



ARIZONA STATE
UNIVERSITY

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UNIVERSITY
FY05 CONGRESSIONAL
BRIEFING BOOK

FEBRUARY 2004

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PRESIDENT

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EXECUTIVE DIRECTOR OF
FEDERAL RELATIONS

Arizona State University | Table of Contents



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Arizona State University is a model metropolitan research university for the 21st century. By matching university talents and expertise with the vision of community leaders, ASU provides indispensable research and support to address the major issues affecting the quality of life in the Valley of the Sun, throughout Arizona and the nation.

Ensuring the state's success in the New Economy is a key component of ASU's commitment to Arizona. ASU, with its Research Extensive status, is integral to strengthening university/government/industrial partnerships to produce a knowledge-based workforce and respond to the demand for technological innovation that is the essence of the New Economy.

ASU Main: The original campus founded in Tempe in 1885 enrolls more than 45,000 undergraduate and graduate students from all 50 states and more than 120 countries. ASU Main offers 92 bachelor's, 89 master's, one law and 48 doctoral degree programs.

ASU West: ASU West serves more than 6,500 students at its campus in northwest Phoenix. ASU West offers 38 undergraduate and graduate degree programs through the Colleges of Arts & Sciences, Education, Human Services, School of Management, and Division of Collaborative Programs.

ASU East: ASU East has 3,000 students enrolled in one of the 24 degree programs offered by the College of Technology and Applied Sciences, the Morrison School of Agribusiness and Resource Management, and East College. Both ASU East and ASU West offer a Bachelor of Applied Science (BAS) degree.

The Extended Campus: represents collaborations of ASU colleges and campuses to deliver quality education worldwide through the College of Extended Education. By extending the resources of ASU into the various communities it serves, the College of Extended Education serves traditional and nontraditional learners through innovative locations, schedules, methods, curricula, and educational technologies. Degrees, courses and programs are delivered by Web, independent learning and television to meet lifelong learning needs and to realize our vision for educated citizens, healthy communities, and an engaged university.

The Freshman Year Experience program provides academic support and other resources directly to the students in a residence hall community designed especially for freshmen.

Campus Communities programs provide students the opportunity to develop academic communities with other students and faculty outside the classroom.



ASU accepts the responsibility of offering all the benefits that a diverse, rapidly growing population center expects from higher education:

- *the highest quality teaching and research;*
- *readily accessible education; and*
- *community, neighborhood, and industry partnerships*



A freshman advising program, begun in 1996 to improve integrated advising, serves more than 3,000 students each fall.

ASU is widely recognized as a national pacesetter in graduate innovations. Numerous ASU graduate programs consistently rank among the best in the nation in *U.S. News & World Report's* listing of America's Best Graduate Schools.

In 2001, ASU had its best year ever in prestigious national scholarship competitions. Students brought home the Rhodes, Truman, Marshall, Goldwater and Udall awards, making ASU one of only two public universities in the nation to be represented in all five top scholarship awards. ASU students also have won numerous other top awards, including Fulbright Scholarships, Javits Fellowships, Achievement Rewards for College Scientists Fellowships, and the Semiconductor Research Corporation Scholars and Fellows Program award.

ASU has the sixth highest number of freshmen 2001 merit scholars of all public universities in the United States, according to a report published by the National Merit Scholarship Corporation. In fall 2001, 115 of these top scholars enrolled at ASU. More than 365 merit scholars have enrolled at ASU in the past three years, representing a concentrated effort to increase the academic quality of the student body. In 1991 the freshman class included six new merit scholars.

Among the first honors colleges in the U.S., ASU's Barrett Honors College quickly rose to a position of preeminence. Only six years after its creation, *Money Magazine* named it one of the top eight honors colleges and programs in the United States. The same year the *Fiske Guide* cited the Honors College as a principal reason for awarding ASU four stars for its academics and fourteen out of a possible fifteen stars overall.

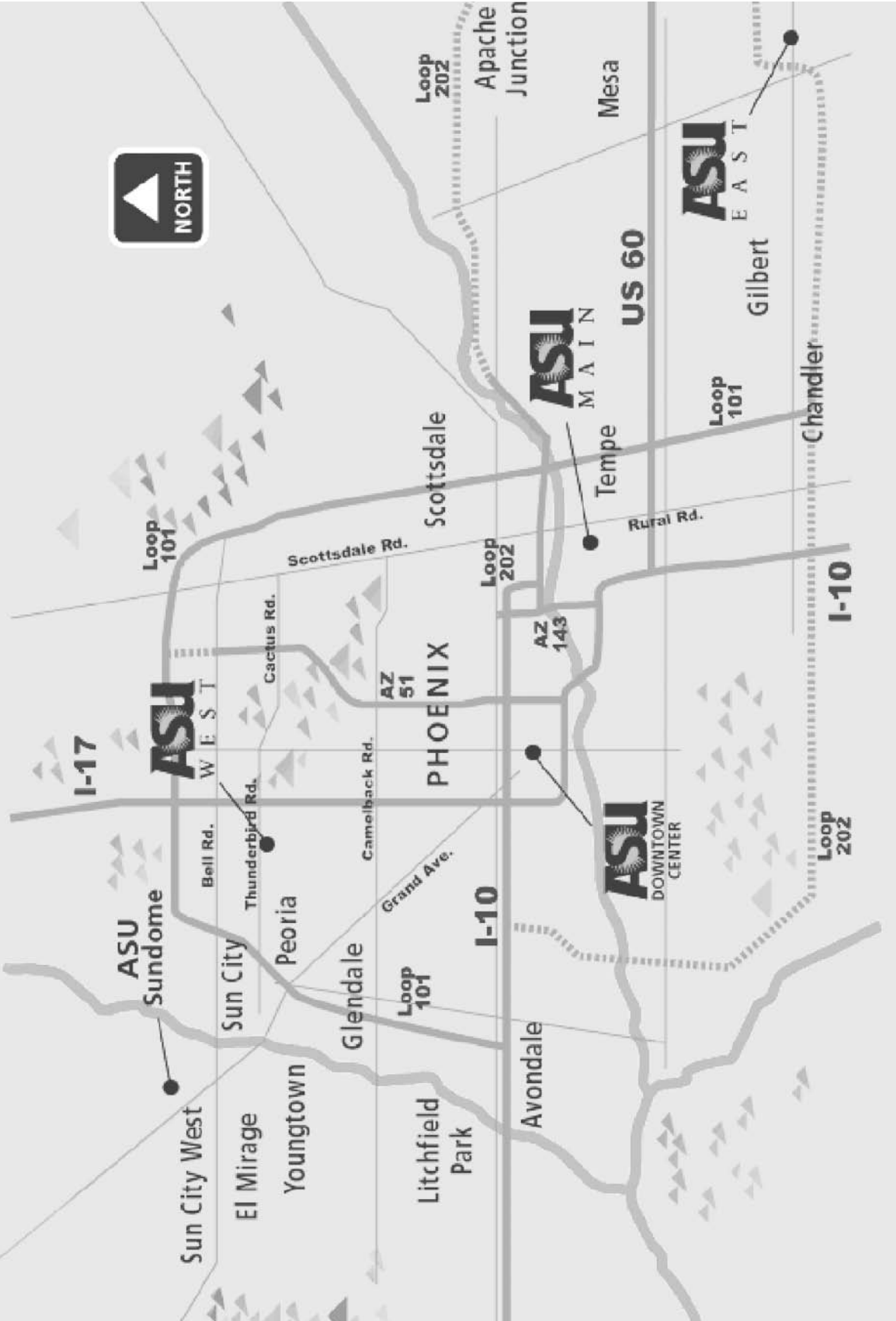


Entering student qualifications also rose substantially. The typical entering freshman is in the top six percent of his or her high school class, has SAT scores of 1300 or above, and has a high school grade point average of 3.8. Honors College graduates receive acceptance, normally with financial support, to the nation's most distinguished graduate and professional schools.

ASU actively seeks community partnerships that promote economic development, address metropolitan issues such as quality of life, provide linkages with K-12 education and develop innovative approaches to solving problems of concern to both.

The university also provides Greater Phoenix and the state of Arizona with some of the best performing arts and fine arts venues in the world. Gammage Auditorium on ASU's main campus, a Frank Lloyd Wright-designed landmark center for the performing arts, seats 3,000 and regularly attracts the nation's finest performers and productions to the Valley of the Sun.

The Sundome Center for the Performing Arts in Sun City West is America's largest single-level theater with more than 7,000 seats. ASU's Kerr Cultural Center in Scottsdale offers smaller-venue cultural events. Arizona State University will continue to set the standard as the university for the 21st century by expanding areas of community involvement, developing innovative undergraduate education and by strengthening its world class research portfolio.



GREAT STUDENTS

Arizona State University's students come from every state in the U.S. and 146 countries to study in programs from nursing to business, engineering to communications, law to agribusiness. ASU is known as a powerhouse in national scholarship circles, producing more winners of top national scholarships than virtually any other public university in the United States. Recent accomplishments include:

- ❖ ASU enrolled a record 173 National Merit Scholars in the fall 2003 freshman class, ranking third in the nation among all public universities for the number of freshman National Merit Scholars enrolled this year.
- ❖ A 2002 Truman Scholar, considered the nation's highest undergraduate leadership award. Only about 75 students across the U.S. are selected for this award each year.
- ❖ Three 2002 Goldwater Scholars, the top national scholarship for students in science, math and engineering.
- ❖ A member of the 2002 and 2003 USA Today All-USA Academic team. USA Today annually chooses its top 20 undergraduates from across the nation.
- ❖ A 2001 Rhodes scholar, one of 32 Americans selected for this award, considered the most prestigious scholarship program in the nation.
- ❖ Two 2002 Marshall Scholars, ASU's 10th and 11th since 1990.
- ❖ ASU is sixth among public universities in its enrollment of freshmen merit scholars.

Fall 2003 Undergraduate Student Profile:

- ❖ 7,647 first-time freshmen enrolled including 173 National Merit Scholars
- ❖ 5,506 transfer students enrolled
- ❖ 80% enrolled full time in the fall
- ❖ 23% are from ethnic minority backgrounds, with Hispanic students having the largest representation
- ❖ 3.1% are international students, with the most coming from India
- ❖ The average age is 22, with 6% who are older than 30 and another 2% who are older than 40; 53% are women
- ❖ 2,696 undergraduates are enrolled in the Barrett Honors College

Fall 2003 Graduate Student Profile:

- ❖ 12,113 graduate students; 52% are women
- ❖ 55% are enrolled full time
- ❖ The average age is 32
- ❖ 16% are from ethnic minority backgrounds, with Hispanic students having the highest representation
- ❖ 18% are international students, with the largest representation from India



GREAT TEACHERS

Faculty members at ASU dedicate themselves to shaping students' lives, improving quality of life, answering the mysteries of science, and making tomorrow's technological breakthroughs. Many of ASU's faculty are renowned in their fields of study, which span from the arts and humanities to nanotechnology and deep space exploration. Some of their many achievements include:

- ❖ In collaboration with researchers at Good Samaritan Regional Medical Center in Phoenix, ASU Bioengineering Professor Jiping He is conducting research that combines treadmill therapy and the surgical implantation of an electrical stimulant to enable wheelchair-dependent spinal cord injury patients to stand and walk virtually unaided.
- ❖ Three ASU faculty members received John Simon Guggenheim Memorial Foundation Fellowships in 2003. The Fellowship is given to established scholars and researchers "who have achieved prominence in their fields" and is evidence of a strong senior research faculty at ASU.
- ❖ Alberto Rios, Regents professor of English, was nominated for a 2002 National Book Award. His book, *The Smallest Muscle in the Human Body*, was one of five finalists in the poetry category. He was awarded the 2002 Western Literature Association's Distinguished Achievement Award, the group's highest distinction.
- ❖ ASU faculty members Fernando Ponce, David Smith, and John Venables have joined a prestigious group of scientists honored for their outstanding professional accomplishments. All three were elected by their peers to the status of Fellow within the American Physical Society.
- ❖ ASU ranks in the top 25 for National Science Foundation (NSF) CAREER Awards over the last four years. During that time, 18 ASU faculty members have received CAREER Awards, which are for faculty members in their first tenure-track position. The awardees are considered most likely to become the academic leaders of the 21st century.

