and     Business Development</b>	17
Preparation for the New Economy	17
University Research and Technology Transfer Initiatives	17
Community College Business Development Initiatives	24
<b>Strategy III: Increase Capacity and Productivity</b>	26
Enhancement of Human Resources	26
Management of Capital Assets	28
Enhancement and Utilization of Information Technology	30
<b>Need for Investment, Accountability and Outcomes</b>	33
Improved Funding Mechanisms	33
Collaboration Between Education Sectors	35
Accountability and Continued Contribution to the Productivity of the State	36
<b>Conclusion</b>	36



**JANE DEE HULL**  
GOVERNOR  
STATE OF ARIZONA

October 20, 2000

To the Citizens of Arizona,

Education continues to be the number one priority of my administration. No other issue is as important to the long-term success of Arizona. While a first-rate K-12 system is imperative to achieve this goal, a high-quality, post-secondary educational system is also critical to our future.

As Arizona continues to grow, it is important to understand how our system of higher education can be better used to improve our quality of life. We cannot afford to sit back and presume everything will work out for the best. The public demands -- and should expect -- policymakers to comprehend the issues that will affect our state for years to come. While it is impossible to forecast every trend, it is possible for learned individuals to begin to thoroughly examine how best to position ourselves for the future. Failure to plan will waste limited resources.

The Governor's Task Force on Higher Education was created because I feel long-term solutions can be found. The task force offers higher-education, business, and community leaders a forum to come together to address ongoing capital and operational issues in a comprehensive manner.

In order to plan efficiently, I instructed members of this task force to address, at a minimum, the following long-term issues:

- How will we serve the higher education needs of Arizona until 2020?
- How will we structure higher education to maximize Arizona's economic development potential?
- How will we determine what kinds of facilities are needed and where they should be located?
- How will we better use technology?
- How will we fund Arizona's higher education needs until 2020?

Over this past year I believe the task force succeeded in meeting my charge. I am delighted that policymakers for years to come will now have a comprehensive blueprint from which they can shape Arizona's higher-education system.

The success of this task force is attributed to the strong leadership of its members and its chairman, Warren S. Rustand. I am also grateful to the countless hours of work committed by the staffs of the Board of Regents and the State Board of Community Colleges.

Sincerely,

  
JANE DEE HULL  
Governor

# Arizona at Risk

The future of Arizona is at risk. While the rapid growth of a new, global, information-based economy provides tremendous opportunities for all of Arizona's citizens, the state is at risk of missing out on the potential benefits of this economic revolution.

## Risk Factors

Risk factors for the state include:

- **Alarming high rates at which students drop out of the educational pipeline.**
- **A growing economic gap between "haves" and "have-nots."**
- **An information-based economy that is narrowly concentrated in a few technology sectors.**
- **A dramatic "brain drain" of top research faculty, scientists and technicians.**
- **Stiff competition from other states that are investing heavily in higher education.**

In the face of these alarming trends and the opportunity costs they imply, the Governor's Task Force on Higher Education recommends a plan of action and seeks public support. This plan is based on statements of principle and is consistent with other recommendations, including those in *Higher Education in Arizona for the 21st Century*, the report of the Seventy-Sixth Arizona Town Hall and the Education 2000 ballot referendum proposed by Governor Jane Dee Hull, referred by the Arizona Legislature and approved by the voters. Given the speed with which the current window of opportunity may close, this request for support, like those in the other reports, is offered with a sense of great urgency.

## The Action Plan

**The action plan calls for a significant strengthening of Arizona's higher educational system through three key strategies:**

- I. Increase Participation**  
Raise the level of participation in higher education.
- II. Increase Research and Business Development**  
Increase the amount of targeted research, technology transfer and business development provided by higher education.
- III. Increase Capacity and Productivity**  
Enhance the human, physical, and technological capacity of institutions of higher education.

Commitment and investment are needed at all levels and by all sectors in order for Arizona to succeed in this new environment. The support that is needed to implement this action plan for higher education includes enhancement of capital formation and revenue sources, along with the improvement of current funding mechanisms. Increased collaboration between education sectors, continued contribution to the productivity of the state, and accountability for results are also major recommendations.

# The Urgent Need For Action

There is a revolution at hand in the economy of this state, the nation and the world—an information revolution. At all levels the economy is becoming more global, more competitive and more infused with technology. The basis of wealth in this New Economy is information, the new ideas and innovation on which this economy thrives. People are the raw material for the production of information. It is their knowledge and their ability to access and communicate information that fuel the economic engine.

Education is a key to participation in this economic revolution, offering the knowledge that is essential for workers to succeed. It provides the well-trained and highly skilled labor force that is essential for business and industry to be competitive. It helps to produce the research and develop the innovations and techniques that fuel the new, knowledge-based economy.

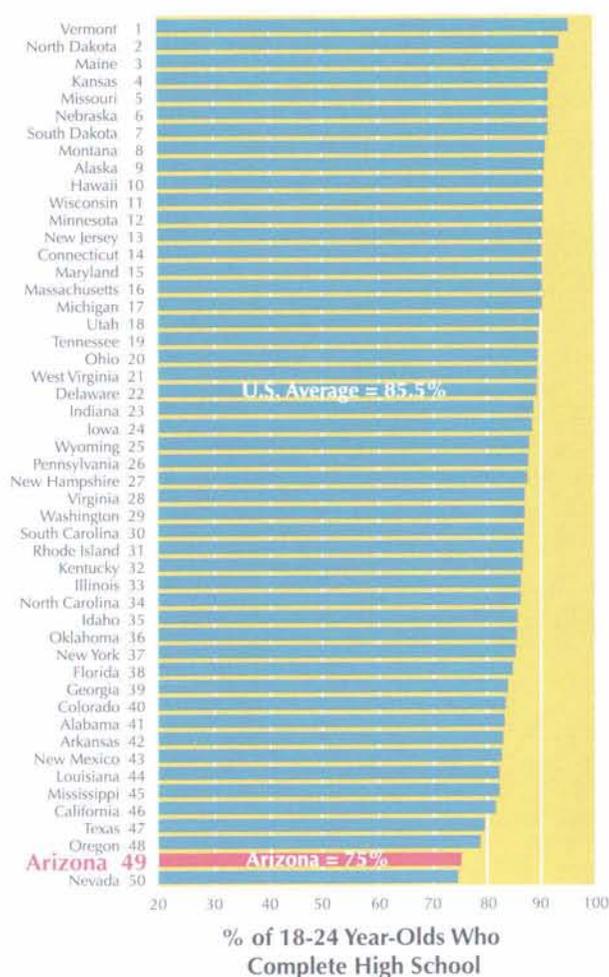
In the face of this historic economic revolution, Arizona stands at risk—at risk of marking time, at risk of slipping backward, at risk of losing out. Key educational benchmarks and trends in the state are negative, and the competition from other states and countries is formidable. Yet Arizona has a strong foundation on which to build. Great strides are being made to improve education at the K-12 level while Arizona's institutions of higher education are already strong. The people of Arizona are now faced with a compelling choice—whether or not to utilize these strengths and mount a vigorous effort to compete in the New Economy. This choice should be guided by the following principle:

## Urgency

*It is imperative that the state recognize the crucial role of higher education as a driver for Arizona's New Economy and increase the financial support required for higher education to effectively fulfill this role. The result will be an enhanced contribution by higher education to quality of life and the economy of the state.*

Arizona is 49th in the nation in high school completion

High School Completion Rate by State 1997-1999



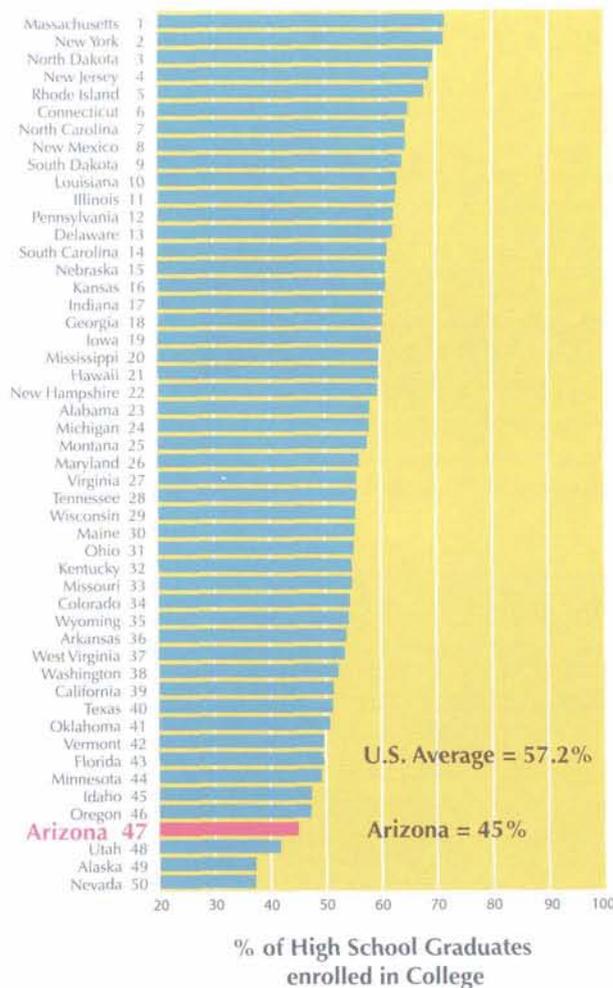
The percentage of 18-24 year-olds in the United States who were high school graduates was 85.5%, averaged over the three year period from 1997 to 1999. This high school completion rate ranged from a low of 74.5% in Nevada to 95.3% in Vermont.

Source: Dropout Rates in the United States: 1999, U.S. Department of Education, National Center for Education Statistics, November 2000.

Note: The horizontal scale for this chart begins at 20% not at 0%.

Arizona ranks 47th among all states in the percent of high school graduates enrolled in college

College Continuation Rate by State, 1998



In 1998, 57% of the 1997-98 public and private high school graduates in the United States were enrolled in college in the fall of 1998. The college continuation rates varied widely across the states. The rate ranged from a low of 37.1% in Nevada to a high of 71.5% in Massachusetts. Arizona's college continuation rate was 45% and ranked 47th among all states.

Source: Postsecondary Education Opportunity, July 2000.

Note: The horizontal scale for this chart begins at 20% not at 0%.

## Recommendation

The Governor's Task Force recommends that the State of Arizona choose to compete in the new, knowledge-based economy by adopting a plan of action that recognizes the central role of higher education in the preparation of the workforce and the development of innovation. This plan should outline ways in which Arizona's institutions of higher education can be utilized to lift the state to a new, competitive level. It should describe both the benefits of such a plan and the support that is urgently needed for the effort to succeed.

The gap between the "haves" and "have-nots" in Arizona is widening

15 States Where the Poor Grew Poorer and the Rich Grew Richer

State	Bottom Fifth	Top Fifth
Connecticut	-\$6,160 -25.9%	\$26,138 17.7%
Rhode Island	-\$3,781 -25.8%	\$35,146 28.1%
New Hampshire	-\$2,767 -14.1%	\$12,497 9.2%
Oregon	-\$2,067 -13.8%	\$39,798 38.1%
New York	-\$1,969 -15.5%	\$19,675 14.8%
<b>Arizona</b>	<b>-\$1,914 -15.1%</b>	<b>\$24,511 21.0%</b>
Vermont	-\$1,857 -11.4%	\$846 0.7%
Wyoming	-\$1,764 -11.8%	\$4,988 4.8%
Washington	-\$1,485 -8.9%	\$22,645 19.5%
Massachusetts	-\$1,412 -8.4%	\$12,101 8.4%
California	-\$1,408 -10.3%	\$12,017 9.0%
New Jersey	-\$1,339 -7.1%	\$13,639 9.0%
Montana	-\$1,142 -10.5%	\$13,078 15.1%
Kansas	-\$1,142 -7.3%	\$32,850 30.1%
New Mexico	-\$1,134 -11.5%	\$7,447 7.2%

Dollar and Percent Change in Average Income of Bottom and Top Fifth of Families, 1988-90 to 1996-98

Source: Economic Policy Institute/Center on Budget and Policy Priorities, January 2000.

