

**HIGHER EDUCATION:
MEETING
CHALLENGES OF THE
FUTURE**

New Jersey Commission on Higher Education

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HIGHER EDUCATION: MEETING CHALLENGES OF THE FUTURE

INTRODUCTION

New Jersey and the nation have entered the 21st century propelled by a new economy – an economy indisputably driven by knowledge, information, and technology. With intellectual capital underpinning unprecedented prosperity, colleges and universities must play a pivotal role in addressing the challenges of the future and sustaining America's preeminence, as well as New Jersey's leadership role within it.

The era of global competitiveness has spawned historic economic progress. Technological advances and innovations are stimulating high rates of productivity growth. In the six-year period from 1994 to 1999, the national rate of growth in jobs doubled the rate in the previous decade; high-tech industries account for 1 million of the 19 million new jobs created. As a result of the nation's significant job growth, unemployment has dipped to a 30-year low. The unemployment rate in New Jersey during the first six months of 2000 was equal to or below the national rate, and in June 2000 the number of unemployed state residents was the lowest since June 1989.

The trend toward higher incomes and an improved standard of living is expected to continue, but the dynamic economy and globalization present formidable challenges as well. The gap in access to computers and the Internet between the highest and lowest income levels continues to grow. In addition, inequality in the labor market has escalated as high-paying jobs have increased and well-paid low-skilled jobs have become more difficult to find. Strength and manual dexterity no longer suffice to ensure employment and a comfortable standard of living. As employers increasingly require verbal, mathematical, organizational, interpersonal, critical thinking, problem solving, and high-tech skills, higher education opportunities must be extended to a segment of the population that could once prosper with a high school diploma or less. Further, as a result of globalization, low-skilled jobs that remain are often filled by low-paid workers from other parts of the world, leaving less-skilled Americans at a disadvantage. Thus, although the trend toward increased inequality in the labor force showed signs of reversing in the late 1990s, the gap in earnings is currently much larger than it was 20 years ago.

Like the job market, the demographic landscape in America has changed dramatically and will continue to do so. According to the U.S. Department of Labor, by 2050 the country's population is expected to increase by 50 percent, with ethnic minority groups making up nearly half the population. At the same time, the population of older Americans will continue to grow, more than doubling in 50 years. These changing demographics will be closely reflected in the makeup of the workforce.

Beyond these challenges, passing our civilization on to the next generation is a fundamental role of education – primary, secondary, and postsecondary. Higher education has a unique job in that regard, because it not only polishes the thinking,

quantitative, and communication skills of students, it is also responsible for transmitting the civic and social values of our society.

ADDRESSING THE CHALLENGES

To prosper in the new millennium, America must aggressively address the challenges inherent in the new economy while seizing opportunities to enhance the nation's economic capacity and technological growth. New Jersey is well positioned to do that, boasting abundant human, geographical, commercial, and industrial assets. Its public and independent higher education institutions are integral to expanding those assets and assuring the economic future of the state.

The nation's economy is more dependent than ever on the knowledge and skills of its workers. With its diverse population and changing demographics, the United States can capitalize on its multiracial, multiethnic society to compete successfully – domestically and in the global marketplace. To do so, all citizens must be equipped with the skills and knowledge they need to succeed in and contribute to the new economy. The country is facing a shortage of workers prepared to meet the needs of the competitive marketplace, and the economy will surely suffer if that shortage is not addressed. This is particularly true in New Jersey and other states where industries are intensely knowledge-dependent.

The education and continual upgrading of the workforce and citizenry to sustain the economy and quality of life are dependent to a large degree on higher education. Colleges and universities prepare entry-level workers, middle management, and corporate executives, while providing essential civil and social foundations. Enrollment in higher education across the nation is increasing, and the trend is expected to continue. More Americans are graduating from high school, and according to the U.S. Department of Labor, in 1998, 57 percent of the high school graduates entered college the following fall.

In the past 50 years, enrollment in U.S. higher education institutions has grown from 2.5 million to more than 14 million. Here in New Jersey, college and university enrollment increased 160 percent since 1965, rising from 127,000 students to over 330,000. More than one-third (123,000) of these students are enrolled in two-year community colleges. Over 140,000 attend senior public institutions, with 62,000 at the three research universities and 78,000 at the state colleges and universities. About one-fifth (67,000) of the students attend independent colleges and universities, including 14 public-mission institutions, 3 proprietary institutions, and 8 theological institutions. Since 1965, graduate enrollment in New Jersey doubled from 25,000 to 50,000, undergraduate enrollment grew from 100,000 to 280,000, and part-time enrollment grew from 58,000 to 141,000.

The growth of the nation's population certainly explains part of the increase in participation in higher education. Enrollment growth, however, is influenced also by labor market requirements, which have increased steadily. Put simply, the information-based economy is skills-intensive, and knowledge is essential for growth. High-tech industries account for a significant portion of the new jobs being created across the nation. In New Jersey, technology is the fastest growing sector, requiring specific skills and ongoing training and development.

Nationally, occupations that require a college degree are growing twice as fast as others, and the value of those degrees continues to increase. In 1979, the average college graduate earned 38 percent more than the average high school graduate; by 1999, it had jumped to 71 percent more. While the fastest growing jobs do require a college degree, many jobs being created require specific skills but less than an associate degree. For individuals with training and those with a degree, lifelong learning to upgrade skills and prepare for multiple careers over a lifetime is now a standard expectation.