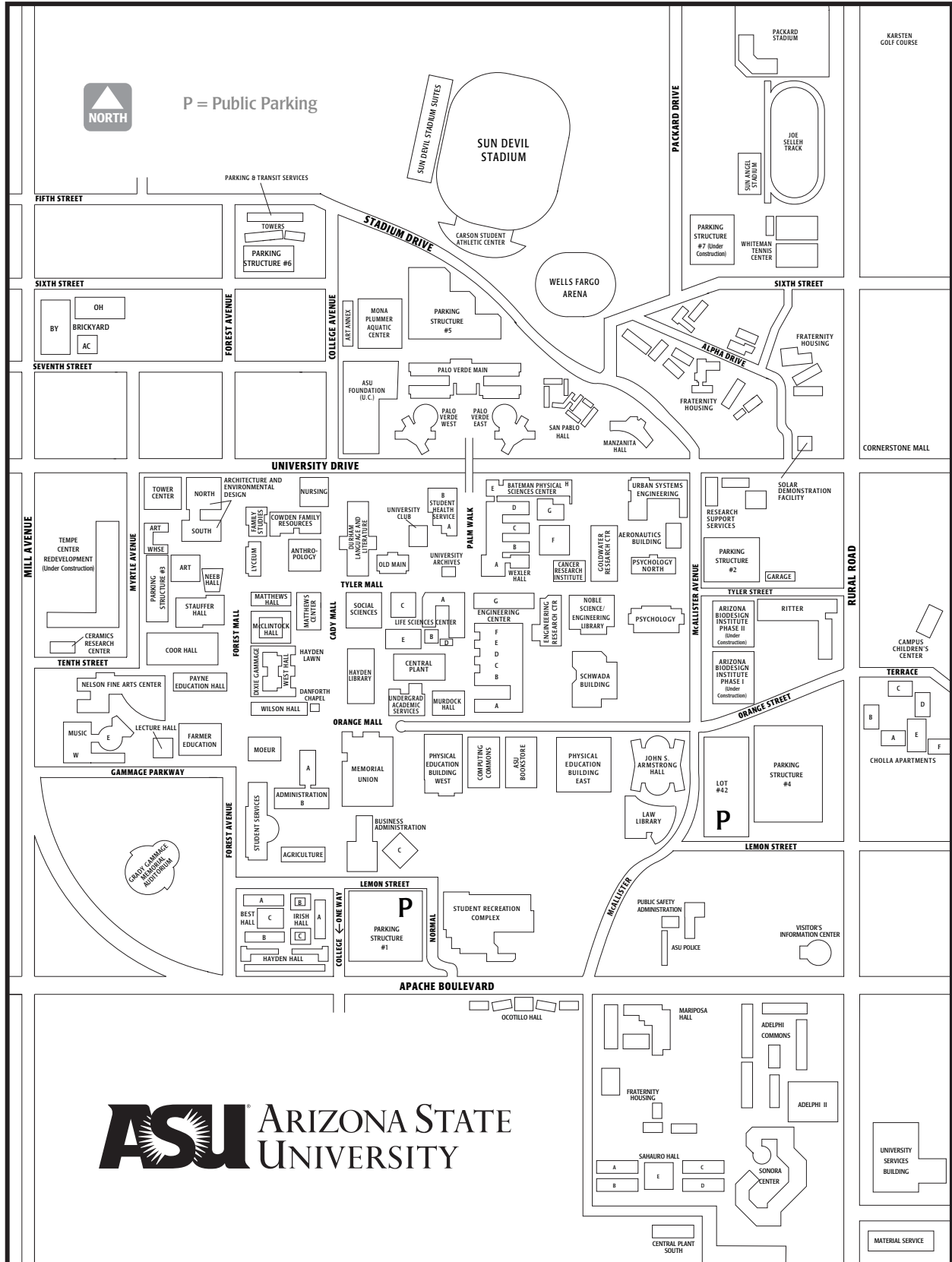
GREAT COMMUNITIES

Arizona State University is directly engaged as an educational, economic, social, and cultural force in the Phoenix metropolitan community. The benefits that Arizona receives from ASU are fundamental and diverse. The university educates thousands of students yearly, preparing them for an increasingly complex and competitive world; is an important center for pure and applied research, providing technical expertise to local businesses on issues such as economic and environmental policy; and enriches the quality of life for local residents by sponsoring a wide range of cultural and athletic events.

- ❖ The ASU College of Nursing serves the community in many ways, including the Breaking the Cycle Community Health Care Clinic, which provides free or low-cost family planning services for those without health insurance.



- ❖ ASU's Academic Community Engagement Services (ACES), known for many years as the ASU Service Learning Program, celebrated a decade of successful partnering with the community in 2003. The program has spread its outreach to encompass 34 programs at 16 different sites, including adult GED preparation and literacy classes for the children's parents. More than 4,000 ASU students have given over 600,000 hours of service.
- ❖ ASU's endowed Center for Nonprofit Leadership and Management seeks to improve the quality of life in communities by enhancing the performance of non-profit organizations. Developed from ASU's American Humanics program, the Center enhances the effectiveness of nonprofits, especially those involved in positive youth development and human services.



NEW YORK CITY REAL ESTATE INVESTMENT BANKER WM. POLK CAREY DONATES \$50 MILLION TO ARIZONA STATE UNIVERSITY COLLEGE OF BUSINESS

TEMPE, AZ, January 24, 2003 -- Wm. Polk Carey, chairman of W. P. Carey & Co. LLC (NYSE: WPC), a New York City-based investment firm, and grandson of John Samuel Armstrong, the legislative founder of Arizona State University, announced a \$50 million gift on behalf of the W. P. Carey Foundation to the Arizona State University College of Business.

The gift, which will endow the W. P. Carey School of Business at Arizona State University, is the largest gift in the history of Arizona State University. According to U.S. News & World Report the W. P. Carey School of Business begins its history ranked 12th in the United States among public programs for its master of business administration (M.B.A.), 31st among all M.B.A. programs, and 25th among all undergraduate programs.

In addition, it ranks among the top business programs in the world for its research, global outreach, technology and ethics curricula. The gift will enable the school to leverage its internationally recognized strengths in management education and thought leadership by supporting faculty, students and special initiatives.

"This is a gift of inestimable importance," said ASU President Michael Crow. "By making possible a world-class business school in metropolitan Phoenix, the W. P. Carey gift increases ASU's capacity to develop new strategic partnerships with business, industry and government. In turn, these partnerships will enable ASU to further develop its entrepreneurial potential and take on major responsibility for the economic, social and cultural health of our region."

FULTON GIVES \$50 MILLION TO ENDOW SCHOOL OF ENGINEERING AT ASU

"You can't have a great city without a great school of engineering."

TEMPE, AZ, June 25, 2003 – Ira A. Fulton, chief executive officer of Fulton Homes, Inc., one of Arizona's and the nation's preeminent residential builders, announced a \$50 million gift to the Arizona State University Foundation for the benefit of the College of Engineering and Applied Sciences.

The gift, which will endow the Ira A. Fulton School of Engineering at Arizona State University, will provide funding for scholarships, fellowships, research programs and investments in faculty to enable the school of engineering to move from its position as a highly ranked U.S. program into the ranks of world-class institutions. According to U.S. News & World Report, the Ira A. Fulton School of Engineering begins its



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history ranked 37th in the United States for its undergraduate programs and 56th for its graduate programs in engineering.

“I have an enduring passion for technology, for education, and for the people of Arizona,” said Fulton. “And I strongly believe you can’t have a great city without a great school of engineering. I am pleased to make this gift, knowing it will enable ASU to grow into one of the highest ranked, most visible schools of engineering in the world.

“We are grateful to Mr. Fulton for his vision, commitment and trust in our ability to turn his investment into use-inspired engineering research and education that will transform the future,” said ASU President Michael Crow. “This is not only a gift to ASU, but a gift to the people of Arizona and this nation.

ARIZONA LEGISLATURE PASSES H.B. 2529, SLATING \$440 MILLION IN STATE FUNDS FOR RESEARCH INFRASTRUCTURE

The Arizona legislature passed House Bill 2529, the research infrastructure bill that secures an investment of \$440 million in state funds for research infrastructure at Arizona’s three universities. ASU’s portion will total about \$185 million.

“This year we saw unprecedented acknowledgement by our government leaders that investing in higher education is a key to the state’s future,” said ASU President Michael Crow.

The most surprising outcome of the session, by far, was passage of the research infrastructure bill.

Even with a broad coalition of support from the business community, city government, and political heavyweights, such as Gov. Janet Napolitano, Speaker of the House Jake Flake, and Speaker Pro Tempore Bob Robson, the bill passed against all odds.

Crow said the research infrastructure bill is for infrastructure alone – not operations, not staff, not overhead – which is why it was critically important to keep Proposition 301 funds out of the negotiation. He said the bill ensures investment capital that can be applied immediately toward research-intensive facilities.

Crow said it’s now up to ASU and the other universities to move forward to keep their commitments to the state.

“We will build these buildings and implement programs in a way that will enable the buildings to pay for themselves,” Crow said. “That means filling them with entities that have the capacity to pay their own way, or the ability to bring in funds from somewhere else to pay their way.”

He said the buildings are for the most competitive research with the highest probability for success. They will be built to benefit Arizona, using local workers and purchasing from local companies.

The buildings will have more than an employment and economic benefit to Arizona. They will house programs that reach out to local schools, economically disadvantaged communities and citizens with debilitating illnesses.

“The state of Arizona has put its faith in our ability to build an entire new technology-based industry that, over the next 10 to 20 years, will transform Arizona to a knowledge-based economy with high wage jobs, world-class educational institutions and thriving enterprises that we can’t even imagine today,” Crow said.

IRA A. FULTON HONORS WIFE MARY LOU WITH \$5 MILLION ENDOWMENT FOR ASU COLLEGE OF EDUCATION CHAIR AND RESEARCH PROGRAM; FOLLOWS \$50 MILLION NAMING GIFT TO ASU COLLEGE OF ENGINEERING

Fulton Homes CEO Ira A. Fulton is honoring his wife, former teacher Mary Lou Fulton, by making a \$5 million gift to the ASU College of Education, where she earned her teaching degree. The gift, which comes less than two months after he gave \$50 million to endow the Ira A. Fulton School of Engineering, is the largest ever given to the College of Education and makes Fulton the largest donor in the history of Arizona State University.

The gift will allow ASU to recruit a national expert in early reading development and reading remediation as the first Mary Lou Fulton Presidential Chair. It also will endow fellowships for outstanding graduate students who are the future “stars” of the teaching profession, scholarships for high potential undergraduates preparing for teaching careers and a research fund for faculty.

The gift launches an initiative to improve

public education for children in Arizona, by helping prepare high quality teachers and develop faculty researchers who are engaged in community partnerships.

ASU CREATIVE WRITING PROGRAM NETS \$10 MILLION GIFT FROM VIRGINIA G. PIPER CHARITABLE TRUST TO ESTABLISH CENTER FOR CREATIVE WRITING— GIFT IS LARGEST-EVER TO A HUMANITIES PROGRAM AT ASU

Arizona State University today announced a \$10 million gift from The Virginia G. Piper Charitable Trust to establish the Virginia G. Piper Center for Creative Writing at Arizona State University.

The gift is the largest ever to a humanities program at ASU, and follows three other “largest ever” gifts to the university since January -- a \$50 million gift from William Polk Carey, on behalf of the W. P. Carey Foundation, to endow the W. P. Carey School of Business at ASU; a \$50 million gift from Ira Fulton to endow the Ira A. Fulton School of Engineering at ASU; and \$5 million from Fulton to the College of Education

The \$10 million for creative writing will help elevate the Creative Writing Program from its impressive top 20 ranking to even greater national and international prominence, and will help solidify metropolitan Phoenix as a hot bed for the art of creative writing.

“The enormity of what this gift means for the future of ASU’s creative writing program and the Valley’s emergence as a leader in cultivating the arts, culture and humanities is immeasurable,” said ASU President Michael Crow. “Our creative writing faculty ranks among the best in the nation, and they will use this gift to transform an already superb program into one that is an exemplar.”

ASU creates research center with \$2.5 million grant from Stardust Foundation; family success, neighborhood stability are focus

Arizona State University President Michael Crow announced that ASU and the Stardust Foundation are joining forces to help create greater stability for neighborhoods and families throughout

Arizona. With a \$2.5 million start-up grant from Stardust, ASU is creating the Stardust Center for Affordable Homes and the Family, pending approval from the Arizona Board of Regents.

The center is an example of how ASU is focusing on community outreach and becoming embedded in the community in ways that will make a difference in quality of life and the economy.

Crow said the center will fill a void by focusing on affordable homes and family success as a single issue. He said there are numerous programs that focus on either affordable homes or family success, but few, if any, are looking at both issues together.

“We know that families can’t succeed, and our economy won’t thrive, without affordable, permanent homes for working families,” said Crow. “But, we also know that a home isn’t the only answer. Families need a whole host of critical life management skills and support services to succeed and we need to know, based on sound research, exactly what those skills and services are and how best to link them to the home.”

ARIZONA STATE UNIVERSITY TO HOST PRESIDENTIAL DEBATE IN 2004

The eyes and ears of the world will turn to Arizona State University and Tempe as ASU’s Gammage Auditorium hosts the final presidential debate of the year on Wednesday, Oct. 13, 2004 at 9 p.m. ET.

Reacting to the news, Arizona Governor Janet Napolitano said the university and Tempe had landed the “Super Bowl of Politics” by getting the debate. She also said hosting the debate will help make Arizona a “bellweather” for the coming national election.

“As part of the greater Valley community, ASU is thrilled and honored to play host to an event of this magnitude,” said ASU President Michael Crow. “The attention of the world will be focused on the Valley and ASU as the power of American democracy is demonstrated through this debate. It’s a fantastic event for both the university and the community.

“It’s not by accident that the commission selected university sites for these historic debates

because of our principal focus on free and open speech, our focus on learning, our focus on discourse. It's for that reason that we are tremendously excited that ASU will be able to serve as the host for this debate. This is the kind of thing that represents the best our democracy has to offer."

ASU LANDS ITS LARGEST FEDERAL GRANT; U.S. ARMY AWARDS \$43.7 MILLION TO REVOLUTIONIZE BATTLEFIELD STRATEGY

TEMPE, Ariz. – The U.S. Army has awarded Arizona State University a \$43.7 million, five-year grant to establish the ASU-Army Flexible Display Initiative Center, where flexible, low-power computer displays will be developed for battlefield maps that can be continually refreshed with new data and carried in the field – a device that will revolutionize combat strategy.