# The Plan for Higher Education

The Governor's Task Force on Higher Education recommends a plan of action to realize the opportunities for all Arizonans to participate in, contribute to and benefit from the new, knowledge-based economy. This plan provides for a significant strengthening of Arizona's higher educational system through three key strategies to achieve desired outcomes:

## Three Key Strategies

### I. Increase Participation

Raise the level of participation in higher education

### II. Increase Research and Business Development

Increase the amount of targeted research, technology transfer and business development provided by higher education

### III. Increase Capacity and Productivity

Enhance the human, physical, and technological capacity of institutions of higher education

# STRATEGY I: Increase Participation

Raise the level of participation in higher education

The plan is to promote universal, continuing access to an excellent system of higher education through the provision of learner-centered programs.

“The extent to which Arizona thrives in the New Economy will rely heavily on whether the state is able to provide a trained workforce.”

—from the *Supplement to Arizona At Risk: The Report of the Governor’s Task Force on Higher Education*

## Universal Continuing Access

The Task Force recommends that the community colleges and universities strive to increase the rate at which Arizona high school graduates, especially from underrepresented groups, participate in higher education. The goal should be a rate of participation above the national average.

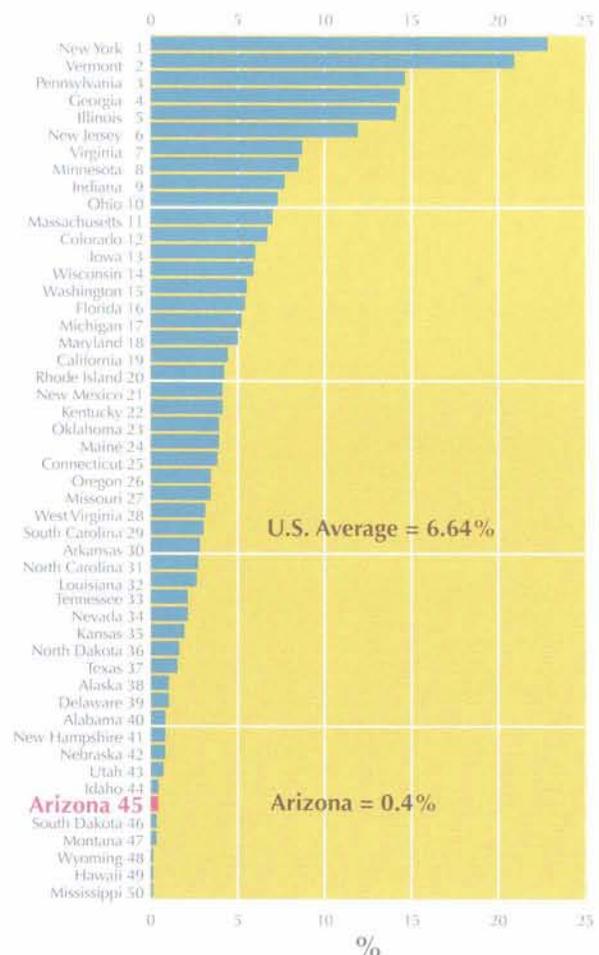
The State Board of Directors for Community Colleges and the Board of Regents should work with the State Board of Education and with local school and community college district governing boards to ensure that all high school students have access to the courses, teachers and curriculum necessary to achieve the highest possible levels of academic preparation for higher education and the workforce.

The Task Force endorses the plan of providing universal access to postsecondary education for all graduates of Arizona high schools and all incumbent workers in need of further education or training. Action to implement this plan should be guided by the following principle:

### Access

Promote universal, continuing access to higher education by overcoming barriers of time, place, and social or economic circumstance and expanding the capacities of campuses and delivery systems. This will help to achieve a better educated citizenry, a better prepared workforce, and a larger, more diverse economy.

Arizona ranks 45th in the relative amount of state financial aid awarded to undergraduates

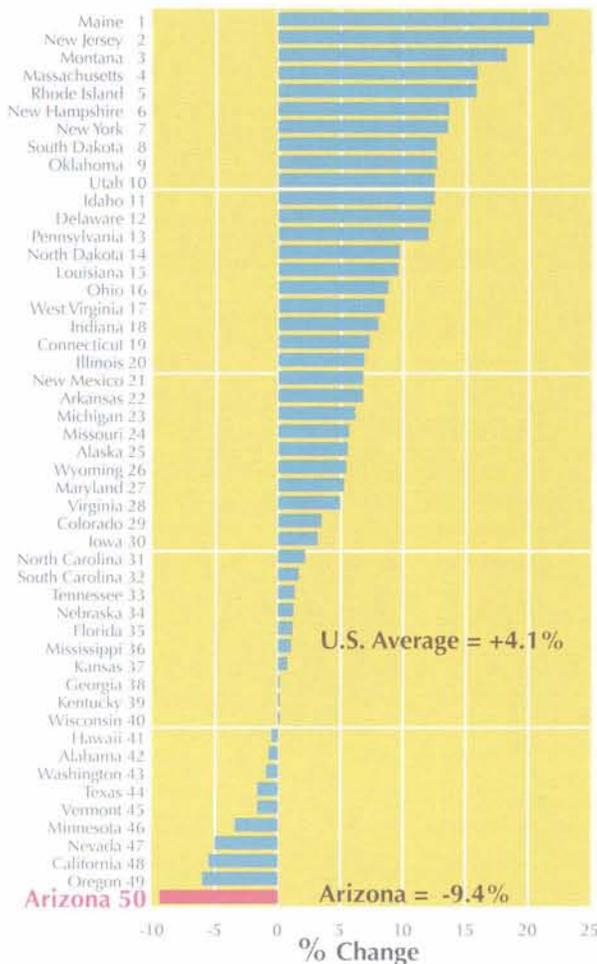


State appropriations for state student grant and other financial aid programs as a proportion of each state’s higher education appropriation—FY 1997.

Source: Postsecondary Education Opportunity, July 2000.

While nationally the rate at which students continue into higher education is increasing, in Arizona that rate dropped in the 1990s

Change in College Continuation Rates by State between 1988-1998



In Arizona, the chances of a 19 year-old enrolling in a college or university declined between 1988-1998, to 27.7%. Arizona was last and had the greatest decline in the percent change in the chance for college by age 19 with a negative rate of -9.4%. The national average increased by 4.1% for the same period.

Source: Postsecondary Education Opportunity, August 2000

## Recommendation

The Task Force recommends that the state promote early awareness of the benefits and implications of higher education and increase financial assistance for qualified students. This financial assistance should be targeted at needy high school graduates and structured to provide incentives for preparation at high school and for completion of academic programs at the community colleges and at the universities, by both originating freshmen and transfer students.

The state should promote more participation in higher education by working adults through financial incentives and training programs focused on preparing the workforce for the new global, knowledge-based economy. [See Preparation for the New Economy, page 17].

Currently, all Arizona high school graduates have unconditional admission to community colleges. However, the Governor's Task Force recommends that universal access be enhanced by the following specific proposals:

- **Improve the college-going rate of high school graduates** through increased programs of early intervention and outreach to children of all grades.
- **Remove financial barriers currently limiting universal access** through the creation and adoption of Arizona College Education (ACE) grants of \$1,000 to supplement federal Pell Grants, with the Basic Level awarded to full-time community college students for each of two years immediately following graduation from Arizona high schools.
- **Sustain and increase universal applicability of academic transfer course credit between public institutions in Arizona** through existing transfer articulation agreements and support systems, and by inter-college and inter-university transfer programs.
- **Extend access to ACE grants for Arizona high school graduates eligible for direct and unconditional admission to Arizona's public or private universities** through Continuation Level awards of \$1,000 to supplement federal Pell Grants as well as university and state grant programs, where applicable, for each of two years after students complete a transfer program at a community college, or Achievement Level awards in the same amount for four years immediately following graduation from high school.

To implement these recommendations, a fund should be established to provide matching support for the expansion of outreach efforts. The program should be funded at \$500,000 for the initial biennium, with funding future levels determined by the success of the program. Full state funding for transfer support services would call for a budget of \$992,400 for the next biennium, an increase of approximately \$250,000 over the current biennium. Finally, the initial baseline costs for the ACE grants include \$4.9 million per year for the Basic Level, \$600,000 for the Continuation Level, and \$1.5 million for the Achievement Level. In the fourth year of implementation, when all three programs would be fully enrolled, the total cost would be approximately \$12.5 million. Future costs would depend on enrollment growth.

#### Possible Performance Measures:

- Increase in the participation rate of Arizona high school graduates in higher education
- Increase in the percentage of high school students fully prepared for admission to the universities

## An Excellent System of Higher Education

The Task Force endorses the plan to promote excellence in the performance of students enrolled in the state's colleges and universities. At the same time, the state's system of higher education should provide universal, lifelong access for all high school graduates. Efforts to implement this plan should be guided by the following principle:

#### Excellence

*Provide quality higher education by matching the preparation levels and aspirations of learners and the needs of society with the appropriate missions, roles and scope of Arizona's public and private post-secondary institutions. This approach will achieve highly productive academic programs that are responsive to workforce needs; certificate and degree recipients prepared for cultural, intellectual and civic life and the workforce; and world-leading research and technology transfer for Arizona's New Economy.*

“Education beyond high school is the key to a trained workforce.”

—from the *Supplement to Arizona At Risk: The Report of the Governor's Task Force on Higher Education*

## Recommendation

**The Governor's Task Force recommends that the Board of Regents and the State Board of Directors for Community Colleges craft policies for admission that help improve student success.**

The Governor's Task Force recommends that academic excellence be enhanced by the following specific proposals:

### Redirect Some Baccalaureate-Seeking Students within the University System

Some university campuses are nearing the practical limit of their capacity to accommodate students. In order to optimize the utilization of campus and faculty resources, the Board of Regents should permit the universities to redirect students, within and beyond the university system, in a manner that maintains as much flexibility as possible both for individual campuses and prospective students.

### Direct Some Baccalaureate-Seeking Students through the Community Colleges

About half of the students who enter one of the public universities as freshmen leave before completing a degree program at that university. If some of the students who are most likely not to complete baccalaureate degrees were redirected instead to the community colleges, they would be given the opportunity to earn certificate or associate's degrees before entering the workforce. Some might be



“As the New Economy  
surges forward,  
vulnerable adults with  
interrupted and minimal  
education will be  
among the most likely  
to be passed by.”

—from the *Supplement to Arizona At Risk:  
The Report of the Governor’s Task Force on Higher Education*

encouraged by a successful lower-division experience and transfer to complete baccalaureate degrees. The Board of Regents should consider the use of more rigorous admission standards for university freshmen in order to increase the percentage of students who continue on to complete academic programs at either a community college or a university.

The recommendation should be targeted toward those students who seek a university degree and would benefit from a community college foundation.

Implementation of this recommendation is contingent upon changes in funding mechanisms to ensure that the loss of potential students does not adversely impact the universities’ funding base.

#### **Maintain Open Admission to the Community Colleges for High School Graduates**

The community colleges are encouraged to retain their traditional policy of open admissions for all high school graduates. Information about changes to university admission standards under consideration by the Board of Regents should be shared with the State Board of Directors, so that the community colleges can make necessary adjustments to accommodate the impact of such changes on student enrollments and curricular requirements.

These recommendations underscore the need described above to ensure ease of transfer by fully funding transfer student support systems.

#### **Possible Performance Measures:**

- Increase in the percentage of certificate-seeking or degree-seeking students who complete an academic program at each institution
- Increase in the percentage of baccalaureate degree-seeking students who begin at a community college, transfer successfully, and complete their program at a university

## Workforce Development Through Learner-Centered Academic Programs

The Task Force supports current plans for academic programs in higher education to be more thoroughly and systematically learner-centered. Efforts to prepare students for success in work and in life through learner-centered education should be guided by the following principle:

### Learner-Centered Programs

*Focus existing and new academic programs on the learning needs of students and the knowledge, abilities and skills they require for success in the New Economy and in their family and civic lives. As a result of this effort, learning will be more outcomes-based, self-paced, team-centered, active, and experiential.*

In keeping with their historic and continuing focus on learner-centered education, the community colleges offer three initiatives targeted to increase opportunities for learners who need additional education and training to obtain, retain, and enhance their contributions to the Arizona workforce.