"Think of these displays as thin computer screens that can be rolled up or folded and put in a warfighter's pocket," said Greg Raupp, ASU professor of chemical engineering, Associate Vice President for Research, and director of the center. "The displays would be integrated with wireless communications technology linked to central command and control, enabling continual updating of information vital to a successful operation."

For example, these real-time "battle-maps" will provide information on troop and enemy positions and movements, weather and environmental conditions, and other important variables providing dynamic field intelligence.

The Army grant, which could be extended for an additional five years with another \$50 million in funding, is ASU's largest-ever federal award.

"This award is further evidence that ASU can compete with the nation's elite institutions for grants of this magnitude and importance on an international scale," said ASU President Michael Crow. "There is keen interest in our capability to develop advanced technologies, integrate those technologies together into working devices and deploy them in the most critical and demanding applications. It has enabled us to compete successfully to get this center against very stiff competition and a rigorous review process."



NASA – ASU SPACE ASTRONOMY

1. HUBBLE SPACE TELESCOPE:

Maintenance of on-orbit visible/UV space imaging and spectroscopy

Objective: Support the Congressional call for an independent review of the decision-making process leading to NASA's cancellation of future astronaut servicing missions to the Hubble Space Telescope. Ensure that key capabilities lost to the science community by the premature demise of Hubble are provided through alternate, cost-effective means.

Background: Grants received from the competitive allocation of Hubble Space Telescope observing time is one of the most important sources of research funding for astronomers at Arizona research institutions (ASU, UA, NAU, etc.). Hubble has been consistently ranked as the nation's most important scientific asset for studying the Universe. NASA has recently decided to cancel all future astronaut servicing missions to Hubble. The reasons stated were partly due to astronaut safety concerns and partly due to financial considerations. The Columbia Accident Investigation Board (CAIB) did not offer a recommendation regarding a return to Hubble because there was no consensus on the CAIB.

Canceling future Hubble servicing missions almost certainly will result in the demise of Hubble several years in advance of the originally planned date of 2010. Power systems and pointing and stabilization components, which were to be refurbished in the next servicing mission called SM4 in 2006, are expected to degrade and fail. But just as important, two new science instruments (the Cosmic Origins Spectrograph and Wide Field Camera-3) which are nearly ready for installation on Hubble, and would have significantly enhanced Hubble's imaging and spectroscopic capabilities, may be mothballed. This will impede the progress of new discoveries in space astronomy, and will negatively impact all users of Hubble in Arizona and the nation.

Program: NASA Office of Space Science

Budget: Adequate funds were already identified to support Hubble servicing missions in the Office of Space Science (Code S), so no new funds were requested for this activity. However, there may have been some perceived financial impacts to the Shuttle program in Code M. Hubble research grants, awarded through competitive peer review, is a mainstay of funding and student support for ASU astronomers.



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2. THE ORION MIDEX MISSION FOR NASA.

Objective: Ensure adequate funding of NASA's Office of Space Science which provides new mission opportunities to the scientific community. This issue is relevant both for ASU astronomers and members of the Mars exploration community in the Department of Geological Sciences.

Background: NASA's Explorer program awards new space science missions to teams of scientists and engineers through an open, competitive peer review process. Explorer missions are regarded as cost-effective experiments with high science impact. ASU astronomers, led by Prof. Jon Morse, are planning to propose to the next Medium-class Explorer (MIDEX) mission opportunity in the summer of 2004. The proposed mission, called ORION, will place a wide-field visible/UV camera in high orbit to study the origins of stellar and planetary systems as part of NASA's Origins science theme. The ORION mission is designed to follow up and improve on certain imaging capabilities provided by the Hubble Space Telescope, and is intended for launch in 2010 after Hubble has completed its mission. With the probable demise of Hubble several years prior to the planned 2010 decommissioning, the scientific urgency for a mission with ORION's capabilities may increase significantly.

The ORION mission involves an academic/industry/national center partnership which leverages the experience and capabilities of each participant. ASU is the lead institution providing science rationale, observation planning, and data analysis. The ORION science team includes faculty and researchers from UA and Lowell Observatory., as well as other leading institutions across the nation. Our NASA center partner is likely to be JPL, with whom ASU scientists have worked closely in the past on numerous mission opportunities. While we will choose our industry partners based on prior performance, risk management, and cost, we have worked closely with Arizona-based companies Spectrum Astro and General Dynamics to develop the ORION mission concept. We are also collaborating with the detector development laboratory at UA.

Program: MIDEX/Explorer Program, NASA Office of Space Science. MIDEX missions are awarded through a two-step process. Roughly 35 proposals will be submitted and 4-6 mission concepts will be selected for Phase A study, of which two will downselected as flight missions.

Budget: MIDEX missions are cost-capped at \$170M plus launch vehicle (~\$70M). Launch vehicle costs are negotiated between NASA and the vendor (probably Boeing), and managed by NASA. The overall ORION mission would be managed by the partnering NASA center (JPL). The \$170M payload budget would be split between the NASA center and ASU, depending on work share. Expectations are that between \$50-100M would reside at ASU to oversee construction, operations, and science return of ORION. A large fraction of this allocation may be sub-contracted to Phoenix-area companies (Spectrum Astro, General Dynamics) during the construction phase.

3. JOINT DARK ENERGY MISSION (JDEM)

Objectives: Ensure adequate funding of NASA's Office of Space Science which provides new mission opportunities to the scientific community. Support the OSTP and OMB initiative to have NASA and DOE collaborate on JDEM and other missions where there is significant scientific overlap between the two agencies. Support the OSTP and OMB initiative to have JDEM competed openly and fairly.

Background: The recently discovered and mysterious "dark energy" that is accelerating the expansion of the Universe has been called the most important problem in modern physics. NASA and DOE have recently agreed to co-sponsor a mission called the Joint Dark Energy Mission (JDEM) to investigate the nature of dark

energy. While the Hubble Space Telescope would be able to make important contributions to this field by 2010, the cancellation of future Hubble servicing and its projected early demise increases the urgency for developing and launching JDEM as soon as possible. JDEM, tentatively scheduled for a 2014 launch, would restore the capability for studying the distant Universe that would be lost with the demise of Hubble. The JDEM program has been advertised as follows: a Science Definition Team (SDT) will be convened in 2004 to define the mission requirements; the observatory construction will be competed to industry – local companies like Spectrum Astro are very interested in this opportunity; the science investigation and instrumentation for the observatory will then be competed in the science community.

NASA has recently awarded a JDEM mission concept study grant to Prof. Jon Morse of ASU. The Morse-led team, whose mission concept is called DESTINY, is one of only two funded studies to study the architecture of JDEM. Morse will be named to the JDEM SDT as part of the development process. The primary competition is the SNAP team, managed out of DOE's Lawrence Berkeley National Laboratory (LBNL). The SNAP team has been funded for several years by DOE and has a ~\$30M budget over the next two years, compared to the ASU study funds from NASA of \$200k over two years. The considerable inequity between these two funded efforts will place the ASU team (or any other team, for that matter) at a decisive disadvantage when the science investigation and instrumentation package are solicited. OSTP, NASA, and DOE officials have all announced publicly that JDEM will be competed openly and fairly, however the allocation of federal funds to the development process has thus far not reflected this attitude.

Program: Joint Dark Energy Mission (JDEM), NASA Office of Space Science and DOE Office of Science.

Budget: JDEM total mission costs are estimated to be \$500M-\$1.2B, with the ASU-DESTINY concept toward the lower end of the cost range and the LBNL-SNAP concept toward the upper end. The science investigation and instrumentation portion would be ~\$100-200M of the total costs, awarded to the PI institution who wins the competition. Prof. Morse is endeavoring to find additional federal funding opportunities through NASA and DOE to achieve a level of parity in the DESTINY technical development to compete effectively with SNAP.



ASU PLAYS A MAJOR ROLE IN MARS EXPLORATION

Currently, NASA and the European Space Agency have several operating spacecraft at or on Mars cooperating in the ongoing investigation of the planet. At the head of these efforts are the twin Mars Exploration Rover missions (MER), Spirit and Opportunity, which are in themselves large, collaborative projects. ASU has significant involvement in every active spacecraft currently at Mars.

The MER missions involve a large, international team of scientists, led by Cornell University. ASU has been deeply involved, both in planning the mission and, now, in carrying it out.

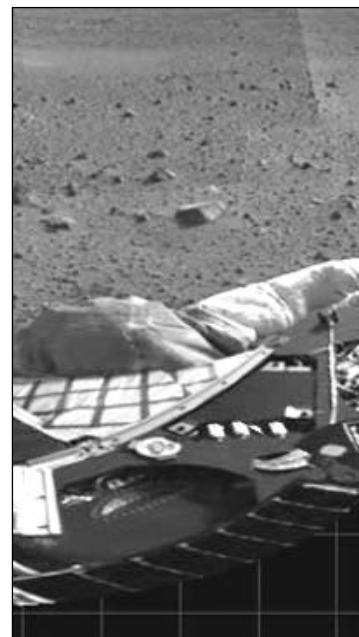
ASU Regents' Professor of Geological Sciences Ronald Greeley and ASU astrobiologist Jack Farmer were involved in picking the landing sites for the rovers, and a discovery by ASU Regents' Professor of Geological Sciences Philip Christensen of hematite (a mineral that usually forms in the presence of water) led to the selection of a place known as Terra Meridiani for the second landing. Christensen's findings through TES on Mars Global Surveyor and THEMIS on Mars Odyssey are responsible for giving us a large part of what we currently know about Mars.

The contributions of ASU will continue, as Christensen and his team will be operating an unprecedented four instruments simultaneously during the MER campaign – TES, THEMIS and the two Mini-TES instruments. In addition, three other ASU faculty members, Greeley, Farmer and ASU research scientist James Rice are members of the MER science team. Greeley and Farmer are both chairs of important decision-making committees, which means that ASU has three scientists who are playing "mission-critical" roles on the rovers' three-month-long odysseys.

ASU is also offering an undergraduate and graduate course centered on the MER rover operations and this is providing an opportunity for students to be directly involved in the project through the ASU curriculum. Students will have the opportunity to study the most recent data being collected by the rovers and be witness to the complex scientific decisions that the science teams will be making during the course of operations.

Spirit, the first of the two rovers, landed successfully at Gusev Crater on January 3. Opportunity successfully landed at Terra Meridiani on the evening of January 24. Both missions are expected to continue for approximately three months -- perhaps longer, if conditions are favorable.

While the science is ongoing, it is clear that Meridiani site is likely to yield the most impressive results, with detection by Mini-TES of hematite in the dust surrounding the landing site, and with a nearby bedrock formation that appears to contain sedimentary layering, a possible indication of past water.



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Having a robust National Science Foundation (NSF) is critical to ASU's research efforts. Roughly 28% of our federal research expenditures in FY03 came from this agency and was secured competitively. It is imperative that NSF's funding continue to increase if ASU is to enhance its research programs.

ASU had the following in expenditure amounts from NSF's directorates in FY2003 totaling \$26.3 million —

Biological Sciences:	\$5.4 million
Computer and Information Sciences and Engineering: ...	\$2.8 million
Education and Human Resources:	\$6.6 million
Engineering:	\$4 million
Geosciences:	\$2.2 million
Mathematical and Physical Sciences:	\$4.3 million
Social, Behavioral and Economic Sciences:	\$843,000
Office of Polar Programs:	\$32,000

CURRENT STATUS: The FY04 Omnibus appropriations report would raise total NSF funding by 5% over FY03 to a level of \$5.578 billion. Research and Related Activities would increase by 4.8% to \$4.251 billion. and Major Research Equipment and Facilities Construction would increase almost 4.3% to \$155 million.

Individual Directorates in areas of ASU strength would receive the following in the Omnibus appropriations report H108-401 legislation:

- Engineering would receive \$558 million, up 5.1% from FY 2003's level.
- Computer and Info. Science and Engineering would receive \$606 million up 4.7%.
- Mathematical and Physical Sciences would receive \$1.093 billion, up by 5.7%.
- Biological Science would receive \$558 million, up 3%.
- Geosciences would receive \$715 million up 4.4%
- Education and Human Resources would be \$939 million, up by 4%.

FY05 REQUEST:

Arizona State University supports FY05 appropriations equal to the authorized level as found in the NSF Authorization Act of 2002. We are hopeful key directorates such as Biological Science, Education and Human Resources, Math and Physical Sciences, will be protected and enhanced.



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NSF'S NATIONAL ECOLOGICAL OBSERVATORY NETWORK

ASU supports the President's budget request for funding the National Ecological Observatory Network (NEON). In FY03 and in FY04, \$12 million was proposed for this item. We believe ASU is well positioned to be able to compete for NEON funding.

DESCRIPTION

NEON will be a network of networks, a system of environmental research facilities and state of the art instrumentation for studying the environment. Each node in NEON will be a regional observatory, comprised of a core site and associated sites that are linked via cyber-infrastructure. These observatories will be geographically distributed based on the US Forest Service defined ecoregions of the US. Observatories will be selected through an open merit review competitive process.

PURPOSE

NEON will enable integrative research on the nature and pace of biological change at local, regional and continental scales.

Neon's advanced technologies and continental scale connectivity will be used to measure all factors that affect the structure and function of ecosystems, for example the power of genomics will be applied to predicting how the spread of invasive species will affect native biodiversity.

New environmental technologies like wireless sensor arrays and real-time nanoscale analytical field instruments will be developed, tested and deployed at NEON.