Faculty at the public universities have been incorporating learner-centered education into individual courses for a number of years. Together with the Board of Regents, the universities are now promoting learner-centered education in a more systematic and deliberative fashion throughout all academic programs. For example, the university missions and strategic plans have been revised to support these changes, and faculty representatives have developed a Web site to promote the communication of best practices in learner-centered education.

Further, the two state higher education boards have met jointly to share information and plans for promoting learner-centered programs.

In addition, as described in the section on Enhancement and Utilization of Information Technology, both community colleges and universities utilize information technology to address the needs of life-long learners for education any time and any place.

## Recommendation

**The Governor's Task Force supports current plans for the community colleges and universities to focus academic programs more thoroughly and systematically on the needs of learners and their prospective employers. The Task Force also recommends that the institutions of higher education develop specific programs to better meet the workforce needs of the state as it transitions into the New Economy.**

The Governor's Task Force recommends that workforce development through learner-centered programs be enhanced by the following specific proposals:

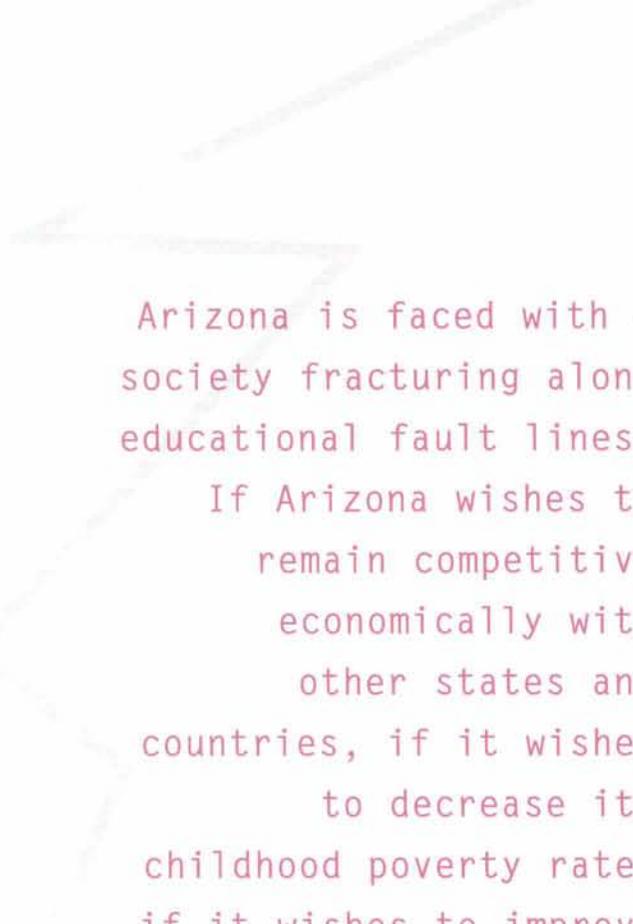
## Enhancing Adult Education

Arizona has long recognized the dynamic relationship between adult education and workforce development. Adult education has always been a keystone of the Arizona community college mission and, as Arizona prepares to compete in the New Economy, the traditional community college role of supplying a much-needed, expanded pool of trained employees takes on new urgency. Arizona is home to nearly 800,000 adults who are marginally literate and in pressing need of basic education to improve their socioeconomic status. Less than 8% of these adults (a total of around 60,000 individuals) are being served by current education programs. The need for adult education has clearly outpaced Arizona's ability to respond and is one of Arizona's most pressing issues.

Arizona must bridge the gap between its educated and literate citizens and those who are struggling with the most basic skills required to survive and to flourish in the New Economy. Two immediate steps will assist in this effort:

1. Align adult education with the community college by transferring administration of the state's adult basic education programs from the Arizona Department of Education, Division of Adult Education, to the State Board of Directors for Community Colleges of Arizona.
2. Dramatically increase the state share of funding for adult basic education.

It is proposed that deliberations begin at once to allow Arizona community colleges to assume primary responsibility for adult basic education and



Arizona is faced with a society fracturing along educational fault lines. If Arizona wishes to remain competitive economically with other states and countries, if it wishes to decrease its childhood poverty rate, if it wishes to improve its tax base and grow its own economy, and if it wishes to significantly affect the performance of some of its most vulnerable school children, the state must make a concerted effort to improve and expand educational opportunity for hundreds of thousands of marginally literate adults.

—Robert Jensen, Chancellor,  
Pima County Community College District

literacy services. Discussion should be conducted by a study committee composed of representatives from:

- Arizona Department of Education
- State Board of Education/Vocational Education
- State Board of Directors for Community Colleges of Arizona
- Local county Community College District Governing Boards
- Local K-12 District Governing Boards
- Governing Boards from Community-Based Organizations

Ultimately, a statutory change would be required to support the proposed movement of adult education programs and services. The Governor and the Arizona Legislature should work together to dramatically and steadily increase state funding for adult education.

The community college-centered adult education effort proposed by this initiative would operate in partnership with other agencies. The intent would be to complement, supplement, enhance, and expand access on the part of adults in need of further education, not to supplant or disrupt successful existing programs.

#### Possible Performance Measures

- Increase in the number of adult basic education students served
- Increase in the number of recipients of the Arizona High School Equivalency Diploma

State funding for adult basic education should be nearly doubled in the first year of the new budget biennium: an increase from \$4.6 million to \$8.2 million for FY 2002. To comply with mandates of federal legislation for adult education services, Arizona has developed “The Five Year State Plan for Adult Education,” approved by the State Board of Education and the Governor. To fully implement this plan, and to expand system capacity to serve an ever-growing need, funding should be incrementally increased until the total state appropriation for adult education reaches \$25 million over four years. Such funding would allow Arizona to focus essential efforts on increasing the basic skills and New Economy employability of a significant portion of the state’s adult population.

## New Economy Training for Gainful Employment (NET-Gain!)

Arizona must ensure access to training and education so that all citizens will obtain marketable skills and gainful employment. Preparing workers to meet real world challenges and changes in the workplace is, by definition, a vibrant form of learner-centered education.

Community colleges throughout Arizona face increasing demands to remain current in technology and curriculum while delivering programs that are relevant for evolving and emerging industries. Alliances among educators, business, and government represent a key approach to addressing these issues and to leveraging intellectual and capital resources. Additional incentives are needed to ensure that colleges and businesses expand and enhance their collaborative efforts to meet increasing demand for well-trained workers.

### Initiative: Incentives for Workforce Partnerships

Arizona should enact a program to provide incentive funding in support of collaborative partnerships leading to New Economy workforce development programs. For purposes of discussion, this program will be called New Economy Training for Gainful Employment (NET-Gain!).

The basic objectives of NET-Gain! are to facilitate collaborative training partnerships among Arizona public community colleges, Arizona businesses, and other agencies that:

- Leverage intellectual, capital, and human resources.
- Promote shared responsibilities for student competency attainment.
- Target job-critical positions.
- Address continuing education requirements for the existing and emerging workforce.

To advance the NET-Gain! concept, sufficient state funding is needed to promote partnership activities throughout the state. One vital need for funding will be to promote workforce partnerships in rural areas with less dense employer concentrations and smaller percentages of high-tech, high-wage industries. It is vital that these rural areas, which are closely served by Arizona community colleges, be encouraged through funding and other incentives to estab-

lish partnerships to provide access to workforce training skills in order to avoid large populations of “have-not” employees. It is estimated that an annual expenditure of \$3.5 million would be required to fully fund NET-Gain! activities. With a generous state allocation and/or if the state provided other incentives to businesses and colleges, a portion of this necessary funding could be leveraged from other funding sources.

### Possible Performance Measures

- Increase in the number of workforce partnerships, especially in rural areas
- Increase in the number of people who, through these programs, obtain marketable skills

## Globally Competent Workforce

The growth and development of Arizona businesses are increasingly reliant on doing business and trade with other nations. Arizona’s role as a player in the realm of global business requires the state to have on hand a strong cadre of employees with transnational skills and competencies. The state is in a particularly advantageous position to benefit from the potential positive effects of the North American Free Trade Agreement (NAFTA).

### Initiative: International Partnerships and Exchange Programs

Perhaps no aspect of education and training requires such a learner-centered approach as does instruction for global and multicultural competence. It is important that community colleges as well as universities develop a global curricula that requires learners to embrace technology, business, and communications across borders, and also leads them to understand the implications of environmental issues, space exploration, poverty, resource allocation, and international conflicts.

Accomplishing these goals with a community college student body that is not affluent and not free to travel the world due to work, family and home obligations is truly a challenge. While it is possible to develop opportunities for very short-term study abroad, it is necessary to create other approaches to accomplish the ambitious learner-centered goal of global competence.

Resources are needed to support the following efforts to internationalize learning in Arizona's community colleges and address the need of Arizona companies for workers who are competent to function in the global workplace:

- Faculty exchange programs between Arizona community college faculty/staff and faculty/staff at colleges and universities in other countries.
- Partnerships with Arizona companies that conduct business internationally.
- Community college collaboration with organizations such as the Border Trade Alliance, which promotes international trade and understanding of the North American Free Trade Agreement (NAFTA) between the United States and Mexico.

It is recommended that an Institute for International Leadership in Arizona's Community Colleges be established in conjunction with Arizona businesses. The Institute will provide experiences and programs to develop transnational skills in current and future employees. A steering committee composed of equal representation from Arizona business/industry and Arizona public community colleges will direct the Institute by establishing guidelines and procedures for developing collaborative college/business/industry programs. Committee members should largely be individuals with international experience. Arizona businesses would be asked to contribute a minimum of 20% cash and in-kind services annually in support of the Institute. The state would be asked to contribute 80% to match the 20% business/industry contribution. Costs are estimated at \$2 million annually.

#### **Possible Performance Measures**

- Increase in the number of faculty/staff exchange programs between Arizona and other countries
- Increase in community college partnerships with Arizona companies that conduct business internationally

## **Math and Science Teacher Pipeline**

Arizona has a great need for qualified teachers in the areas of math and science. These teachers are in demand because of the workforce needs of the New Economy for employees with competencies in math, science, technology and engineering. This need is underscored by the relatively high percentage of students currently admitted to the public universities with deficiencies in these subject areas.

Arizona's public and private universities have been increasing their efforts to recruit and to graduate more teachers through traditional teacher preparation programs. In addition, many institutions have developed alternative, accelerated programs to attract and prepare prospective teachers who already have baccalaureate degrees in math or science. However, there are still not enough new teachers coming through the pipeline and too many of those who begin a career in teaching are leaving the state or the field in the first few years. The growing numbers of teaching positions unfilled at the start of the school year forces greater use of emergency certifications, long-term substitutes and teachers assigned to classes outside their area of certification.

The teacher shortage experienced in Arizona is also occurring on a national level. To address this shortage, there is clearly a need to enhance the status of teaching as a profession, and some states are moving to increase teacher salaries to competitive levels. In Arizona the salaries offered to teachers are still relatively low, having slipped to 33rd out of the 50 states over the last decade. Even with the recent passage of Proposition 301, it will continue to be difficult to recruit teachers from other states. This situation raises the question of how the state can stimulate enrollment, graduation, and continued employment of teachers, especially in the areas of mathematics and science.

### **Initiative to Increase the Supply of Teachers through Traditional Teacher Preparation Programs**

The universities, community colleges and high schools should work together to create programs that encourage students to explore teaching as a profession and ensure that teacher preparation is provided at all levels of instruction. To stimulate enrollment by individuals who have already

demonstrated an interest in teaching, the state should provide tuition assistance for teacher aides or teachers with emergency certifications who are working toward full certification.

### **Initiative to Increase the Supply of Teachers through Alternative Teacher Preparation Programs and Alternative Teacher Certification**

The university, community college, and K-12 systems should work together to expand the offering of alternative certification programs and to explore the need for alternative certification options. Students who have a bachelor's degree in an academic subject other than education may want to earn a teaching certificate through accelerated certification programs. The state should provide funding for two semesters of paid service as mentored teachers and for teachers to serve as mentors to these post-baccalaureate degree student teachers.

### **Initiative to Stimulate and Support Teacher Preparation through both Traditional and Alternative Preparation Programs**

To address the issue of distributional shortages, the state should provide funding for college scholarships (or loan forgiveness programs) for aspiring teachers who prepare to teach in a high-need subject area, such as math and science, who agree to teach in a geographic area with shortages or in a low-performing school after obtaining certification. The state should also support a centralized data collection function to enable projection and tracking of teacher supply, demand and shortages throughout the state.

To increase the overall supply of qualified teachers in Arizona, the state should identify the funding necessary to offer competitive salaries for teachers in Arizona. State funding should be sought to leverage existing and new federal teacher preparation grants. Tax credits should be made available to corporations that partner with school districts to offer math and science teachers summer jobs that relate to their expertise. The state should also provide tax credits for public and private school teachers with at least four years of service, as an incentive to reduce turnover.

Finally, to provide increased access to education, development and support for aspiring, new and continuing teachers, teacher preparation programs

should consider greater utilization of information technology. At the same time, these programs can serve to demonstrate to teachers and others the use and benefits of e-learning.

#### **Possible Performance Measures**

- Increase in the number of math and science teaching degrees awarded at the universities
- Increase in the number of alternative certification options and availability of electronic delivery of courses and programs

## **Workforce Development In Engineering And Science**

To thrive in the New Economy, the state must stimulate enrollment, graduation, and Arizona employment of people in key fields in engineering and science. Aside from the Center for Low Power Electronics, the State of Arizona has not been a major player in these partnerships outside of the standard university budgets. Arizona ranks in the bottom 20% of all states in per-capita spending on cooperative technology programs. The relocation to Arizona of new high-tech industries and the expansion of existing Arizona high-tech industries hinge to a great extent on the ability of its colleges and universities to supply a well-educated workforce, primarily in engineering, science and business. All major high-tech industries in the State of Arizona (Motorola, Intel, IBM, Allied Signal/Honeywell, Raytheon, etc.) depend on the availability of engineering and science (including IT) talent.

### **Initiatives**

The state should provide a \$1,000-\$5,000 contribution per student to a Professional Workforce Development Program at each university. Each new engineering and science graduate in approved majors, including math and science education, would be eligible. Graduates must be employed in Arizona or enrolled in an advanced degree program in Arizona in one of these same fields within one year of graduation.

The state should provide partial support for internships in high-tech fields for college and university students in selected majors.

Arizona's links to the knowledge economy are not as strong as in other leading technology states

The state should match corporate contributions to scholarship support for students successfully pursuing degrees in engineering and science.

The state should provide financial incentives to colleges offering engineering and science degrees who participate in pre-college outreach programs.

The state should develop a public relations campaign, statewide and preferably nationwide, highlighting Arizona's commitment to and development of engineering and science talent.

**Possible Performance Measures:**

- Increase in number of engineering and science degrees awarded at the universities
- Increase in the number of internships for university students in high-technology fields

**Knowledge Industry Employment Concentrations**

State	Software Communications Services	Computer/Electronics	Healthcare Technology	Innovation Services	Financial Services	No. of Clusters Above 1.1
Maine	1.51	2.14	1.97	1.63	1.67	5
California	1.32	2.15	1.50	1.21	0.93	4
Colorado	1.84	1.90	1.22	1.39	0.99	4
New Jersey	1.61	0.64	2.25	1.13	1.39	4
Minnesota	0.90	1.82	1.39	0.65	1.33	3
Texas	1.12	1.28	0.71	1.11	0.85	3
New York	0.99	0.76	1.12	1.02	1.85	2
Pennsylvania	0.80	0.65	1.07	1.24	1.30	2
<b>Arizona</b>	<b>0.87</b>	<b>1.96</b>	<b>0.59</b>	<b>0.97</b>	<b>0.79</b>	<b>1</b>
Illinois	0.89	0.94	1.02	1.01	1.23	1
Florida	0.93	0.75	0.96	0.91	0.96	0
Michigan	0.73	0.24	0.7	1.06	0.74	0
North Carolina	0.67	0.66	0.99	0.59	0.58	0
Washington	1.04	0.89	0.76	1.09	0.83	0

An employment concentration above 1.1 means that the area's share of the state's jobs is at least 1.1 times higher than the national average. Arizona has just one area of strength: computer/electronics.

Source: Index of the Massachusetts Innovation Economy, 1998.

# STRATEGY II: Increase Research and Business Development

Increase the amount of targeted research, technology transfer and business and workforce development provided by higher education

## Preparation for the New Economy

### New Economy

*Transform higher education into a driver for the knowledge-based, global economy by assessing and addressing the needs of Arizona's industry clusters, the needs of Arizona's workforce and the learning outcomes required for the effective engagement of Arizona higher education graduates in the economy. Targeting resources to university research and business development, implementing e-education for on- and off-campus programs, utilizing e-commerce for business functions, and increasing the use of public/private partnerships will stimulate innovation and the transfer of technology to Arizona business and industry. Higher education will be student-focused, outcomes-based, technologically integrated, globally competitive, flexible, agile, and market-driven.*

Arizona is faced with a crucial decision regarding the role it is to play in the New Economy. Arizona's higher education system is a vital resource in meeting the state's urgent need to prepare for success. The old Industrial Age is giving way to a new digital age, and a narrow window of opportunity has opened for a few states to emerge as world leaders. To become such a leader, Arizona must act with great urgency to position the state and its citizens for economic success.

### Recommendation

The Governor's Task Force recommends the development of partnerships and the targeting of investments in a series of university research initiatives that directly support the state's existing industry clusters. A parallel effort to enhance the development of

small business in the state should also be implemented through community college programs and legislative support.

These recommendations should be implemented through the following specific initiatives:

## University Research and Technology Transfer Initiatives

To provide support for the industry clusters identified by the Governor's Strategic Plan for Economic Development (GSPED), the university research and technology transfer initiatives cover a broad range of fields:

**Bio-Science and Technology** (human health, plant sciences, molecular engineering, anti-cancer research, combating infectious diseases, aging, brain research)

**Information Science and Technology** (software and hardware development, telecommunications, artificial intelligence, e-learning, Internet applications)

**Environmental Engineering** (water reclamation, sustainable energy, advanced materials)

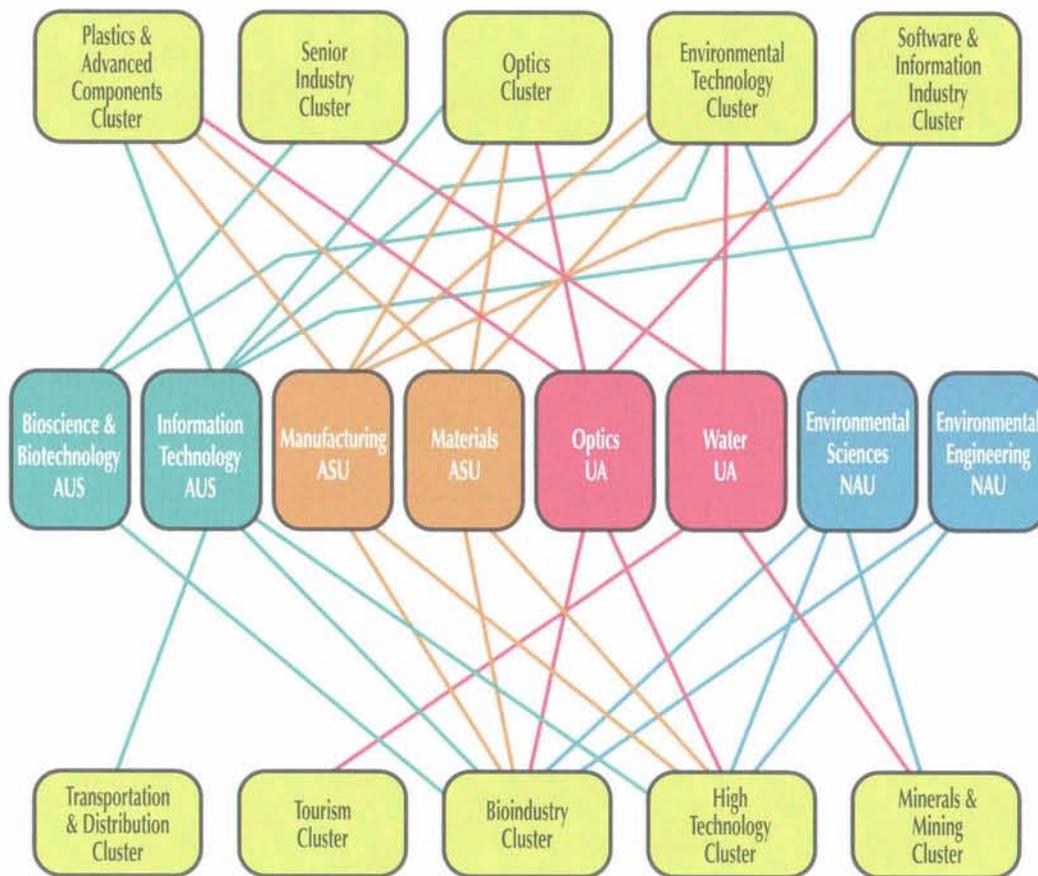
**Environmental Sciences** (research, education, outreach, alternative energy sources, new construction techniques, new waste treatment approaches)

**Manufacturing** (semiconductors, aerospace technologies, environmental quality)

**Materials** (ultra small and ultra light, high temperature, high pressure)

**Optics** (lasers, optical fibers, telescope lenses and mirrors, new glass and polymers)

**Water Sustainability** (semi-arid issues, water quality, and climate impact on resources)



### Arizona University System (AUS) Research Support for Arizona Industry

The connections illustrated above show the many ways in which the universities' research initiatives (displayed in the middle tier) support Arizona's existing GSPED industry clusters (displayed in the upper and lower tiers).

### Bioscience and Biotechnology

Biomedically related biotechnology is rapidly becoming a major economic driver not only in the U.S. but throughout the world. There is broad agreement that we are moving rapidly into the "age of biology" powered by exciting advancements in molecular technologies. These technologies will empower unprecedented advances in our fundamental understanding of biology, especially medicine and agriculture. They can lead to major breakthroughs in the treatment of disease, development of new drugs and medical devices, and improving the quality of life. This emerging age of biology will continue to spawn new industries at an unprecedented rate.

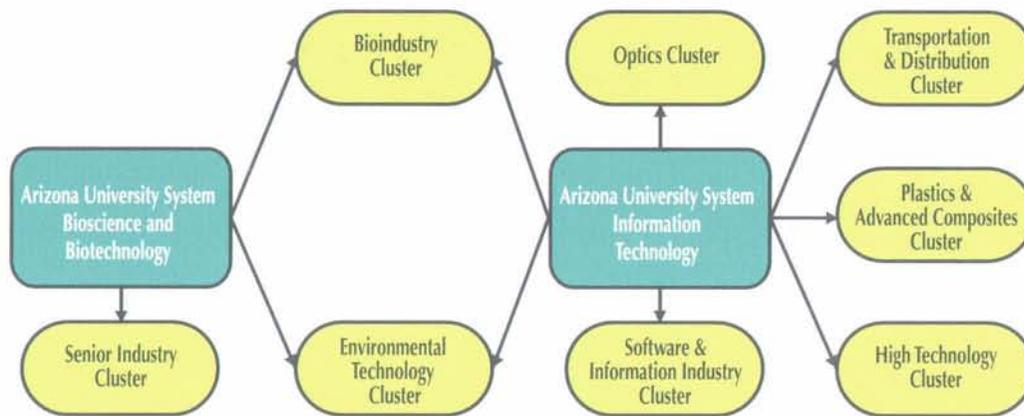
#### Arizona State University Initiatives

To enhance ongoing programs and facilitate interactions with the medical community and biomedical/biotechnology industrial base in the Phoenix area, Arizona State University is creating the Arizona Biomedical, Behavioral and Health

Institute. The Institute will initially be comprised of three major research elements: Bioengineering, Stress and Lifespan Development, and Basic Biological Processes including Functional Genomics and Structural Biology. The proposed initiative focuses on Bioengineering and Basic Biological Processes, the areas of research most closely related to the New Economy.