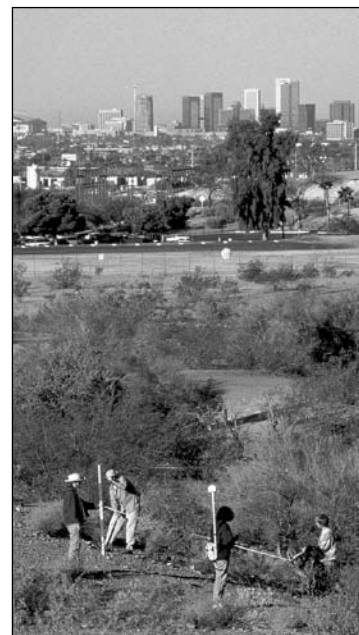
USERS

Biological, physical, and social scientists and engineers will use NEON to achieve a better understanding of our nation's environment as they collect, integrate and synthesize data across space and time.

Kindergarten through post-graduate students and teachers will use NEON information for educational activities and NEON facilities for research.

Local, state and national decision makers will use NEON to inform planning and policy decisions.

The American public will use NEON to get up-to-date information about environmental issues of interest to them.



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GOAL

A fully functional NEON requires seventeen observatories, the target number based on the number of US ecoregions plus an observatory for Antarctica, established over a 7-year period.

Construction cost for each NEON observatory is estimated at \$20 M annually adjusted for inflation.

FY05 REQUEST:

ASU supports funding for the NEON program which has been in the President's budget recommendation for the last couple of years but has gone unfunded. We feel it is important that this program begin in FY05. \$12 million in FY05 will start construction of the first two NEON observatories.



ASU PARTICIPATION IN THE NEXT GENERATION LIGHTING INITIATIVE. ALSO KNOWN AS SOLID STATE LIGHTING.

The DOE in collaboration with a U.S. industry consortium is planning a Next Generation Lighting Initiative (NGLI) aimed at greatly enhancing the energy efficiency of lighting through development of solid state lighting. Roadmaps have been developed by DOE National Labs (Sandia and Lawrence Berkeley Labs especially) together with the Optoelectronics Industry Development Association (OIDA) to establish priorities. The technology is based on new light-emitting diodes and organic thin films that would form the basis of solid state lights and be more efficient and versatile than present day vacuum light bulbs. The project is designed to help the U.S. stay ahead of competitors in Japan, Europe, and Korea for global leadership in the \$40 billion lighting industry.

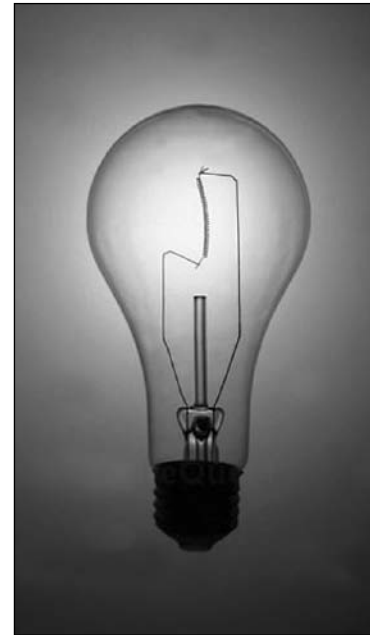
IMPACT

SSL has the potential to reduce the energy use for lighting by 50% by 2020, reducing overall electricity use by approximately 10% and saving roughly \$25 billion per year. This would; (1) reduce environmental impact of energy generation, (2) improve the nation's energy security and economic competitiveness, and (3) create a large number of jobs in a new industry. SSL research is synergistic with national security technology areas such as synthetic aperture radar (SAR), and UV-fluorescence detection of chem-bio weapons, since the same novel semiconductor materials are used.

Funding at the level of \$17 million for FY05 is urged followed by \$50 million in FY06. Funding should be balanced between basic research, applied R&D and technology demonstrations, with participation by industry, universities and government laboratories. Sandia is expected to be a major player and already is investing several million dollars in research in this area. ASU plans to partner with Sandia to develop a major thrust in this area.

There was a bill introduced last session (S167) authorizing the initiative but it did not make it through the legislative process and was ultimately rolled into the stalled energy bill.. In the FY04 President's Budget request, \$5 million was proposed for NGL. Senate marked up at \$9 million for NGL, House was at \$6.5 million and finally settled at \$7.75 million in the Interior Conference Report.

ASU has particular expertise in characterizing the properties of nitride materials. These inorganic materials form the basis for one of the two major approaches to solid state lighting. ASU is known for its wide array of electron microscopy capabilities for understanding the structure and defects of new materials, and has a group of faculty who are expert in the properties of nitride materials. This capability is particularly well suited for teaming with major national laboratory and industrial partners who



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are developing improved methods for producing and processing these challenging materials. ASU also has considerable breadth in the development of novel approaches to the growth of nitride materials which will further support the advance of new concepts in the development of inorganic light emitters. These capabilities can provide significant contributions to a national initiative in lighting.

FY05 REQUEST:

ASU supports funding for the Next Generation Lighting Initiative through the Interior appropriations subcommittee at a level of \$17 million for FY05.



TRANSLATIONAL GENOMICS RESEARCH INSTITUTE

After an initial year of unprecedented cooperation and economic development effort, Arizona was selected as the location for the headquarters of the International Genomics Consortium (IGC) and created the Translational Genomics Research Institute (TGen). TGen was officially formed as a private, non-profit corporation in June 2002 through cooperation among Arizona State University, University of Arizona, Native American Tribes, Northern Arizona University, the state, the City of Phoenix, private foundations, and business. TGen will foster the growth of the biotechnology industry in Arizona, and will maintain an affiliation relationship with the IGC.

IGC is a private, non-profit corporation that will collect tissue samples from nineteen consortium partners across the country. The IGC has temporary office space in downtown Phoenix and lab space at Scottsdale Healthcare. Both TGen and the IGC have agreed to build their permanent headquarters and labs in downtown Phoenix, creating a synergy that begins to fulfill the state’s plan to attract high paying jobs and diversify the economy.

CONTRIBUTING PARTNERS TO DATE:

State of Arizona	\$30.4 million
City of Phoenix	\$43.0 million+*
State Universities	\$17.5 million
Flinn Foundation	\$15.0 million
Salt River Pima-Maricopa Indian Community	\$ 5.0 million
Virginia G. Piper Charitable Trust	\$ 5.0 million
Maricopa Community Colleges	\$ 1.0 million
Kemper and Ethel Marley Foundation	\$ 1.0 million
Hospitals, Foundations & other donors	\$13.2 million

*The City of Phoenix commitment includes \$31 million toward design/construction of the facility to house the headquarters of the Translational Genomics Research Institute (TGen) and the headquarters of the International Genomics Consortium (IGC) and \$5.8 million to TGen and \$6.2 million over five years to IGC for operations.

Target account for FY05 is Labor/HHS/Education Appropriations bill, specifically in the Health Resources Services Administration (HRSA) facilities account. Funding will be for site design, land acquisition, building construction and equipment. \$1.5 million was secured in FY03 and \$1.4 million was secured in FY04.

FY05 REQUEST:

\$1.5 million targeted for TGen through the HRSA account for the next 3 years.



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THE NOAA – COLLABORATIONS FUND

The National Oceanic Atmospheric Administration Collaborations Fund would provide \$25 million for a fully competitive, extramural research grants and contracts program addressing the efficiency and coverage of the nation's operational observing system and the direct transfer of leading-edge research into operations. Like the successful interaction between the National Institutes of Health and the extramural research community, the Fund will promote interaction between NOAA and the university and private sectors, thereby contributing to economic security, citizen safety, and protection of property through much-improved weather forecasts.

Initially, the funds will be directed toward research applications in technology development and operations through the following NOAA:

Σ **Global Observing System** – THORpex is an international program designed to examine the global observing system and determine the optimum way in which this system can be improved to increase the accuracy of forecasts out to two weeks. The impact will be significant throughout the economy, particularly in the energy sector where even small improvements in temperature and precipitation forecasts have large impacts on energy costs.

Σ **National, Regional, and Short Term Forecasting** – Development and implementation of the Weather Research and Forecasting (WRF) model will provide data at critical points every square mile, as opposed to every 55 miles as in current models, thereby producing much higher resolution forecasts. Concurrent efforts to improve regional forecast modeling capacity by local university, government, and private sector consortia will be implemented through the creation of new products established in regional testing laboratories. An additional effort to improve short term forecasting will focus on predictions out to two days over the continental U.S., affecting the forecasting of precipitation distribution, temperature, air quality, and severe weather, including flash flooding.

Σ **Operational Test Beds**—Test bed facilities will provide venues where new numerical weather prediction models and forecasting techniques (such as those mentioned above) can be tested and evaluated in an operational environment without interfering with forecasting operations. The Fund will make possible university and private sector involvement in actual testing.

Σ **Hurricane Landfall**—Funding will increase research community efforts to analyze and interpret data collected in the annual NOAA field programs and develop new models and forecasting techniques to hasten improvements in hurricane landfall predictions capabilities.



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Σ **Societal and Economic Impacts**—To ensure that scientific advances are useful to the consumers of weather information, the Collaborations Fund will support more effective methods of delivering weather information, assess the social and economic impacts of adverse weather from disastrous to routine, and evaluate what is most useful to public and private sector decision makers.

FY05 REQUEST

ASU supports an appropriation of \$25 million For FY05 for the establishment of a Collaborations Fund within NOAA. ASU should be competitive in this area of research. The country would benefit by quickly improving the utility and accuracy of weather forecasts.

Senate language found in section 202 of S 1401 states;

(a) **IN GENERAL.**—The Administrator shall submit a report to the Senate Committee on Commerce, Science, and Transportation and the House of Representatives Committee on Science at the same time as the President’s budget request for fiscal year 2005 is submitted to the Congress for the establishment of an external research program within the Office of Oceanic and Atmospheric Research. The report shall include a plan to support funding levels of \$25,000,000 in fiscal year 2005, \$30,000,000 in fiscal year 2006, \$35,000,000 in fiscal year 2007, and \$40,000,000 in fiscal year 2008.

(b) **MANAGEMENT PLAN.**—The report shall include a management plan for the program the purpose of which shall be to provide funding for merit-based, peer-reviewed research grants and contracts to public and private organizations that will improve the efficiency and coverage of the nation’s operational observing system and accelerate the direct transfer of research results into operational programs at the National Oceanic and Atmospheric Administration providing operational weather monitoring, analysis, and forecasting services to the Nation. The management plan shall include a strategy to commit the Administration to spending 50 percent of new research funds (exclusive of adjustments to base) within the external community via merit-based, peer-reviewed processes.

(c) **PUBLIC PLANNING PARTICIPATION.**—The report shall also include a mechanism for involving the public and private organizations in the planning and execution of the external research program.

(d) **ANNUAL PROGRESS REPORT.**—The Administrator shall provide an annual report to the Senate Committee on Commerce, Science, and Transportation, the House of Representatives Committee on Resources, and the House of Representatives Committee on Science on the progress within the Administration of the transition of research results into operational products and services.



About 600,000 people die in the United States each year from one or more of over 200 types of human cancer. Only a small number of anticancer drugs discovered over the past 40 years are now used with varying degrees of success against about 20 types of human cancer. However, the current death rate from cancer in the United States and internationally is an ongoing disaster of massive proportions. The most promising way to further reduce the tragic loss of life is to discover and develop more effective anticancer drugs for improving human cancer treatment and increasing the overall curative responses.

Since its establishment in 1974, ASU's Cancer Research Institute has discovered more than 30 promising anticancer drugs have been discovered that now require development to clinical trials. ASU-CRI is the largest and most productive anticancer drug discovery program in the world and is funded entirely by grants and gifts. The Institute is credited with discovering a number of effective drugs, now in Phase II human cancer clinical trials, for example:

Byostatin 1: derived from a ship-fouling pest helpful in fighting melanoma, ovarian cancer, various lymphomas, lung cancer, esophageal cancer, renal cancer, and a variety of leukemias.

Dolstatin 10: isolated from a sea animal shown effective against prostate cancer, melanoma, ovarian cancer, many leukemias and a broad spectrum of other anticancer activity.

Auristatin PE: a very important structural modification of dolastatin 10" continue with "is also known as TZT-1027 and Soblidotin, and is now in eight Phase II human cancer clinical trials."

Combretastatin A-4 prodrug: now entering additional human trials came from the African bush willow.

Twelve other promising anticancer drugs discovered by the ASU-CRI are currently at various levels of development and are in need of accelerated preclinical research leading to clinical trials. The process for developing anticancer drugs has the following steps:

- 1) Scale up production of the anticancer compound.
- 2) Pharmacology assays-development and conduct of pharmacology studies,
- 3) Formulation,
- 4) Analytical methods,
- 5) Production of dosage forms,
- 6) Stability analysis of the dosage forms and
- 7) IND-directed toxicology (with pharmacology and histopathology).



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Historical Decline of Anticancer

Drug Discovery in the National Cancer Institute:

In 1957, the NCI embarked on an anticancer drug discovery program that focused on organic chemical structural modifications and synthesis of compounds found in plants and microorganisms. In 1966, this successful strategy was extended to marine organism anticancer constituents. After 1957, a majority of the most effective anticancer drugs were discovered and developed by NCI research. In 1971, the Congress passed the Cancer Conquest Act and brought the NCI's anticancer drug discovery to new and higher levels of productivity.