#### Northern Arizona University Initiatives

There is not only an unmet need for highly technologically trained individuals in Northern Arizona, but there is also a need for the small firms that can become the nucleus to draw biotech firms to the area. The proposed Northern Arizona Center for Biotechnology and Human Welfare would act as a catalyst to satisfy this need. The proposed center would include four major interdisciplinary foci that are supported by a broad array of bioscience research by NAU faculty: 1) biotechnology, plants and human health; 2) emerging infectious diseases; 3) heavy metals and cancer; and 4) biotechnology, genetic medicine and society.



### The University of Arizona Initiatives

The University of Arizona has significant research capabilities in basic life sciences, the physical sciences, mathematics, biomedical engineering, and clinical activities across the campus. There are also important developing capabilities in the techniques of Genomics, Proteomics and Bioinformatics in several parts of the campus. The proposed Institute for Biomedical Science and Biotechnology will bring these technologies to the College of Medicine, facilitating specific areas of research and technology, and developing graduate training programs that stress the interdisciplinary nature of life science research of the future. This proposal also includes the establishment of a MRI Center for Cognition and Neuroimaging that would house a high field-strength research-dedicated magnet.

#### Possible Performance Measures:

- Increase in funding from Federal agencies, foundations and other interested organizations
- Increase in activity in the biotechnology industry in the state

### Information Science and Technology

Information technologies are an integral part of people's lives, businesses, and society. Transforming the way we deal with information requires significant improvements in data access methods, including high performance information systems and tools to help individuals locate information and present, integrate, and use the information in meaningful ways.

High-speed computers and networks are enabling scientific discovery across a broad spectrum — from mapping the human brain to modeling climatic change. Research problems are becoming more complex and interdisciplinary in nature. As a result, researchers are finding innovative ways to collaborate with their colleagues across the globe. Key research technologies include high-end computing to allow higher fidelity models of complex physical phenomena, advances in collaborative environments, visualization of complex data sets, data mining techniques and management of very large data sets and databases.

### Arizona State University Initiatives

ASU, in partnership with industry, intends to develop a Center for Embedded Systems. Embedded systems are the lifeblood of semi-conductor manufacturers such as Motorola and Intel, in addition to other manufacturers in the state. Embedded systems software is required by almost every product imagined from cell phones to automobiles to refrigerators. For these industries to grow and prosper, it is essential that ASU 1) advances this technology through research, and 2) trains a sufficient cadre of engineers in Arizona capable of meeting the needs of employers. ASU will also work collaboratively with industry to 1) build a college-wide emphasis on software that will provide an intellectual focus for software research, 2) provide an investment focus in software research and development for Arizona industry and commerce, 3) provide leadership in the development of undergraduate and graduate educational programs in software engineering and closely related disciplines, and 4) provide leadership in the development of continuing educational programs for industry and commerce in the areas of software engineering and software-intensive applications. ASU will also enhance its efforts in telecommunications research.

### Northern Arizona University Initiatives

NAU's e-Learning Initiative will use information technology to transform the teaching and learning process for students and professionals alike. By partnering with industry leaders, the Colleges of Business Administration and Engineering and Technology will create learning environments that allow students to experience and function in a networked world. Business and engineering students will practice their professions in a rich virtual environment where they will team up with other students, faculty and practicing professionals from all over the world to tackle real-world problems using leading-edge applications and technologies. Another vital component of this initiative is the e-Learning Park, a facility that will foster a rich intellectual and educational exchange among its participants while being mindful of issues of private enterprise.

### University of Arizona Initiatives

The UA's initiative focuses on education, research and technology transfer related to foundations and applications of software and information science and technology. The core functions of this initiative are:

#### 1) **Education**

Offer degree, certificate and continuing education programs presenting students with the knowledge and skills to develop and manage a) software for a variety of applications, including engineering, business, earth and life sciences and arts and entertainment, and b) information technology for distributed work. Information technology will be used to create, coordinate and deliver education across the virtual community of the universities and industry.

#### 2) **Research and Development**

Investigate foundational elements of software and information technology resources for the virtual workplace through industry and university partnerships.

#### 3) **Facilities**

Provide resources including high performance computing and scientific visualization capabilities, digitized learning content, high-speed communication and multimedia facilities and know-how for partners from the private and public sectors for their own research, development and operational needs.

#### 4) **Human Resource Development**

Provide opportunities for multi-disciplinary teamwork, internships and fellowships, particularly to software-educated engineers and managers.

#### 5) **Outreach and Technology Transfer**

Foster interactions between multi-disciplinary UA teams and industry, distance-based continuing education, short courses, applications training, intellectual property and law.

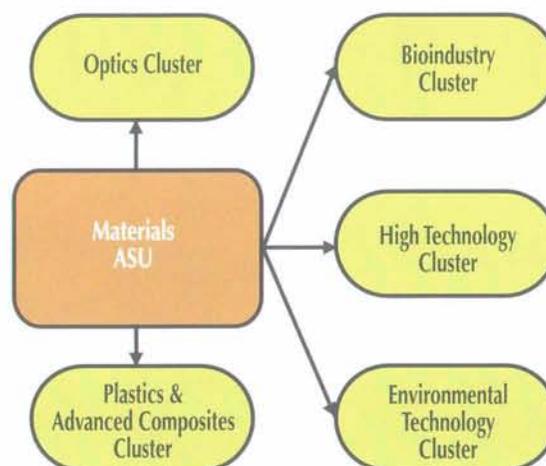
#### Possible Performance Measures:

- Increase in research in information science, technology, and software
- Increase in activity in the information technology industry in the state

## Materials

### Arizona State University Initiative on Materials Science: Ultra Small and Ultra Fast

Faculty at Arizona State University have made significant contributions in the emerging field of nanostructure science and technology and already have strong connections with major industrial companies and national laboratories. Additional support, especially for new faculty, could place ASU among the upper echelons of U.S. universities in the field. Arizona State University proposes to contribute significantly to the state's high-technology industrial base by expanding its research and education capabilities in Ultra Small (less than 1 billionth of a meter) materials synthesis and Ultra Fast (1 trillionth of a second) analysis of chemical reactions. This will require a major upgrading of instrumentation for high-resolution electron microscopy and laser spectroscopy, as well as nanofabrication, nanolithography and materials preparation.



**Possible Performance Measures:**

- Increase in external funding
- Increase in the number of patents registered

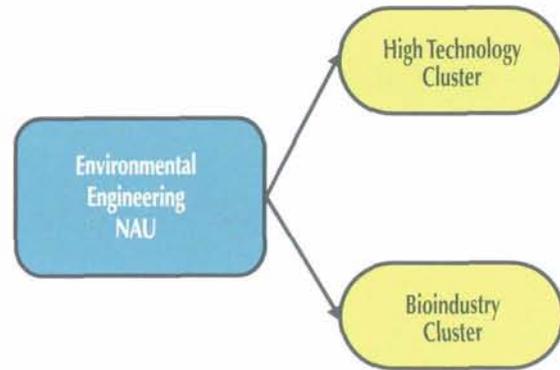
## Manufacturing

### Arizona State University Initiative on Manufacturing: The Manufacturing Institute

Since 1979, ASU has maintained a strong partnership with Arizona's high-technology manufacturing industry. The collaboration has elevated the quality of engineering and business education at ASU and fostered multi-disciplinary research that supports economic development. Building on this foundation, Motorola supported Arizona State University in the creation of the Manufacturing Institute (MI) as a collaborative partnership between industry and the College of Business and the College of Engineering and Applied Sciences. Since its inception the metropolitan industrial community has thrown its support behind the concept by investing in MI scholarships as well as research. It is through the MI that Arizona State University seeks to create a new form of partnership with Arizona's manufacturing industry, one that advances mutual goals of creating new knowledge, innovative education, life-long learning, and advancing global partnerships.

**Possible Performance Measures:**

- The number of interdisciplinary grant proposals funded in manufacturing
- Increase in the number of student internships with industry



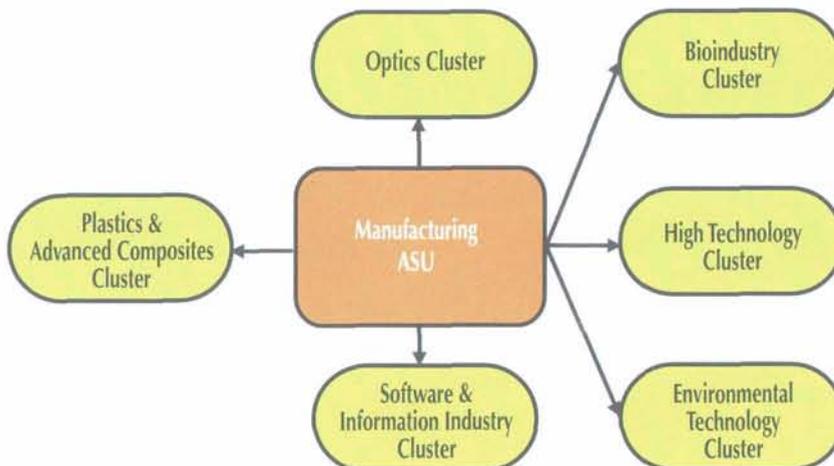
## Environmental Engineering

### Northern Arizona University Initiative on Environmental Engineering: Arizona Center for Environmental Technology

The proposed Arizona Center for Environmental Technology would include and be an expansion of existing research laboratories, including the Water Resources and Reclamation Laboratory, Sustainable Energy Laboratory, and the Advanced Composite Materials Laboratory which all integrate with the existing Center for Data Insight (data mining). The Arizona Center for Environmental Technology will serve as an incubator for small technology development projects for firms of various sizes, partner with small businesses to apply for federally funded Small Business Innovation Research awards, and serve as a resource and training center for rural Arizona.

**Possible Performance Measures:**

- The number of firms that use the Center and bring products to production
- The number of specific workforce development workshops, courses and training programs completed

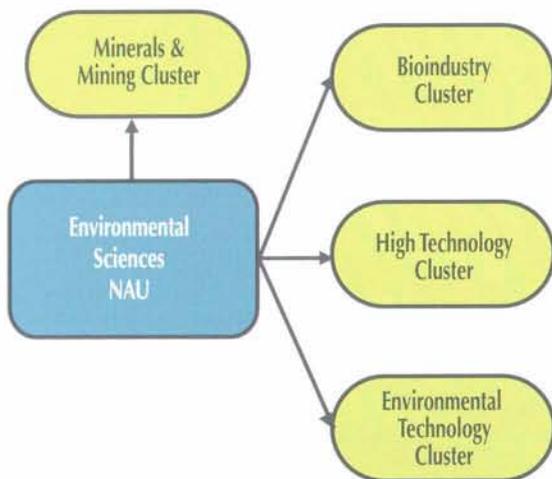


## Environmental Sciences

### Northern Arizona University Initiative on Environmental Sciences: Center for Sustainable Environments

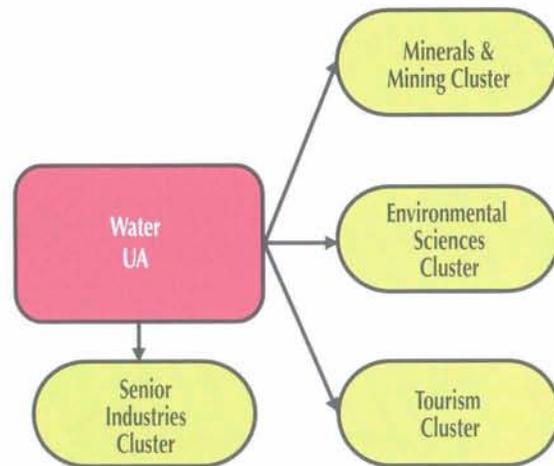
The Center for Sustainable Environments (CSE) will serve as a catalyst to facilitate a broad range of activities related to environmental research, education and outreach. NAU researchers are seeking and devising alternative paths to economic development including the development of alternative energy sources, new construction techniques and new waste treatment approaches. The CSE has established a set of goals to attain the highest level of multidisciplinary and environmentally relevant research, education and stewardship including the following:

- Develop collaborative relationships with Indian tribes and other local communities in conducting research on environmental issues;
- Support studies that seek to have a direct effect on environmental policy, from the local to the global;
- Produce prototypes of new materials; i.e., construction materials, that are energy efficient and recyclable;
- Assist studies that make connections between international and local/regional environmental issues;
- Work with partner agencies and organizations to apply knowledge to the development of effective strategies to restore, sustain, and preserve the environment.