In 1975, the NCI dismantled its research program in the synthesis and structural modification of anti-cancer drugs. In 1981, the NCI's major effort to discover naturally occurring anticancer drugs was also dismantled. Today botanical and other specimen procurement contracts are being phased out, including the vitally important and necessary discovery of anticancer constituents. The NCI's anticancer drug discovery and development programs, based on naturally occurring substances and their synthetic modifications, had been supremely successful and were in fact the best in the world. Instead of being abandoned, the animal, microorganism, and plant anti-cancer constituent research and drug synthesis research urgently needs to be greatly expanded. This type of research is the forte of the ASU Cancer Research Institute.

The world's flora may number as high as 800,000 species. Moreover, there are upwards of 30 million microorganisms available for research investigation. It is likely that only 5% or less of the higher plants on the earth have received even a cursory look to see if they contain anticancer constituents. In addition, there are 2 million marine animals with only 20,000 evaluated. The potential for discovering new treatments is vast.

FY05 REQUEST:

ASU's Cancer Research Institute and the International Foundation for Anticancer Drug Discovery support several specific actions which would assist ASU's Cancer Research Institute advance:

1. Reinstate NCI's Outstanding Investigator Grant Program.
2. Increase potential funding to the NCI with language encouraging the NCI to step up its resources targeting anti-cancer drug discovery and development.
3. Rapidly advance 6-12 anti-cancer drugs discovered at ASU's Cancer Research Institute to clinical trials in Arizona. Each anti-cancer drug takes a minimum of \$1 to \$1.5 million for its full pre-clinical development.

DOE CENTER OF EXCELLENCE ON ELECTRIC POWER SYSTEM RELIABILITY

A university – industry collaboration seeking innovative solutions to critical challenges to electric power transmission and distribution reliability. Using a multidisciplinary, geographically-diverse organization, the Center:

- seeks innovative solutions to reliability challenges in today's and tomorrow's electric power system
- stimulates productive interchange of ideas among university, government and industry professionals
- leverages and integrates research funding from universities, government and industry
- facilitates rapid access to highly experienced faculty and superior quality students
- prepares current and future professionals for the new power industry.

BACKGROUND

A U.S. DOE priority is to meet the nation's long-term energy needs and protect economic security by promoting delivery of reliable, affordable, and environmentally sound electric energy. In its National Transmission Grid Study, the DOE reported to Congress that electric transmission constraints threaten reliability. The transmission system was not designed to support the new uses of the grid found in emerging regional electricity markets. Reliability is at risk in today's wholesale generation marketplace, with its increased volume of transactions and long distance power flows, and staggeringly complex operating environment. Better ways must be found to operate the existing transmission grid to overcome congestion when it occurs. Both technological and market-based solutions are required, so pricing and customer participation options should be considered along with enhanced transmission investment and improved system operations. In addition, a looming manpower shortage faces the electric power industry. Some 25% of the current workforce will retire in the next five years. University resources are essential to helping DOE address the challenge of maintaining a reliable electric transmission grid for future generations.

Every state wants to expand its economy, to develop a skilled workforce, and to obtain benefits from technology transfer. Thus, in establishing standards and operating protocols for regional reliability organizations, the unique requirements, situations, and experiences of the states must be considered. An appropriately designed, geographically-diverse university Center of Excellence can play an important role in understanding and integrating state experiences in electric system restructuring so that each state benefits from electric transmission reliability enhancements.



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FY05 REQUEST:

"The Committee recognizes the need for reliability related research and proposes to increase the FY05 budget request by \$8 million to establish a university center of excellence in electric power system reliability."

The consortium is asking that an additional \$8M be put into the U.S. DOE Office of Electric Transmission and Distribution (OETD) budget as a Research and Development line-item request. Specifically, we are asking that the FY 05 Request for Research and Development be increased from \$75,679 to \$83,679 (see page 275 of the current U.S. DOE budget request.)

The Center's academic researchers must specialize in a range of expertise including power systems, applied mathematics, non-linear systems, power electronics, control theory, computing, operations research, economics, industrial organization and public policy. In collaboration with industry, they must provide the research services and products that add value to industry, and that support efficient and reliable provision of electricity services while meeting environmental requirements.

THE CENTRAL ARIZONA PHOENIX URBAN LONG TERM ENVIRONMENTAL RESEARCH CENTER (CAP LTER)

The CAP LTER project is one of 24 long-term ecological research sites funded by the National Science Foundation (NSF). LTER sites have tended to focus upon pristine locations well removed from the myriad effects brought about by extensive human modification and dominance of ecosystems. The CAP LTER site provides a unique addition to the LTER network by focusing on an arid-land ecosystem profoundly influenced, or even defined by the presence and activities of humans and is one of only two sites that specifically study the ecology of urban systems.

The multifaceted CAP LTER project is aimed at answering the question: How does the pattern of development of the city alter ecological conditions of the city and its surrounding environment, and vice versa? To answer this question, social, physical, and biological scientists from Arizona State University and a wide range of community partners are working together to study the structure and function of the Phoenix urban ecosystem, assess the effects of urban development on the Sonoran Desert, and define the impact of ecological conditions on urban development. Research areas include:

- Current and future land transformations
- Local climate change and climate feedbacks
- Biodiversity in a human dominated ecosystem
- Water systems and social aspects of water
- Ecosystems health and public health
- Air-land-water-groundwater linkages in biogeochemistry

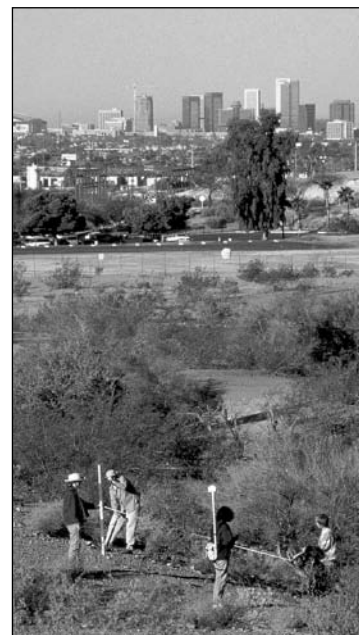
Multidisciplinary investigations into the relationship between land-use decisions and ecological consequences in the rapidly growing urban environment of Phoenix are of broad relevance for urban planning. The project also has an explicit commitment to engage the larger community in our research effort, both in K-16 education and in the public understanding of science.

Web Site: <http://caplter.asu.edu>

Principal Investigators are Nancy Grimm, Charles Redman, Stuart Fisher, and J. WuT

FY05 REQUEST

ASU's LTER was competitively awarded initially in 1997. Presently the center is up for renewal for an additional six years. This is an NSF cross-cutting program recommended to be funded at \$22.8 million in the FY05 President's budget request. ASU supports funding at the President's level. We should know the outcome of our renewal in the near future.



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BUILDING AN END-TO-END SOLUTION FOR THE DETECTION AND MANAGEMENT OF BIOTERRORISM ATTACKS

o Bioattacks, unlike terrorist or military attacks with explosives, provide a wide range of possible outcome scenarios that complicate greatly the design of a comprehensive defense.

o Most experts agree that if a bioterrorist attack were to occur today, it would only be detected when infected individuals start arriving at medical facilities. Military forces stationed in the United States are vulnerable to attack whether directed against them or the surrounding civilian communities. The first responders will therefore likely be health-care workers who will need to distinguish a biothreat agent from the ordinary, routine infections that have similar initial symptoms.

o Today's health providers do not have the necessary tools to distinguish between infection caused by a bioattack and that caused by routine infections. They must rely on a series of sequential, inefficient and cumbersome actions that delay mobilization of prompt responses. In a bioattack, delayed diagnosis places lives at risk and increases the probability that any bioincident involving a contagious agent will continue to spread before meaningful containment actions are implemented.

o What healthcare providers need most is an instrument for determining immediately whether a person has been exposed to a bioterrorist agent or a naturally occurring infection. Given the critical importance to homeland security, these results must be generated rapidly and be incorporated into a national and international information network that can alert national, state, and local authorities of a potential bioterrorism incident.

o Project Zebra is the solution. Project Zebra is a concept developed by some of the country's leading academic and industrial entities who have formed a consortium to generate the fundamental elements needed to create a meaningful first line of defense in a bioterrorist attack. The centerpiece of Project Zebra is a network of sophisticated clinical diagnostic tests (not sensors) that will immediately distinguish infections caused by biothreat agents from those routinely found in patients. Faster clinical diagnosis is the single largest point of leverage available to save lives and to accelerate the mobilization of optimum bioincident containment actions.

o Why the name Project Zebra? Physicians in training are traditionally taught that the most common diseases occur most commonly. In other words, they are taught that "When you hear hoof beats, think of horses, not zebras." The dilemma in biodefense is how to detect "the Zebra" – the rare bioweapons pathogen amidst the background noise of medically common infectious diseases.



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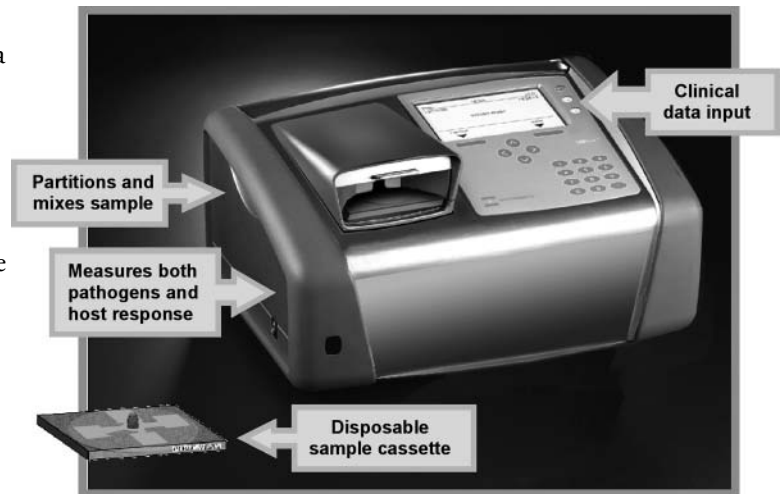


o Identifying that a person has been exposed to a bioagent is only the beginning. What is required is a holistic, “end-to-end” solution that includes detecting and monitoring the infection in real time, integrating the information into an international computer network that alerts the key decision makers who can assess, monitor and address the situation rapidly. The net result: lives are saved and threats are addressed efficiently and with the optimum tools.

Specifically, Project Zebra comprises the following four elements:

1. Molecular Signatures (BIOPRINT): Sequencing of the genes and proteins of selected pathogens, detection of genomic, proteomic and phenotypic signatures of the host immune response, and the genesis of unique markers for a broad range of bio-threat pathogens.
2. Zebra Diagnostic Platform (ZDP): Incorporation of the molecular signatures into a low-cost diagnostic platform suitable for routine patient testing in a variety of clinical settings.
3. A National Information Architecture (Bioincident Warning and Communication System-BWACS): Integrated collection of data, syndromic surveillance, reliable anomaly detection, and real-time alerting of local and national decision-makers that a bioincident has occurred and permit real-time assessment of incident progression and the effectiveness of containment actions.
4. Decision Support Systems: A robust infrastructure linking key decision-makers with relevant medical and public health authorities to ensure the rapid launch of optimum treatment protocols, rational allocation of drugs and vaccines, and comprehensive incident containment actions.

In summary, the creation of the Project Zebra system will allow faster mobilization of all relevant incident management actions. The nation and the world will remain vulnerable until a comprehensive diagnostic system such as Project Zebra is created and implemented. The consortium is not aware of any similar initiative to achieve this “holistic” technological integration within academia, industry, or government.



Zebra Diagnostic Platform (ZDP) and disposable sample cassette (artist's impression)

The Project Zebra Consortium consists of teams led by highly regarded scientists at leading universities and companies under the overall leadership of Dr. George Poste of Arizona State University. Dr. Poste is an acknowledged expert on biowarfare and serves on the Defense Science Board of the Office of the Secretary of Defense and the Threat Reduction Advisory Committee of the Defense Threat Reduction Agency.

The Zebra Consortium has assembled the required skills in microbiology, genetics, diagnostics, instrumentation design and the design of large scale, secure information architecture networks.

The purpose is to provide an end-to-end technological solution to the biothreat problem, from initial detection through all aspects of incident containment. This holistic “systems” approach is considered fundamental to success and contrasts with the current highly fragmented and non-integrated approaches to this formidable problem.

KEY CONTRIBUTORS TO THE ZEBRA CONSORTIUM ARE:

o Translational Genomics Research Institute (TGen) and the Arizona Biodesign Institute at Arizona State University (ASU): The Director of TGen Dr. Jeffrey Trent is a leading expert in the translation of

genomics technologies into medical advances. Dr. George Poste, Director of the Arizona Biodesign Institute at ASU, in addition to his bioterrorism expertise, has extensive experience in the development and FDA approval of drugs and diagnostics and was instrumental in bringing large scale genomics into the pharmaceutical industry in the early 1990s and in achieving its successful application to drug, diagnostic and vaccine discovery.

- o Northern Arizona University: Dr. Paul Keim is a leading expert in anthrax research and forensics. His research has been influential in the criminal anthrax investigations on the East coast, and also in providing advanced forensic tools to the intelligence community.