### Possible Performance Measures:

- The number of environmental issues addressed
- The number of New Economy businesses attracted to the state because of the environment and innovation in solving environmental challenges



## Water Sustainability

### The University of Arizona Initiative on Water Sustainability

The goal of this initiative is to maintain and increase the reliability and quality of the state's water supplies. It will allow expansion of two critical areas of research and the area of knowledge transfer: 1) multi-disciplinary research on the basin-scale level, and 2) pathogen detection in potable water. This initiative will include:

- A water information center with a library of water-related materials and information staffed by an information specialist;
- Courses and research opportunities that will train the state's next generation of water resource managers;
- A Web-based course in basic hydrology, offered through Extended University and available to anyone, including high school science departments;

- A satellite office in Maricopa County to facilitate interactions with key stakeholder groups; and
- A presence in rural Arizona through the existing network of extension offices.

**Possible Performance Measures:**

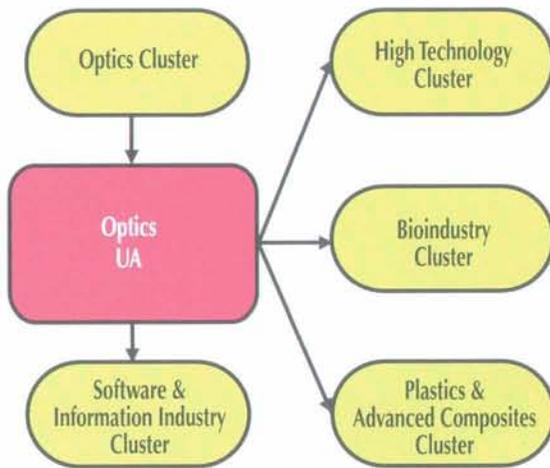
- The number of new water resource management tools developed and adopted
- The growth in Tucson's environmental technology industry cluster in water resources

**Possible Performance Measures:**

- Increase in the number of optics-related research grants
- Increase in the number of optics-related patents

**Fiscal Implications for University Research and Technology Transfer Initiatives**

It is estimated that an investment of \$50 million annually by the State of Arizona into the research infrastructure of its public universities would repay taxpayers many times over. The investment will leverage external funds from foundations, the federal government and industry as well as position the state to attract and enhance New Economy enterprises.



**Optics**

**The University of Arizona Initiative on Optics**

The UA's Optics Initiative will support the development of the New Economy in the state through providing highly educated graduates for Arizona optics companies to hire, engaging in world-class research and development in areas of relevance to local optics companies, and implementing an effective outreach program to provide technology transfer and technology support for Arizona optics companies. This initiative will allow the expansion of three critical areas of research and of the university's technology transfer infrastructure: 1) The Arizona Center for Photonic Information Technology, 2) The Steward Observatory, 3) a coordinated optical materials research effort, and 4) technology transfer and industry support capabilities.

"If I were to give one bit of advice to the Regents or to the citizens of Arizona for the future of the economic growth of this state, it would be to have quality research universities..."

— Craig Barrett, Chief Executive Officer, Intel Corporation

## Community College Business Development Initiatives

The Task Force recognizes that a large part of the New Economy will be driven by Arizona businesses, many of which will be retooling in a competitive environment. Given the speed with which New Economy businesses must adapt, it is appropriate that much of the responsibility for assisting with this task fall to the community colleges.

Going to the Small Business Development Center is the best thing that I've ever done for my business. I thought that I really knew my business, but I learned so much more . . . I would recommend it to anybody who wants to open or expand a small business.

—Bettie Ritter, co-owner, Pueblo Southwest, Inc.  
Recipient of SBDC 2000 Success Award  
Lakeside, Arizona

## Community College Initiative on Small Business Development Centers

Established in 1988, the Community College Small Business Development Center Network is now the single largest provider of small business assistance in Arizona. These centers, located in each of the 10 community college districts, help people who either currently own a business or who are planning to open a business learn the fundamentals of operating a small business. In 1999 community colleges invested \$1.3 million matched by \$1.1 million in Federal funds, to operate these centers. Arizona is one of only two states that do not provide state funding for this type of center.

During 1999, as a result of these centers, 1,466 jobs were created and 282 jobs retained; 208 clients received more than \$35 million in financing; 3,390 clients were counseled; and 3,749 received training. Sales by these clients increased by \$72.3 million. A total of \$5.2 million in state and federal tax revenue resulted from the enhanced activities of these businesses for a \$2.14 return on each dollar invested.

### Initiative: Expand Small Business Development Centers

It is proposed that the state become a partner in funding the Arizona Small Business Development Center Network by providing \$975,000 annually in increased funding. Over a three year period, the funding will allow the network to assist more than 2,500 small businesses to create an estimated 5,580 new jobs and contribute more than \$10 million new dollars in state tax revenue.

#### Possible Performance Measures:

- Increase in small businesses served and new jobs created
- Return on investment

## Tax Credits for Training Costs in Small Business

In large measure, the economic health of the state depends on the ability of small businesses to grow and prosper. In turn, the vitality of small businesses relies on obtaining and retaining capable employees. The lack of capable staff and frequent staff turnover can cause a business owner to curtail services, or to limit production of goods. Workforce training, targeted to the needs of small business, would enhance the competence and retention of small business staff and improve the overall health of Arizona small businesses.

### **Initiative: Expand Tax Credits for Employee Training**

Arizona's community colleges are accessible and affordable avenues for workforce training and employee development. The colleges have the flexibility to tailor courses and programs to the needs of small business owners and employees.

Recently approved legislation allows a business a state tax credit of 50% of the cost for training employees in information technology. The public community colleges are an approved site to offer such training, as are private postsecondary institutions. Through their Small Business Development Centers, public community colleges can encourage small business employers to make employee training an integral part of their business plans. If this legislation were amended to increase the training topics that qualify for tax credits, the community colleges could serve an expanded number of small businesses and employees. Expanding training will not only improve the profitability of small businesses, but also provide increased services and goods for Arizona consumers.

The current tax credit incentive for employee training should be amended in the 2001 Legislature to cover a wider variety of training in addition to information technology knowledge and skills.

#### **Possible Performance Measures:**

- Increase in utilization of tax credits by small businesses
- Increase in completion of workforce development training programs offered by the Arizona community colleges

An additional \$2.5 million annually will be needed to support this initiative.

“Getting and keeping employees is THE business problem today for our member small businesses, and training for employees can help meet this challenge. The tax credits for technology training enacted via HB 2442 by the 44th Legislature was a great step in the right direction, but small businesses need help with other areas of training, such as customer service, working in teams, and communicating effectively. I see this proposal as vitally important to the continued health and growth of Arizona's small businesses.”

Thomas A. Gunn, Jr.  
Executive Director  
Arizona Small Business Association

# STRATEGY III: Increase Capacity and Productivity

Enhance the human, physical, and technological capacity of institutions of higher education

## Enhancement of Human Resources

Arizona must have strong universities and community colleges and private institutions to develop the targeted research and partnerships that are essential for the state's industry clusters to be competitive in the New Economy, as described under Strategy I. Arizona's community colleges and universities also must have the human resources required to develop a highly educated and well-trained labor force and to meet the anticipated increase in demand for higher education over the next 20 years, as described under Strategy II. To fulfill their role in strengthening the economy of the state, Arizona's institutions of higher education must each have the resources necessary to be competitive in the marketplace for top faculty and staff. Planning to implement this strategy should be guided by the following principle:

### Human Resources

*Conserve and enhance essential human resources by increasing faculty and staff salaries to competitive levels in order to hire and retain top faculty and critical staff, and attract world-class scientists and technicians.*

## Recommendation

**The Governor's Task Force recommends that faculty and staff salaries at the universities and community colleges be competitive in each of their respective markets, thereby enabling the institutions of higher education to hire and retain faculty and staff of the highest caliber. The Task Force recommends that initiatives be undertaken and supported in order to provide the resources necessary to achieve competitive salaries.**

## University Faculty Salary Initiative

Arizona's universities operate in a highly competitive national and international marketplace for the recruitment and retention of faculty. Competition for the best faculty is fierce, and the universities' ability to offer competitive salaries to new faculty and to retain the best faculty is being severely compromised. The gap between the average salaries of faculty in Arizona's universities and those of peer institutions is already significant, and despite the reallocation by the universities to faculty and staff salaries of more than \$20 million dollars in the past four years, this gap continues to increase. As a result, Arizona's universities are losing increasing numbers of talented faculty to other institutions offering substantially higher salaries as well as greater resources for research and teaching.

### Initiative: Raise University Faculty Salaries

A continuation of small annual salary adjustments by the Arizona Legislature will only contribute to the widening deficit in faculty salaries. Therefore, university salaries should be raised to the 50th percentile of peer institutions over the fiscal years 2002 and 2003. This is the first step toward the ultimate goal of making Arizona salaries truly competitive with those at peer institutions. It is imperative that the money necessary to implement this initiative be awarded on a merit basis, in order to reward and encourage quality teaching and research. These funds should be allocated with enough flexibility to allow the universities to develop attractive hiring and retention packages for key faculty members. To obtain a salary level that is competitive with peer institutions and to establish a fund to avert a "brain drain" from the State of Arizona will require an investment of approximately \$68.4 million in continuing funds over fiscal years 2002 and 2003.

#### Possible Performance Measures:

- Movement of average faculty salaries toward the 50th percentile of peer institutions
- Increase in externally-funded research dollars brought to the state by university faculty

“States that rank as the most ineffective for ensuring that their upper tier public sector universities remain nationally competitive in the academic labor market during the last two decades include Arizona, New Mexico, Utah, Oregon, Washington, and Wisconsin... Incidentally, these states also are among the nation’s lowest in per student state expenditure support for higher education.”

—Alexander King, *National Trends in the Relative Fiscal Capacity of Public Universities to Compete in the Academic Labor Market*, 2000.

## Community College Faculty Salary Initiatives

As the main contact with students, faculty members are the community colleges’ most important assets. If community colleges are to continue to provide exceptional services to their communities, it is imperative that they have a faculty pool that is highly competent and sufficiently large to meet the needs of all students. The challenges of competency and capacity are met through a combination of full-time and adjunct faculty.

### **Initiative: Increase the Number of Full-Time Faculty and Make Faculty Salaries More Competitive**

Arizona community colleges operate in a highly competitive national/state marketplace in the recruitment and retention of faculty. Competition for the best faculty is fierce, and the community colleges’ ability to offer competitive salaries to new faculty and to retain the best faculty is severely strained and at times compromised.

The initiative addresses two main focus areas:

- 1) Resources should be allocated to reduce the ratio of adjunct to full-time instructors in the community college system.
- 2) Arizona should enact a program to assure that there are available resources to be competitive and maintain a faculty pool in the community college system that adequately serves the growing student demand.