- o Amersham Biosciences: One of the world's largest instrument companies is a leader in developing and providing integrated systems and solutions for the development and manufacture of diagnostic tests and equipment. Key to Project Zebra is the CodeLink[®] microarray obtained in the recent acquisition of Motorola Life Sciences. Dr. Trevor Hawkins, leader of Amersham's effort, was until recently the Director of the Joint Genome Initiative at the Lawrence Livermore National Laboratory.

- o International Genomics Consortium (IGC): IGC has a working network of 19 academic and private medical centres across the country to provide a ready geographic infrastructure for stepwise validation and implementation of diagnostic tests. IGC will facilitate the incorporation of molecular diagnosis, host response gene expression and proteomic signatures into an integrated network for easy-to-use, accurate diagnostic platforms.

- o Ingenuity Systems: Dr. Daniel Richards, as a co-founder of Ingenuity, is a leading expert in the use of biological knowledge bases and advance biological computing in systems biology. Ingenuity has developed the world's largest knowledge base of functional genomic knowledge as well as advanced algorithms for elucidation of biological networks. Ingenuity will also provide a worldwide operational capability for acquiring relevant knowledge from public and proprietary sources.

- o SRI International (SRI): SRI has an extensive and prestigious record of accomplishment in life sciences,

engineering and advanced computing for both civilian and military applications. Dr. Michael Tracy leader of SRI's team has extensive experience in the genesis of diagnostic tests. SRI will design the sample cassette and integrate all necessary functions into a CLIA approved self contained desk top instrument for hand-off to Amersham for production and distribution. Dr. Patrick Lincoln, a leading expert in large-scale bioinformatics and computer network intrusion signal correlation, will lead the software design and related technology development for the correlation of data streams across the Zebra communications network. His research includes construction of the open-source BioSPICE software integration platform, the EMERALD[®] network anomaly detection system, and the VADER information privacy protection effort.

- o University Systems of Florida:

OVERALL FUNDING/RESEARCH STRATEGY:

The consortium is seeking \$145 million dollars over the next three years to design, develop and deploy the Zebra Diagnostic Platform for initial large scale testing. A second phase over the following two years to expand the range of diagnostic tests and to finalize instrument design and software to allow extensive deployment on a national scale will require an additional \$110 million.

The estimated costs over the five-year period will be allocated equally between the three main R&D "modules":

- (A) Molecular Signatures (BIOPRINT)
- (B) Zebra Diagnostic Platform (ZDP)
- (C) National Information Architecture (Bioincident Warning and Communication System-BWACS) and Decision Support Systems.

Research on the Molecular Signatures (BIOPRINT) and Zebra Diagnostic Platform (ZDP) segments of Project Zebra will be initiated in 2004 provided funding is released. Initial research will focus on developing rapid tests utilizing the CodeLink[®] microarray platform that differentiate biothreat pathogens (zebras) from common pathogens (horses)

in blood. Research will focus on:

- o High-resolution genomic sequencing and proteomic analyses of select biothreat pathogens and naturally occurring infectious agents.
 - o Development of expression profiles for the host immune response triggered by select pathogens.
 - o Development of molecular signatures for pathogens and host immune response to pathogen infection.
 - o Development of assays that will target multiple pathogens simultaneously in a single sample.
 - o Methods for rapid sample preparation, processing and concentration.
-
- o Design of a self-contained sample cassette that will incorporate technologies to simultaneously detect two or more biological parameters in one sample.

FY05 REQUEST:

Project Zebra received significant support from multiple states on the Hill in FY04. Members from Arizona, Florida, New Jersey, and California supported funding. In September, 2003 Zebra participants testified before the House Homeland Security Subcommittee on Emergency Preparedness and Response. The consortium is in the process of working with the Defense Threat Reduction Agency to secure FY04 funds appropriated to address chemical and biological threats. The consortium will actively attempt to secure funding from multiple funding streams in FY05 thru DoD, DHS and others. Given the critical importance of Project Zebra to combating domestic bio terrorism, the consortium is hopeful that the Project will eventually be included in the President's annual budget.

REMOVING RESTRICTIONS FROM PROPERTY CONVEYED TO ASU

Williams Air Force Base was listed for closure by the 1991 Base Realignment and Closure (BRAC) process and was actually closed on September 30, 1993. To date, ASU has received approximately 604 acres of property at Williams through four (4) separate parcels conveyed by quitclaim deeds. A final conveyance of approximately 5 acres is expected following completion of environmental remediation.

The deeds contain a number of covenants, conditions subsequent, and restrictions that may impact our ability to use the property for economic development or significant revenue generating activities – without seeking and obtaining prior approval of the U.S. Department of Education. For example, two of the deed provisions state:

“For a period of thirty (30) years from the date of this Deed, the Property will be used solely and continuously for educational purposes in accordance with the proposed program and plan of GRANTEE set forth in its Application and for no other purposes. GRANTOR reserves the right to enter and inspect the Property during said period.”

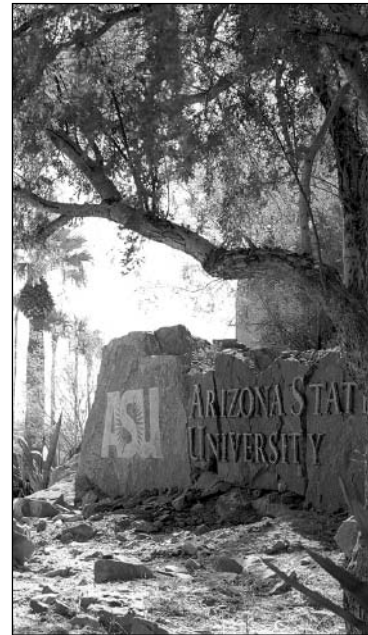
“During the above period of thirty (30) years GRANTEE will not sell, resell, lease, rent, mortgage, encumber, or otherwise transfer any interest in any part of the property except as GRANTOR may authorize in advance in writing.”

While ASU received federal approval for two major capital financings that involved long-term ground leases, even with excellent cooperation by the Department of Education, the approval process took an exceedingly long time and impacted the closing timetable and the project schedule. Also, there was always the possibility that the Department of Education could have disapproved these projects, and there are no assurances that approval of entrepreneurial, revenue producing use of the property will be approved in the future.

Removing these onerous restrictions from the deeds should enable ASU to move forward with accelerated development of the ASU East campus in a way that contributes to the creation of a New American University.

FY05 REQUEST:

Legislation that removes the restrictive conditions and covenants from the property conveyed to the university by the U.S. Department of Education. (The ASU Office of General Counsel has drafted legislation for consideration by the congressional delegation.)



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ARMY RESEARCH LABORATORY'S FLEXIBLE PANEL DISPLAY INITIATIVE

On February 10, 2004, the U.S. Army announced that ASU had won a major competition and was awarded a cooperative agreement to set up the Army's Flexible Display Center (FDC). This \$43.7 million over 5-years award announcement can be found at the following URL: http://www4.army.mil/ocpa/print.php?story_id_key=5661

The ASU-Army Flexible Display Initiative Center will be an exemplar genuine collaborative University-Industry-Government partnership and national asset in flexible display technology research, development and prototype manufacturing. The Center will strategically deploy focused intellectual, physical, financial and management resources to dramatically accelerate full color flexible display technology and catalyze the growth of a vibrant U.S.-based flexible display industry. The Center will spearhead the national effort to provide the Future Warfighter with ubiquitous conformal and flexible displays that are lightweight, rugged, low power, and low cost, and which will significantly enhance the Warfighter's situational awareness and operating effectiveness.

INTELLECTUAL CAPACITY

The Center partnership brings together a synergistic set of diverse competencies operating in a pre-competitive environment that fosters teamwork and sustains innovation to deliver cutting edge scientific inquiry and engineering development. In this context faculty from ASU's Fulton School of Engineering and the Applied Nano-Bio Systems Center will collaborate with government colleagues from the ARL and other government laboratories; with key academic partners Cornell University, University of Southern California, Penn State University, and the University of Arizona Optical Sciences Center; and with key industrial partners DuPont Displays, Kodak, Honeywell, UDC, USDC, FlexICs, Kent Displays, E Ink, and Optiva, along with technology users and integrators General Dynamics, Raytheon and Three-Five Systems, and Center affiliates General Atomics, ECD, AGI and Southwall. Through this dynamic partnership a comprehensive suite of candidate display technologies, including PLED, SMOLED, cholesteric LCD and electrophoretic, can be effectively developed and fully evaluated.

PHYSICAL ENVIRONMENT AND INFRASTRUCTURE

ASU will rapidly deploy an unparalleled, state-of-the-art multi-functional display manufacturing R&D facility in the ASU Research Park to serve as the FDI Center headquarters. The facility is immediately available and will be occupied in the first quarter of Center existence, and within the first year will have a fully operational 6" TFT and OLED Pilot Line, a state-of-the-art OLED R&D laboratory, and a supporting 4" TFT R&D toolset. Pilot lines will be designed for versatility to maximize the technologies that can be inserted in the display prototypes to be delivered.



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GEN II photolithography capability will come on-line in the second year of operation, and full GEN II Pilot Line capability will be established in the fourth year with the 6" line subsequently transitioning to R&D service. These powerful, concentrated resources "under one roof" will enable intensive collaborative technology co-development supported by research, and will promote success in transitioning emerging technologies into prototypes and off-the-shelf products that support the Army Transformation.

FINANCIAL CAPACITY

Center activities will be enabled through the highly leveraged resources of the federal government and substantial co-investment of ASU and its industry partners. The State of Arizona has recently committed more than \$ 485 million to ASU to establish new research teams and large scale research facilities. This financial foundation enables ASU to aggressively co-invest in the FDI Center, including \$25 M for acquisition of the Center facility (note that the original cost of the building exceeded \$100 M), \$7 M for GEN II Pilot Line tools, and \$0.8 M for the OLED R&D laboratory. Industrial partner five year co-investment commitments in Center operations and infrastructure exceeds \$16 M; the total ASU plus partner co-investment provides better than a 1:1 leveraging of the Army investment. Moreover, the value of in-kind contributions to the Center mission at partner locations is approximately \$84 M. Total leverage of the Army investment for the overall effort is therefore 3:1.

DISCIPLINED BUSINESS-ORIENTED FOCUS

In ASU's implementation model, the Center management structures and processes provide strategically-guided decision-making, effective project and IP management, aggressive performance metrics and clear accountabilities in the framework of full partner engagement and rapid deployment.. In addition, we will seek creative opportunities to leverage our collective intellectual, physical, and technological capability to establish one or more "Product Cooperatives" that could substantially accelerate technology advancement and market readiness, enhance prototyping and manufacturing capacity, and strengthen the domestic flexible display industry overall.

T*o advance innovations improving human health and quality of life through use-inspired, biosciences research and effective, multidisciplinary partnerships*

The vision for the Arizona Biodesign Institute (AZ Bio) is to make it the benchmark for excellence in use-inspired, collaborative research focused on the intentional manipulation of biological systems. AZ Bio will be a catalyst for innovation, facilitating the multidisciplinary investigations in basic science and engineering that are required to design the critical biotechnology solutions of the 21st century.

The hallmark of Arizona Biodesign will be a physical and intellectual environment that leverages communication, collaboration, and integration, and a research agenda that emphasizes the application of discoveries to commercial uses and societal benefits. The research programs are clustered into two focus areas of increasing contemporary importance: 1) Biologics and Therapeutics, and 2) and Nano-Biosystems and Devices. The integrative tools of Genomics and Informatics will connect and support these broad focus areas.

The output of Arizona Biodesign will be measurable in terms of highly trained professionals, pioneering discoveries, new technologies, new practices, or new businesses—all of which can drive statewide economic development. Arizona Biodesign will be a hub for biotechnical and biodesign research in central Arizona, building collaboration networks among scientists and clinical researchers from leading industries and institutions. The Arizona Biodesign Institute will be anchored in a research complex on the Main Campus of Arizona State University.

ARIZONA BIODESIGN INSTITUTE RESEARCH CENTERS

To optimize the management of the research agenda in specific focus areas, the institute is organized into several networked and overlapping research centers. Each center is comprised of a group of researchers collaborating to address defined problems or needs of major societal importance. Innovative solutions are sought that leverage the emerging discoveries in related fields such as the biosciences, biotechnology, and nano-technology and integrating disciplines such as genomics and bioinformatics. These centers are organized to be flexible, adaptable, and responsive, thus allowing the institute to keep pace with the accelerating advances in science and the increasing demands by society for new technology.

- ❖ Production of Vaccines from Applied Crop Science,
Dr. Charles Arntzen
- ❖ Protein and Peptide Pharmaceuticals, *Dr. Collen Brophy*
- ❖ Nanoscale Bio-Optical Technologies, *Dr. Neal Woodbury*
- ❖ Single Molecule Biophysics, *Dr. Stuart Lindsay*
- ❖ Applied NanoBioscience, *Dr. Frederic Zenhausern*
- ❖ Neural Interface and Brain Control, *Dr. Jiping He*
- ❖ Rehabilitation Neuroscience and Rehabilitation Engineering,
Dr. James Abbas, Dr. Ranu Jung
- ❖ Evolutionary Functional Genomics, *Dr. Sudhir Kumar*



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NIH BIOMEDICAL COMPETITIVE FACILITY PROGRAM

ASU is aggressively expanding its capabilities in the area of biomedical and bioengineering research. (See earlier section of this briefing book entitled ASU Research Infrastructure Update".) We are in the process of building multiple facilities for the Arizona Biodesign Institute which will be the cornerstone for our research in this vital and burgeoning field. Programs such as the NIH's competitive extramural facilities program are important sources of potential matching resources to the significant investment made by the state.