The community colleges are striving for a 50/50 split of classes taught by full-time and part-time faculty. This should give students access to faculty without hampering the ability of the colleges to respond to rapidly changing economic situations that demand immediate action. Based on a full-time student-to-faculty ratio of 20:1, there is a need to increase the number of full-time faculty in the community college system by 329. The incremental cost to hire a full-time residential faculty member, rather than adjunct instructors for the same number of class sections, is approximately \$40,000. The first-year cost of increasing the ratio of full-time to part-time faculty is \$13.1 million. In future years, this number may fluctuate with the economy and enrollment.

### Maricopa Initiative

In order to maintain or improve its current faculty salary standing among peer institutions, the Maricopa Community College District may have to sacrifice development of programs and technology and/or maintenance of plant. It is recommended that \$7,748,000 in annual funding be made available to keep the district competitive within its peer group.

### Pima Initiative

An average increase of \$10,000 in annual salary per full-time faculty member would bring the Pima County Community College District close to the highest mean salary in its peer group. This would cost approximately \$3,360,000 annually for its present full-time faculty.

### Rural Initiative

In order to maintain their competitiveness, it is recommended that rural community colleges receive \$4,000,000 annually to retain and improve their ability to compete through the maintenance of a quality faculty pool.

#### Possible Performance Measures:

- Increase in the ratio of full-time to part-time instructors up to at least 50 percent
- Increase in the statewide percentage of classes taught by full-time instructors

## Management of Capital Assets

As part of New Economy initiatives supporting workforce development and research and technology transfer, numerous states across the country have made substantial investments in capital budgets for their colleges and universities. A similar program for Arizona colleges and universities is needed.

### Capital Assets

*Address chronically deferred maintenance problems by renewing buildings and infrastructure, retrofitting older facilities for information technology, and expanding academic and research facilities at existing sites. This will help to provide optimal use of existing facilities, and integrate information technology with campus-based instruction.*

### Capital Formation

*Enhance the formation of investment through new funding approaches, including public/private partnerships, private contributions, mutual leveraging of funds from multiple sources and levels, and new approaches to public funding.*

## Erosion of Capital Assets

Continued inadequate support for maintenance of community college and university campuses has resulted in a substantial backlog of deferred maintenance and badly needed infrastructure and facility renovation upgrades. For example, during the last decade, the Legislature has funded the universities' Building Renewal at an average of 43 percent of the formula adopted by the Legislature's Joint Committee on Capital Review. In the current biennium, funding is at 23 percent of the formula.

## Enrollment Growth/Workforce Development

The Governor's Task Force anticipates significant enrollment growth over the next 20 years for Arizona's institutions of higher education. This growth in enrollment will push the universities and community colleges beyond the current capacities of their campuses and create additional capital asset needs for both systems for at least the next decade. Capital needs for the second decade of the 21st Century should be evaluated later to integrate technological advancements in the design of learning facilities.

## Research and Technology Transfer

New and/or improved research facilities are a critical component of positioning Arizona to be successful in the competition to attract and retain the knowledge-based industries of the New Economy.

## Recommendation

**The Governor's Task Force on Higher Education recommends that the public capital assets of the institutions of higher education be managed over the next ten years in such a manner as to catch up with past needs, maintain existing facilities, and keep up with projected growth. Resources should be identified and secured in order to address these needs in a systematic and on-going manner.**

- **The Legislature should be encouraged to appropriate general fund revenues to cover the cost of debt service for university and community college capital projects.**
- **The Legislature should fully fund the universities' existing Building Renewal Formula and/or any future revisions to that formula.**
- **The Legislature should provide greater state support for community college state aid capital funds to improve the repair and maintenance of state-owned community college real property.**
- **The universities and community colleges should more aggressively seek private and federal partnerships to support the construction of facilities and infrastructure.**

[**Note:** The Report and Conclusions of the Subcommittee on Funding from which these recommendations were derived can be found in the Appendix of the *Supplement to Arizona at Risk: The Report of the Governor's Task Force on Higher Education*. The Subcommittee's report provides an in-depth evaluation of the various funding sources and mechanisms supporting public higher education in Arizona and presents a series of conclusions regarding ways to strengthen the financial foundations of public higher education.]

### University Capital Asset Needs

To address the demands of expanding enrollments and increased research and technology transfer for New Economy industries, two categories of capital needs were proposed for consideration by the Governor's Task Force on Higher Education:

- 1) Building Renewal; and
- 2) Special Needs Not Addressed by Building Renewal.

The proposal on building renewal has components for Catch-Up and Keep-Up. The proposed Catch-Up element of building renewal would eliminate the unfunded backlog of deferred maintenance by providing 20 percent of the unfunded formula amount (from the last decade) each year over a five-year period. This would require appropriations of \$24.4 million per year. The proposed Keep-Up element of building renewal calls for full funding annually of the formula.

The proposal for special needs not addressed by building renewal includes elements to support enrollment growth/workforce development, research and development, and other special needs, all subject to Board of Regents authorization. To support enrollment growth/workforce development, approximately 1 million square feet of new facilities will be needed in the next ten years. For research and development, the universities plan to maximize the requested state support by matching it in innovative ways with a variety of other fund sources from federal agencies and private partnerships. To cover the debt service/lease purchase payments for the enrollment growth/workforce development and research and development projects would require a 20-year repayment schedule of \$47.9 million annually.

### Community College Capital Asset Needs

To meet the challenges of developing a workforce for the New Economy, Arizona's public community colleges must have state assistance for capital development of buildings and infrastructure:

- 1) Enrollment growth will require additional academic facilities on the main and branch campuses; and
- 2) Access needs of Arizona citizens will require support for infrastructure improvements including new facilities and retrofitting of existing facilities.

Funding for community college capital asset needs would have to begin with a state commitment to increase support for community college buildings which are state-owned real property. This commitment should be matched by state participation in helping local district taxpayers and students in meeting the costs of debt service for capital projects at a 33 percent share. Also, increased capital state aid formula amounts, with annual inflationary adjustments, should be provided by the Legislature to address deferred maintenance and infrastructure improvements.

Eliminating the 1991-2000 backlog of unfunded capital state aid for community college students and inflationary growth would require additional appropriations of approximately \$1.96 million per year over the next five years.

To cover the 33 percent state share for debt service payments for capital facilities for community colleges, approximately \$22.6 million is needed in FY 2002.

State share amounts of 33 percent beyond FY 2002 would be dependent upon the debt service required for capital projects that are approved for construction at that time.

**Possible Performance Measures:**

- Decrease in the backlog of deferred maintenance
- Increase in federal and private partnership support for capital facilities

## Enhancement and Utilization of Information Technology

The Task Force supports the plan to increase the technological capacity of the system of higher education in Arizona. Efforts to implement this plan should be guided by the following principle:

**Information Technology**

*Increase the use of new technological delivery channels for academic degree and certificate programs as well as noncredit coursework and workshops. The aim is to achieve integration of electronic education with traditional delivery systems, to enhance administration and support services, and to prevent unnecessary duplication of resources through collaboration between and among educational institutions and sectors.*

### Recommendation

**The Task Force recommends that the potential for e-learning through information technology be realized through specific initiatives that provide for electronic course sharing among community colleges, electronic delivery of collaborative programs among the public universities, and useful collaboration between the two sectors.**

The Arizona higher education institutions are dedicating significant resources to expanding distance learning and articulating electronically-delivered education. This has been for a number of years the fastest growing area of education. States across the nation are developing virtual universities and colleges, integrative web sites, and telecommunications infrastructures. Most of the commitment in Arizona has been through internal reallocation of resources and when there have been appropriations, they have been in the millions of dollars, not the tens of millions that many other states have provided.

The Governor's Task Force recommends that the use of information technology be enhanced through the following specific proposals:

### Arizona Learning Systems

Arizona Learning Systems (ALS) was established in 1996 as a consortium of the ten Arizona community colleges. ALS is designed to help meet the statewide demand of Arizona workers and companies for increased access to higher education content and training to compete in the New Economy. ALS also serves students in rural areas who do not have access to needed higher education classes. These needs are addressed by sharing the resources of ALS member colleges to provide distance learning through the development of a statewide, telecommunications network that has the capability of tying together all educational institutions of the state into a single, cost-effective system.

**Initiative: Continue Expansion of ALS**

Currently, ALS is implementing Phase I of this network, which will connect an initial site in each of Arizona's ten community college districts. In Phase II, the ALS Network will be expanded to connect remaining community college sites. In Phase III, consistent with statute creating the system, ALS intends to extend its current network to all of Arizona public education.

It is proposed that Arizona enable the ALS Network to reach its full potential by funding its expansion for Phase II and ultimately for Phase III if initial projections are sustained by experience. This will ensure that Arizona students, no matter where they are geographically, will enjoy the same access to distance learning. Such a statewide network will enhance and grow existing public education cooperative ventures.

## Implications

The start-up cost to implement Phase II and the postsecondary portion of Phase III is \$6.3 million. Under current conditions, the cost to add the K-12 districts and charter schools for Phase III is \$40 million. These costs reflect a complete turnkey operation involving all equipment, installation, and engineering costs. The Governor's Task Force on Higher Education recommends that, by the end of Phase II and prior to the implementation of Phase III, ALS be evaluated to determine the implications of further expansion.

### Possible Performance Measures

- Decrease in telecommunications costs born by Arizona educational institutions for items such as Internet and voice connectivity
- Increase in the number of courses delivered across the network, the different types of courses being delivered, and the number of students taking such courses

## University Information Technology Initiatives

The availability of classroom technology to enhance instruction and to extend education to the community via telecommunications and the Internet has become a defining characteristic of higher education today. While existing classrooms meet a variety of needs, the lack of equal access to needed instructional technologies results in serious limitations for most faculty and their students.

The New Economy will demand a better match between workplace requirements and the knowledge and skills of higher education graduates. A program must be developed to advance the breadth and depth of technology literacy that employers expect and need. In order to enhance New Economy workforce development programs, the state's public universities have a strong need to develop their information technology infrastructure, wiring and equipment.

### Initiative:

A basic infrastructure platform is needed at each of the universities in order to enhance instruction via electronic technology. Basic needs are estimated to

cost \$14.5 million for ASU, \$13.7 million at NAU and \$17.0 million for the UA. It is proposed that the Legislature provide an annual appropriation of \$3.6 million to cover lease/purchase payments for this infrastructure.

### Possible Performance Measures:

- Decrease in obsolete technology and equipment
- Increase in student access to new technology

## Information Technology Critical Salaries

Information Technology (IT) is a critical component to advancing learner-centered programs on today's community college and university campuses. Properly preparing our students for the e-business world requires robust IT infrastructures, state-of-the-art equipment, and quality IT staff to install, operate and maintain these integrated components. Arizona public higher education must meet the challenge of keeping quality IT staff employed to supply the essential IT environment for students to learn in an efficient and effective manner.

Although attempts to reallocate funds have been made in the past, current university budget allocations for overall IT needs are not allowing for salaries to keep pace with industry trends. Additionally, the current benefits offered to university IT staff lag far behind the industry. A small 2% merit pay pool (capped at 4% per individual) provided by the Legislature in FY 2000, plus a few other benefits, do not compare favorably with what many IT employees are being offered by commercial businesses.

The community colleges are experiencing parallel challenges in offering sufficient salaries and benefits to compete for IT professionals with private industry. The fact that many colleges are located in rural areas serves to exacerbate this challenge.

### Initiative:

The state should take steps to overcome the current lack of sufficient funding to address IT salary and retention issues in higher education:

- 1) Provide the funding necessary to raise IT salaries to the market average for all IT employees. These salary adjustments could be phased over two years.

- 2) Institute an annual salary adjustment for IT staff, which will help universities and community colleges maintain pace with salaries in the market.

The overall sum needed to support a phased salary increase for university IT employees is \$7,872,000 plus a yearly 5% increase in each university's IT salary budget to pay for annual market adjustments. The latter will help the universities keep pace with annual increases in the IT job market. The community colleges would require \$3,195,000 for a phased salary increase plus a 5% increase in each college district's IT salary budget to fund annual market adjustments to keep pace with annual increases in the IT job market.