The \$72 million, 172,000 gross-square-foot facility is scheduled to be open in the Fall 2004 on the east side of the main campus and will be the first of a new biodesign complex. This will be ASU's first world-class, Grade A self-contained, flexible and dedicated research facility on any of ASU's campuses.

Competitive facility dollars at the federal level are critical for the complex to come to fruition. Facility programs such as the NIH program found at the National Center for Research Resources (NCRR) are important sources for potential matching dollars to ASU's investment. This specific NIH program is authorized under Sections 481A and 481B of the Public Health Services Act, as amended by Sections 303 and 304 of Public Law (PL) 106-505, to make grants or contracts to public and nonprofit private entities to expand, remodel, renovate, or alter existing research or animal facilities or construct new research or animal facilities. The facilities will be used for basic and clinical biomedical and behavioral research and research training.

In FY04 the Senate championed the funding for this critical program which ended in conference at a level of \$119 million. From H Rept 108-401, the omnibus appropriation conference report;

"The conference agreement includes bill language to earmark \$119,220,000 for extramural facilities construction grants as proposed by the Senate. The House did not provide funding for extramural facilities construction."

FY05 REQUEST

The President's budget recommended \$0 million for the NCRR's extramural facilities construction grants. ASU supports continued funding for NIH extramural competitive facilities program at the level of at least \$125 million.



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CONSORTIUM FOR SCIENCE, POLICY & OUTCOMES AT ARIZONA STATE UNIVERSITY (CSPO)

“Man’s power to achieve good or to inflict evil surpasses the brightest hopes and the sharpest fears of all ages. We can turn rivers in their courses, level mountains to the plains. Oceans and land and sky are avenues for our colossal commerce. Disease diminishes and life lengthens. Yet the promise of this life is imperiled by the very genius that has made it possible. Nations amass wealth. Labor sweats to create, and turns out devices to level not only mountains but also cities. Science seems ready to confer upon us, as its final gift, the power to erase human life from this planet.”

President Dwight D. Eisenhower (First inaugural address, 1953)

MISSION

How can science and technology most effectively contribute to an improved quality of life for the greatest number of people?

This is the organizing question for the Consortium for Science, Policy, & Outcomes (CSPO). The Consortium is devoted to enhancing the capacity of public policy to link scientific research to beneficial societal outcomes.

The Consortium creates knowledge, cultivates public discourse, and fosters policies to help decision makers and institutions grapple with the immense power and importance of science and technology as society charts a course for the future.

Science and technology have become the most powerful transforming forces in society, allowing people to escape fundamental need; fostering innovation and economic growth; fighting scourges like smallpox, polio, and AIDS; and joining billions of people together in information and communication networks that serve democracy as well as commerce. But the profound changes brought about by science and technology have led as well to negative impacts – often unanticipated. From the industrial revolution to the information revolution, the march of scientific and technological progress has left in its wake unemployment, cultural dislocation, economic inequity, environmental destruction, even war and disease.

Just as science and technology affect our world, they are affected by public policy decisions about how research funds are allocated, priorities established, the research enterprise organized, knowledge communicated and applied, and accountability maintained. Policy decisions influence the societal consequences – the outcomes – of scientific research in realms as diverse as the economy, the environment, health, governance, national security, and social structure.

While it is clear that science and technology contribute to large scale soci-



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etal transformations, our current understanding of how they do so is inadequate, and this leaves us unprepared for the task of planning for the future. Today, decision makers lack the tools necessary to plan for, respond to, and integrate into public policy the dynamics of science and technology progress that continually reshapes our world.

CSPO is the only intellectual center dedicated to understanding the linkages between science and technology and its effects on society, and to developing knowledge and tools that can more effectively connect progress in science and technology to progress toward desired societal outcomes. The Center draws on the intellectual resources of Arizona State University and other institutions for the scholarly foundation to assess and foster outcome-based policies across a broad portfolio of publicly-funded scientific research. The Center's core commitment is to generating useable knowledge for real-world decision making.

FY05 REQUEST

Fund Section 9 of the "21st Century Nanotechnology Research and Development Act" which would allow ASU's Consortium for Science, Policy, & Outcomes (CSPO) to compete for funds to address the serious national issue.

Authorizing already language passed last session--
SEC. 9. ADDITIONAL CENTERS.

(a) AMERICAN NANOTECHNOLOGY PREPAREDNESS CENTER.—The Program shall provide for the establishment, on a merit-reviewed and competitive basis, of an American Nanotechnology Preparedness Center which shall—

- (1) conduct, coordinate, collect, and disseminate studies on the societal, ethical, environmental, educational, legal, and workforce implications of nanotechnology; and
- (2) identify anticipated issues related to the responsible research, development, and application of nanotechnology, as S. 189—9 well as provide recommendations for preventing or addressing such

HIGHER EDUCATION ACT REAUTHORIZATION HISPANIC SERVING INSTITUTIONS

ASU has over 6,650 Hispanic students but yet is not designated as a Hispanic-Serving Institution since the designation presently based primarily on percentages of students attending an institution. Given our large overall student enrollment, we feel ASU's students are being disadvantaged given there are far greater numbers of Hispanic students at ASU as compared to many institutions that have acquired the Hispanic Serving Institution designation. The legislative authority setting forth the criteria for the designation comes from the Higher Education Act which is up for reauthorization this year.

Definition of a Hispanic-Serving Institution:

Presently a Hispanic-Serving Institution (HSI) is an institution that has at least 25% Hispanic full-time equivalent (FTE) enrollment, and of the Hispanic student enrollment at least 50% are low income. Low income is defined as 150% of the poverty level as determined by the Bureau of the Census.

The Department of Education has compiled a list from IPEDS data of institutions that may qualify as Hispanic-Serving Institutions. This HSI list includes non-profit, public and private, four-year and two-year institutions of higher education. Even though ASU has a large Hispanic student population we do not qualify for consideration since we are not at the 25% threshold. We feel there should be discussion as to whether or not this arbitrary threshold is in the best interest of students attending institutions that have large numbers of Hispanic students.

For example, in Arizona there are 9 institutions named in the above referenced "list" that may be designated as Hispanic Serving Institutions. ASU has nearly as many Hispanic students as these 9 institutions combined. (An institutions is identified as an HSI by US Department of Education after they have met qualifications and have been awarded a competitive grant – which is why numbers seem to vary)

As of the Fall of 2003:

Over the past 10 years, Hispanic enrollment at Arizona State University has risen 83 percent, to 6,650 Hispanic students -- this amounts to 11.6 % of our student population.

ASU has made a concerted effort to increase minority enrollment. For example, one of ASU's most successful programs is the Hispanic Mother-Daughter Program, bringing girls who have no college-educated family members to campus once a month throughout high school with their mothers, for tutoring and workshops on careers and academic life. The program has been recognized as a national model by the American Council of Education. According to Hispanic Magazine, ASU is the 17th most Hispanic friendly university in the country



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FY05 REQUEST:

We feel there needs to be a serious dialogue regarding the formula used for identifying Hispanic-serving institutions in the Higher Education Authorization Act. The parameters for the designation need to include factors such as numbers of Hispanic students and/or taking into account rapid growth of Hispanic students at an institution. The President's budget request for FY05 recommends \$96 million for HSIs.

The Phoenix metropolitan region is the third fastest growing metro area in the U.S. with a population of roughly 3 million. It is projected to reach 4.5 million in population by 2020. As a result the region faces significant challenges in providing transit service for a growing population.

The Central Phoenix/East Valley Light Rail Transit Project is a 20 mile light rail transit (LRT) corridor linking activity centers in Central Phoenix, downtown Tempe, and downtown Mesa. In addition to serving large employment centers in the region, the project would also serve large student populations at ASU (50,000 students), Gateway Community College (10,000 students) and several secondary schools. The LRT would serve several major sporting venues including the home to college and professional sporting events. Major conventions would also be served at facilities leased along the corridor. In total over 300 events occur annually along the corridor, translating to almost a daily occurrence. On many dates there are multiple events.

RECENT MILESTONES AND PROJECT SCHEDULE

- Proposed as a Full Funding Grant Agreement (FFGA) in the FY2005 US Department of Transportation budget with recommended funding in FY05 of \$75 million.
- A Letter of No Prejudice (LONP) in the amount of \$207 million was received from the Federal Transit Administration to allow the project to begin construction and procurement activities. The LONP allows local expenditures for these activities to be reimbursed with federal funds upon attainment of the FFGA.
- A business outreach plan was launched that will result in ongoing efforts to minimize construction impacts to businesses along the light rail corridor.
- A contract was signed to being manufacturing light rail vehicles.
- The Valley Metro Rail Board approved an operational name for the system -- Metro

PREVIOUS FEDERAL AND LOCAL FUNDING

From FY 1998 to FY 2004, the Central Phoenix/East Valley LRT project benefited from \$59 million in Section 5309 New Starts funding. The funding was used to conduct Preliminary Engineering, the environmental analysis and begin Final Design and acquisition of right-of-way. In addition to Section 5309 funding, the region has committed \$19.1 million in TEA-21 Congestion Mitigation Air Quality (CMAQ) funding to the project.

It is anticipated that the LRT project will ultimately obtain 50 percent of the funding from the Section 5309 program. However, with construction already underway the capital costs required to complete right-of-way purchases and construct the project over the next few years will be considerable. As a result it is recognized locally that the federal participation in



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the first few years of the program will be less than 50%. The cities of Phoenix, Tempe, and Mesa have the financial capacity and are willing to fund more than the 50 percent local match in its early years with the expectation that Federal funding will follow.

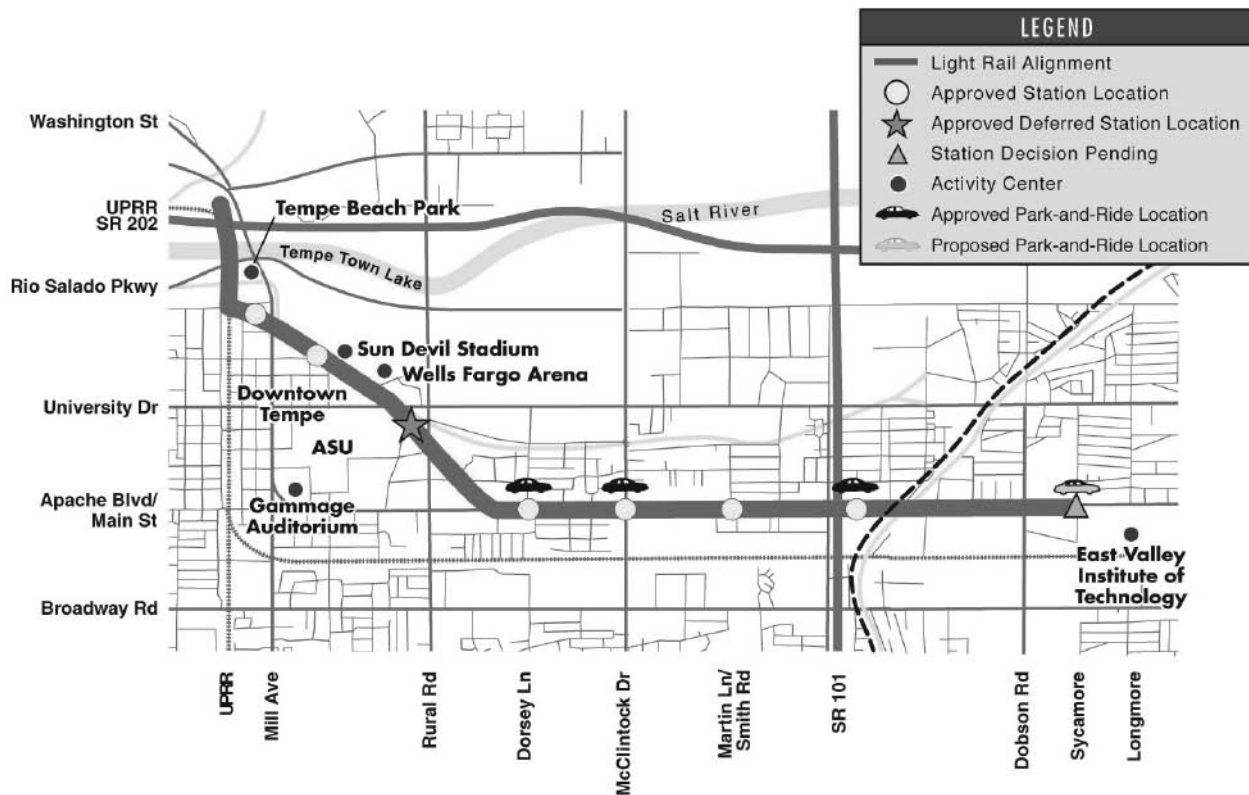
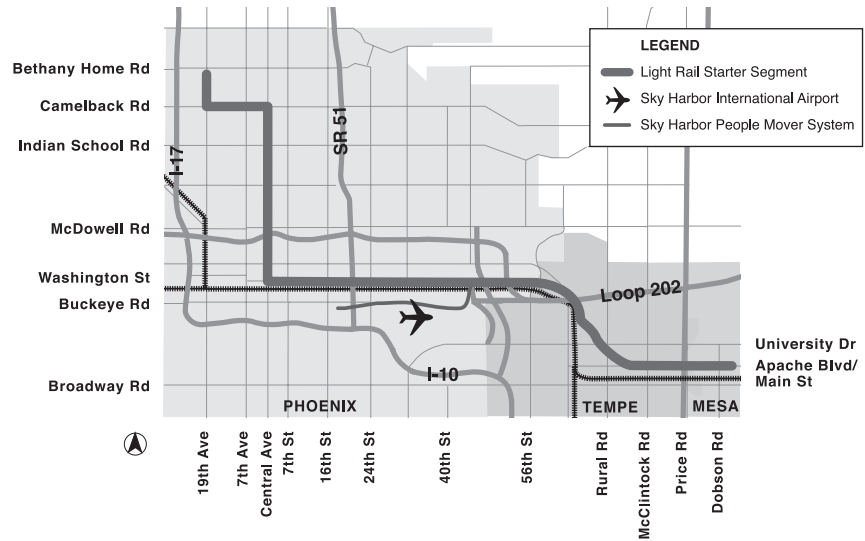
With a rail stop on the Northeast side of Arizona State University's main campus the light rail will be highly advantageous to our faculty, staff and students.

FY05 REQUEST:

Valley Metro Rail's request for \$75 million in Section 5309 funding for FY05 is consistent with the Administration's budget request and is commensurate with the needs of a project that will be well into construction. ASU support Valley Metro Rail's request.

ASU will have two stops on campus at the below locations:

LIGHT RAIL STARTER SEGMENT



SOUTHWEST CENTER FOR ENVIRONMENTAL RESEARCH AND POLICY (SCERP)

The Southwest Center for Environmental Research and Policy (SCERP) is a consortium of five U.S. and five Mexican universities which serves U.S.-Mexican border residents by applying research information, insights, and innovations to environmental challenges in the region. SCERP was created in 1989 to initiate a comprehensive analysis of possible solutions to acute air, water, and hazardous waste problems that plague the United States-Mexican border region.

The consortium works closely with the Border XXI Program and other environmental agencies in the United States and Mexico. It has the multi-fold mission of conducting applied research on the environment, outreach, education, policy development, and regional capacity building for border communities. SCERP addresses issues that pertain to the rapidly deteriorating border environment, strives to protect and enhance the quality of life of border residents, and works to support the educational mission of our universities.

SCERP's unique approach to transborder issues is to integrate and focus transdisciplinary academic expertise; binational, state, tribal, and local policy-making; non-governmental organization advocacy capacity; and private industry know-how. The consortium envisions a vital region with a dynamic and diverse economy, sustainable environmental quality, intact ecological systems, and a more equitable quality of life. For FY04 there was \$0 in House, \$2.5 million in the Senate, and \$2.5 million in conference. ASU typically gets around \$500,000 per year.

Partners include: Arizona State University, New Mexico State University, San Diego State University, University of Texas at El Paso, University of Utah, El Colegio de la Frontera Norte, Instituto Tecnológico de Ciudad Juárez, Instituto Tecnológico y de Estudios Superiores de Monterrey, Universidad Autónoma de Baja California, Universidad Autónoma de Ciudad Juárez.

FY05 REQUEST:

ASU supports continued funding for this multi-institutional consortium. We support the consortium's request for \$5.0 million..



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COMMUNITY OUTREACH PARTNERSHIPS CENTERS (THROUGH HUD)

OBJECTIVE

The objective of the COPC program is to help colleges and universities apply their human, intellectual, and institutional resources to revitalize and aid surrounding communities in distress. COPC is an existing 5-year demonstration program under the Department of Housing and Urban Development designed to help universities harness these resources in the service of nearby communities.

BACKGROUND

The COPC program has been allocated \$7.5 million to create Community Outreach Partnership Centers for each of the 5 years of the demonstration. Grantees must match at least 50 percent of the cost of research activities and 25 percent of cost of outreach activities with contributions from private sources or State and local governments.

Considering the important role and responsibility that universities and institutions of higher learning have with their surrounding community, and that most of these programs are ongoing and will not terminate at the end of the fifth year along with the funding, but will carry on, several institutions have the need to apply for grants on a continuing basis, which given the current funds shortens the possibility for other institutions. There is a need to increase funding that would allow an even larger number of community centers to work toward developing and improving their environment. Large universities located in areas with high growth indices and in some cases with an increasing immigrant population, need to help their communities face the new challenges of extensive growth and changing demographics.

PROGRAM

ASU has recently established the Stardust Center for Affordable Homes and the Family and is working on the development of an Urban Design Institute to help address the issues that affect the most its surrounding community. The goal of the Stardust Center for Affordable Homes and the Family is to serve as a leading source of knowledge on matters relating to the development of permanent affordable homes for working families. The center aims at providing leadership education, technical assistance to the community and families, evaluation services, providing researchers, faculty and other non-profit and for-profit institutions and individuals involved in home development with the research, development models, appropriate tools and data for the implementation of applicable and innovative solutions. A COPC further aids ASU in its efforts to evaluate and address homeownership and family development, some of the most important issues at the state and national level.

FY05 REQUEST

Increase COPC program allocation to \$10 million (from its current \$7.5 million) and extend the program five additional years.



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AMERICA'S AFFORDABLE COMMUNITIES INITIATIVE (HUD)**OBJECTIVE:**

The objective of the America's Affordable Communities Initiative is to break down regulatory barriers that impede the production of affordable housing. This is a program of the US Department of Housing and Urban Development (HUD).

BACKGROUND:

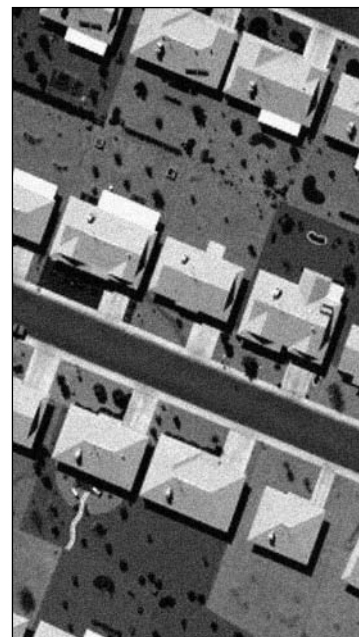
The America's Affordable Communities Initiative is a new department-wide initiative within HUD. As part of this effort, HUD will undertake activities designed to promote barrier removal by state and local governments. Addressing barriers is a key component for any housing program or policy. According to HUD, public policies at a local, state or federal level are fundamental for efforts on increasing housing but can sometimes work at cross-purposes by imposing significant constraints. Through this program HUD also seeks to provide incentives for barrier removal in its funding allocations.

Most housing policy, even if it is federal or state wide, can have a different effect at a local level, thus the evaluation for barrier removal must be done on a local scale. HUD will provide support to non-governmental institutions that a) directly undertake activities to remove barriers within their communities b) streamline local governmental processes and c) eliminate redundant requirements. However institutions that work on policy evaluation on a local and state level are also critical components of the barrier elimination process, thus we believe increased funding and grants could be provided to institutions with such capabilities, to act as evaluators and later as proponents and active participants.

PROGRAM:

Academic institutions through conducting local and national academic studies have served as external evaluators, and have the unique capabilities and human resources to thoroughly evaluate the housing barriers from various fronts. Academic institutions due to their presence in the community are the best suited for evaluation and proposals on policy, they can combine government and public participations through academic studies and achieve a greater impact on current policy leaders and most of all on the formation of future leadership.

Such is the case with Arizona State University, which has taken on several policy studies through the Morrison Institute for Public Policy. Recently, with the creation of the Stardust Center for Affordable Homes and the Family, which focuses on housing policy as one of its main areas, ASU would be capable of providing local evaluation of existing policy, while provide new initiatives for policy with the expertise of the faculty involved. Its transdisciplinary nature will allow for ASU to evaluate and

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provide assistance on policy evaluation from several fronts, over a wide range of policies which have an effect on affordable housing development. The Center focuses on housing as a key component for family and community stability and development, and thus will evaluate and propose new policies that would cover a wider spectrum of related policies such as family well-being and community welfare.

BUDGET:

America's Affordable Communities Initiative is only an initiative; HUD has not proposed funding for it. With funds, local institutions such as universities, can work on local policy evaluation and be active in removing barriers to affordable communities.

HIGHER EDUCATION ACT REAUTHORIZATION ISSUES

ISSUE: PELL GRANT AWARDS

Recommendation:

- (a) Create a true Pell Grant entitlement. Tie the maximum annual award to the average living expenses incurred by students at four-year public colleges and universities nationwide (currently approximately \$5,600 at four-year public universities, based on the most recent Trends in Colleges Pricing).
- (b) Clarify through statute that Congress has the authority to set the maximum Pell grant award annually and that the Secretary of Education does not have the authority to decrease the maximum.

Rationale: The Pell grant program is the cornerstone for all aid programs at Arizona State University, with 9,162 students receiving Pell funds in the 2000-2001 academic year. With the rising cost of education and economic downturn, the most needy students are finding it more difficult, if not impossible, to afford to attend college.

ISSUE: LOAN DISBURSEMENT REQUIREMENTS [Section 428G(a)(3), (b)(1)]

Recommendation: Eliminate the 30-day delay for first-time students and multiple disbursements for single term loans.

Rationale: Implementation of this recommendation would help ensure that students receive loan funds when the costs are incurred which inevitably assists with enrollment and retention efforts. Waiver of these requirements has also proven to positively impact our cohort default rate.

Although we fully support The Department’s emphasis on default reduction, these requirements have not been productive for schools in meeting this objective. Instead, they have contributed to compounding efficiency problems. In the years we were not subject to these provisions, we did not experience a rise in our cohort default rate - on the contrary, our cohort default rate decreased.

As a result of 30-day delay and multiple disbursement requirements for Spring 2003, 1,287 ASU students experienced a delay. We estimate that over 160 man-hours were necessary to identify and notify the students affected, implement a means for our system to accommodate these provisions, and track the outcome of implementation to ensure that the disbursements are issued correctly. The amount of time it took to adhere to these requirements provided no measurable positive outcome. For the Fall



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2003 semester, we estimate that a minimum of 3,000 students will be impacted.

ISSUE: INCREASED LOAN LIMITS [428(b)(1)(A)]

Recommendations: Increased Loan Limits and elimination of up-front fees

(a) Increase annual and aggregate loan limits for both subsidized and unsubsidized loans, effective in 2004.

RECOMMENDED ANNUAL LIMITS FOR STAFFORD LOANS

	Subsidized Loans	Total (subsidized & unsubsidized loans)
Dependent Undergraduates	\$7,000	\$7,000
Undergraduates without access to PLUS	\$7,000	\$14,000
Graduate & Professional Students	\$10,000	\$25,000

RECOMMENDED AGGREGATE LIMITS FOR STAFFORD LOANS

	Subsidized Loans	Total (subsidized & unsubsidized loans)
Dependent Undergraduates	\$35,000	Same
Undergraduates without access to PLUS	\$35,000	\$70,000
Graduate & Professional Students	\$85,000	\$195,000

(b) There would be only one annual loan limit for undergraduate borrowers rather than the current first-year, second-year, and third- and fourth-year limits.

(c) Schools would have the authority to implement lower loan limits for undergraduate and graduate students. A statutory provision would be placed into the law prohibiting any executive agency or judicial review of a school's decision to have lower limits than the federal maximums.

(d) Elimination of all up-front fees for borrowers associated with student loans.

Rationale: The last time loan limits were increased for first year students was 1986 and for all other students, 1992. The absence of increased loan limits since then has resulted in ASU students increasingly seeking alternative loan sources to meet their increased costs of education. Alternative loans represent a more expensive, less beneficial borrowing option for students.

Additionally, level annual loan limits for all undergraduate students would represent a simpler loan structure for students to comprehend while decreasing the administrative burden schools face in managing several different loan limits. For example, level loan limits would eliminate the current need to process additional loan amounts for those students who advance a grade level at the mid-year point, a fairly common occurrence at a school the size of ASU.

Also, the elimination of loan fees would create more beneficial terms for borrowers.

ISSUE: RETURN OF TITLE IV FUNDS- UNOFFICIAL WITHDRAWAL DEADLINE FOR DETERMINATION OF DATE OF WITHDRAWAL [Section 668.22]

Recommendation: Increase the time allowed for determination of the withdrawal date for students who fail to formally withdraw from the institution from 30 days to 60 days.

Rationale: Although we understand The Department's position in regards to students earning a portion of their funds based on the number of days in attendance, and agree that students who fail to officially withdraw should not receive greater benefit than those that officially withdraw, current regulations do not provide enough time to accomplish this objective.

Currently, institutions have 30 days to 1) determine the population of students affected by this regulation and 2) determine a withdrawal date. ASU takes 2 weeks from the end of the term to post grades. Since unofficial withdrawal processing is dependent upon identifying students who have not successfully completed any course for the term, it is necessary to wait for grades to post before beginning the Return of Title IV withdrawal process for unofficial withdrawals. Waiting for grades to post consumes half of the time allowed under current guidance.

However, a failing grade does not necessarily correlate to a student not having "successfully completed the course." (Current regulations indicate that a student that earned an 'F' grade and maintained enrollment is eligible for 100% of the aid received and should not be subject to Return of Title IV requirements.) As a result, after grades are received, we must secure proof of attendance from all means available. If students indicate completion of a course, we are forced to contact professors in an attempt to document last date of attendance. At an institution as large as ASU, where taking attendance is not required, the response rate is poor and the administrative burden enormous. At best, it is difficult to make a determination of the date of withdrawal for these students and can take significantly more time than current regulations allow.