**Possible Performance Measures:**

- Increase in retention rates for Information Technology staff
- Decrease in the difference between average Information Technology staff salaries as reported in the Mercer survey and by the Arizona campuses

## Arizona Regents University

This initiative will make the Arizona university system more responsive to statewide educational needs, especially those connected with economic development priorities. It will provide access to citizens who are time- and place-bound, life-long learners, or disabled. It will utilize technology-delivered and distance courses and other improvements in access to higher education. It will draw together existing resources from the three public universities and initiate development of new resources, giving preference to new programs that support Arizona's competitive position in the New Economy.

The initiative is proceeding in three overlapping phases. A web site, [AZDistanceEducation.org](http://AZDistanceEducation.org), has already been developed to describe current course and program offerings. In Phase Two new degree programs will be developed, as needed. In Phase Three, an appropriate continuing organization, currently called the Arizona Regents University, will be established. In September 2000, the Board of Regents retained Dr. Sally Johnstone, of the Western Cooperative for Educational Telecommunications, to facilitate the design and development of this organization. To implement Phases Two and Three of the Arizona Regents University will require an annual operating budget of at least \$2 million.

**Possible Performance Measures:**

- Increase in hits at the [AZDistanceEducation.org](http://AZDistanceEducation.org) web site
- Increase in the number of new degree programs created and offered

## Cooperation Between the Two Sectors

Arizona's public universities and community colleges are committed to offering technology-delivered education to the state in close inter-institutional collaboration and through cooperation between boards. The eventual form of Arizona Learning Systems and of the Arizona Regents University will be shaped by strong existing transfer and articulation agreements and by thoughtfully negotiated division of effort between the university and community college systems.

# The Need for Investment, Accountability and Outcomes

## Improved Funding Mechanisms

Nationwide, the strongest public universities and community colleges have been built on sustained financial support from multiple revenue streams. In an era in which the competition to attract and develop industries of the New Economy has led to substantial investments by states in the operating and capital resources supporting their institutions of higher education, Arizona must act to put in place a competitive funding framework of its own for higher education. The report and conclusions of the Subcommittee on Funding, from which these recommendations were derived, can be found in the Appendix to the *Supplement to Arizona At Risk: The Report of the Governor's Task Force on Higher Education*. [See also the discussion and recommendations regarding capital needs in the section labeled, Management of Capital Assets, page 28.]

## University Funding Mechanisms

Over the last ten years, the major source for new state revenue for the universities has been enrollment growth funding. The enrollment growth formula, allowing faculty and staff funding for every student and referred to as "22:1" provides revenue only for marginal costs and does not fund the full cost of growth. Moreover, because the formula does not provide the full cost of education for additional students, it erodes the competitiveness of the universities with their peers by diluting the resource base that supports university programs. The Task Force has projected significant new growth in university enrollments which cannot be sustained with a marginal cost formula. Further, the main campuses of Arizona's universities are approaching an optimal size and a funding mechanism that is not based on growth is required to enhance the competitive position of these campuses.

## Community College Funding Mechanisms

Operational funding for community colleges, as originally defined by statute, has evolved over a period of forty years. The current formula is based exclusively on the number of full time student equivalency generated, and allows the Legislature to annually fund inflationary increases. Unfortunately, the Legislature has not kept pace with the statutory provisions and has underfunded the formula. The effect of this underfunding has led to an erosion of state support for educational programs and services.

The Governor's Task Force on Higher Education has identified three major strategies for the state to pursue:

- Increase participation;
- Increase research and business development; and
- Increase capacity and productivity.

Each of these strategies is dependent on availability of sufficient resources for successful implementation. Moreover, the existing funding formulas and incentives must be revised to support accomplishment of the Task Force's major strategies.

### Capital Formation

*Propel higher education in Arizona to the next level by enhancing the formation of investment through new funding approaches, including public/private partnerships, private contributions, mutual leveraging of funds from multiple sources and levels, and new approaches to public funding.*

### Funding Mechanisms

*Transform the incentives inherent in funding to include quality, productivity, efficiency, and collaboration. Do so by such means as improving or replacing the current funding formulas, reviewing university and community college capital allocation practices, keeping the net price of instruction for Arizona students as low as possible, and pricing to market for non-residential students.*

## Recommendation

**The Governor’s Task Force on Higher Education recommends that Arizona reaffirm and strengthen its current strategy for financing its public universities and community colleges employing multiple revenue streams. The recommendations are, therefore, divided into four categories: state appropriations; other operating revenue sources; tuition; and capital support.**

### State Appropriations

The Legislature should be encouraged to appropriate a higher level of general fund support, and provide matching funds for grants and contracts, private funds for public/private partnerships, and salaries and faculty start-up costs. In addition, university and community college funding mechanisms should be revised as described below.

#### Public University Funding Mechanisms

- The Board of Regents should examine and revise the 22:1 formula, as needed, to more fully recognize the real costs of enrollment growth.
- The 22:1 formula, and any subsequent revisions, should be fully funded.
- The Legislature in consultation with the Board of Regents should adopt a funding approach for universities—beyond enrollment growth—that is tied to a market-based analysis utilizing benchmark data from peer institutions. The goal of the funding model should be the average of funding on a per-student basis of each institution’s Board of Regents-approved peers. Attainment of this goal should be accomplished through a combination of increases in tuition and state general fund revenues.

#### Public Community College Funding Mechanisms

- The Legislature should reinstate the statute establishing the 33 percent share goal and fund it. Funding from the state should occur according to statute from year to year to allow for strategic planning for enrollment growth to meet and comply with the general objectives specified in the community college philosophy and mission.
- The state’s general fund support for operations should include growth as well as inflation in the base as called for in statute.
- The Legislature should consider changes in the law to allow Arizona’s community college dis-

tricts to increase their expenditure capacity for New Economy and local initiatives. Currently, five of the ten community college districts are at or near their expenditure limitation.

### Other Operating Revenue Sources

Additional revenue sources identified should not be used to supplant current funding. Arizona’s public universities and community colleges should be encouraged to pursue a wide variety of other operating revenue sources, including: private funding, gaming revenues, tobacco settlement funds, enhanced revenue from state trust lands, and tax credits for contributions to higher education.

#### Public Universities

The public universities should maximize revenues from federal funding, research parks, and commercialization of faculty research; maximize the value of university assets; and fully implement the recommendations of the External Review Committee for Public Private Partnerships.

#### Public Community Colleges

The public community colleges should pursue: public and private grants; private contributions matched with public funds; private funding; partnerships with corporations, public agencies, and businesses for funding and training; partnerships with public and private entities for joint facility use and expansion; and incentives to attract increased financial support from the private sector.

### Tuition

The Legislature should:

- appropriate additional general funds to improve the match for the Arizona Financial Aid Trust program;
- provide enhancements and tax incentives to programs encouraging family savings for college tuition; and
- match universities’ and community colleges’ private fund raising.

#### Public Universities

The Board should:

- consider raising resident tuition to the top of the bottom one-third of the 50 senior public institutions in the U.S. and maintain that relative position over time; and

- consider raising nonresident tuition to the median of the 50 senior public institutions in the U.S. and maintain that relative position over time.

### Public Community Colleges

- Tuition should remain affordable to students through a combination of increased state appropriations and private funding.
- The legislature should establish an Arizona Financial Aid Trust for community colleges.

## Capital Support

[The recommendations for Capital Support are presented on p. 28-29 of the report under Management of Capital Assets.]



## Collaboration Between Education Sectors

Arizona's public community colleges and universities are governed by separate entities. The three public universities are governed by the Arizona Board of Regents. The ten public community college districts are each governed by local county district governing boards with certain key functions coordinated by the State Board of Directors for Community Colleges of Arizona. Members of the Board of Regents and the State Board are appointed by the Governor. Members of local county district governing boards are elected by county voters.

A member of the Board of Regents serves as a voting member of the State Board to ensure communication between the two groups. In addition representatives of both boards meet two to three times a year as the Joint Conference Committee, a group which was established in 1981 to allow the two boards to

coordinate policy on higher education issues. Recently the two boards have also scheduled joint meetings to discuss topics of mutual concern.

In May 2000, the 76th Arizona Town Hall made the following recommendation:

*The three-part public governance system (the Arizona State Board of Education, the State Board of Directors for Community Colleges and the Arizona Board of Regents) is adequate, but should be improved. Town Hall strongly recommends that these existing governing bodies, in collaboration with local governing boards, identify a process by which a well articulated master plan integrates the delivery and funding for education in Arizona. With one voice, this plan should be presented to the public and the Legislature for debate.*

The Governor's Task Force on Higher Education agrees with the recommendation of the Arizona Town Hall and believes that implementation of a process for articulated master planning should be guided by the following principle:

### Collaboration

*Further strengthen the coordination among state education boards, and the communication between state and local district boards, in order to enhance policy coordination on educational issues, develop and implement an articulated master plan for higher education, and present unified proposals for support to the legislature and the public.*

## Recommendation

**The Task Force agrees with the Arizona Town Hall that an articulated master plan should be developed for all of publicly funded education. The Task Force recommends further that once a master plan is developed, current governance structures should be evaluated to determine if they are adequate to support and guide the future of Arizona postsecondary education as envisioned in that plan. This recommendation should be implemented through a process that includes participation by business and other community representatives in addition to the three state education boards and the local education governing boards. This process should begin with a dialog between the Board of Regents and the State Board of Directors for Community Colleges.**

## Accountability and Continued Contribution to the Productivity of the State

Many of the Task Force recommendations require additional financial support. Implementation of these initiatives should be guided by the principle of accountability.

### Accountability

*Strengthen the accountability of higher education by defining and implementing performance measures for recommended initiatives. Accountability measures should be incorporated into the plan and systematically pursued for each new initiative advanced in higher education.*

Arizona's institutions of higher education provide education and training to thousands of certificate and degree program completers each year. These graduates benefit from and contribute to the economy of the state. The more effective and efficient the higher education system is at preparing students for successful completion of academic programs, the more that system contributes through these graduates to the productivity of the state. Several Task Force recommendations seek to improve the effectiveness and efficiency of Arizona's system of higher education by means of changes in policies, programs and plans. Implementation of these recommendations should be guided by the principle of productivity.

### Productivity

*Improve the contribution of higher education to the productivity of the state by ensuring the effectiveness and efficiency of academic programs and the coordination of delivery systems between and among individual institutions and sectors.*

## Recommendation

**The Governor's Task Force recommends that the State Board of Directors for Community Colleges of Arizona and the Arizona Board of Regents provide additional documentation of the accountability of higher education to the public and the contribution of higher education to the productivity of the state through specific performance measures, such as those described in this document.**

## Conclusion

Over the course of the last year, the Governor's Task Force has heard presentations, studied reports, and discussed and debated at length a great many issues concerning the future of postsecondary education in this state. From those deliberations, two major conclusions have emerged:

- 1) Arizona is at risk if it does not become a leader in the new, global, knowledge-based economy; and
- 2) Arizona's institutions of higher education are the keys to developing the state's workforce and strengthening its economy.

This report provides a strategic framework to position Arizona and its citizens such that they can contribute to, and benefit from, the changes that lie ahead. The Governor's Task Force recommends that the State of Arizona act now to:

- increase student participation in higher education;
- increase the research and business development provided by higher education;
- increase the capacity and productivity of institutions of higher education through improvements in faculty salaries, capital assets and information technology; and
- enhance funding support from multiple revenue streams for higher education institutions.

Finally, the release of this report signals the beginning of a crucial stage in creating a prosperous future for Arizona—success hinges on sufficient funding and support to implement these strategies. The passage of Proposition 301 in Fall 2000 provided ample evidence of taxpayers' support for New Economy initiatives. Likewise, the State of Arizona must act promptly to strengthen the financial foundation of higher education, increase access and provide the enhanced capacity it requires. The challenge facing Arizona's leaders and citizens alike is to sustain the momentum provided by the passage of Proposition 301 in building the support required to carry Arizona forward into a successful and prosperous 21st century.