IMPLICATIONS FOR NEW JERSEY

The dynamic economy and global marketplace have significantly increased the demand for higher education and training at New Jersey colleges and universities. The institutions are expanding their capacity to meet increasing enrollment and needs, enhancing flexibility to serve students effectively through nontraditional means, and strengthening parity among all minority groups in respect to enrollment, academic performance, faculty retention, and graduation rates. As colleges and universities strive to provide both access and success for all potential students, government support for institutions is crucial.

Given the key role higher education plays in preparing future citizens and leaders and sustaining the economy and well-being of the state, the return on investment in colleges and universities is high. Operating support from state and local governments provides the very foundation on which New Jersey's 31 public institutions exist; the state also provides financial support to the 14 independent institutions with a public mission. The state's targeted support for student assistance; higher education facilities, technology and equipment; special programs; and research and development is also fundamental to sustaining a higher education system prepared to meet the challenges of the future.

ACCESS TO KNOWLEDGE AND OPPORTUNITY

GENERAL OPERATING SUPPORT

In FY 1999 New Jersey made a commitment to significantly increase funding for its 19 community colleges. The commitment is consistent with the state's long-range plan for higher education, which calls for an increase in the state's share of operating costs for public institutions to better balance the funding partnership. New Jersey students were paying considerably more to attend community colleges than their counterparts nationally, even after adjusting for cost of living. As a result of the state's annual funding increases, average tuition increases at the two-year colleges have been minimal since FY 1999, and several institutions have frozen tuition. The state's share of operating costs increased from 24.8 percent in FY 1998 to 28 percent in FY 2000. The additional funding provided in the current year and in FY 2002 will continue to increase the state share.

Increased state funding is working to help the community colleges rebalance the partnership among students, the state, and counties. But, it takes time and a commitment from the institutions to moderate both expenditure and tuition increases. It also requires a

commitment from all county governments to move toward their one-third share of operating expenses. Currently support from counties varies considerably, with some paying well above one-third and some paying much less. The average percentage share for counties has decreased, however, from 34 percent in FY 1995 to 31 percent in FY 1999.

SHARES OF OPERATING AID
Community Colleges

	<u>FY95</u>	<u>FY96</u>	<u>FY97</u>	<u>FY98</u>	<u>FY99</u>	<u>FY00</u>
Tuition & fees	42.0%	43.5%	43.7%	43.5%	42.5%	41.3%
State	24.0%	24.0%	23.7%	24.8%	26.3%*	28.0%
County	34.0%	32.4%	32.7%	31.7%	31.2%	30.7%

*First year of \$12 million annual increase in state funding

While all students benefit, the minimal increases in community college tuition since FY 1999 have had the greatest impact on the state's most disadvantaged, low-income students. For them, access to higher education is particularly dependent on reasonable tuition levels, which better enable students to complete their degrees expeditiously and to move into the workforce or to a four-year college. Continued effort to reduce the student share of the partnership to one-third will help attain the desired parity in enrollment and opportunity.

New Jersey's community colleges strive to provide a convenient and efficient transfer route for baccalaureate seekers, reducing overall tuition outlays. They are often the only route to higher education for many economically and academically disadvantaged students, as well as many older returning students who seek to upgrade their skills. The community colleges are also a principal source of human capital at the technical level, which is highly desired by the state's high-tech industries.

Like the community colleges, the state's 12 senior public institutions play a major role in preparing students to contribute to the workforce and society. The state's three public research institutions comprise the land grant university, the comprehensive health sciences university, and the technology research university. In addition to preparing future members of the workforce, these institutions play a significant role in research and development. The state is also advantaged to have nine state colleges and universities that collectively prepare a major portion of the state's workforce at the baccalaureate level. Each of these nine institutions has a distinctive mission, encompassing a variety of educational emphases, including science and technology, education and teacher preparation, service to urban populations, adult and continuing education, and undergraduate and graduate programs in the liberal arts, fine arts, and business disciplines.

The state's long-range plan for higher education calls for a two-third state share of operating costs for the senior public institutions, with student tuition covering the other one-third. Preliminary figures for FY 2000 indicate the state's share was approximately 57 percent. The long-range plan also stresses the need for institutions to be increasingly

diligent in holding down costs, enhancing instructional and research productivity, and collaborating with their peers, as well as in raising external funds to assist in meeting some non-recurring costs. External funds have increased somewhat at the senior public institutions. On average the institutions also have held down expenditure increases over the past five years while taking steps, when necessary, to meet the demand for new students, expand and improve offerings and facilities, and upgrade technology and library collections. The percentage increases in expenditures from FY 1994 to FY 1999 are indicated below. Salaries account for approximately 72 percent of these increased expenditures, with contractual salary increases, which are negotiated by the state in most cases, as the primary driver.

**Expenditures of Public Four-Year Colleges, Universities, and Research Universities, 1994-1999
(excluding University of Medicine and Dentistry and Thomas Edison State College)**

(000s)

	1994	1995	1996	1997	1998	1999
Unrestricted Expenditures*	\$1,107,868	\$1,171,679	\$1,217,611	\$1,250,359	\$1,313,226	\$1,401,708
Increase (\$)		\$63,811	\$45,932	\$32,748	\$62,866	\$88,482
Increase (%)		5.8%	3.9%	2.7%	5.0%	6.7%

* " Unrestricted Expenditures" are defined as Unrestricted Educational and General expenditures, including mandatory transfers, excluding nonmandatory transfers, auxiliary enterprises, and hospitals.

Source: IPEDS reports for the applicable fiscal year.

The state should strongly consider a significant increase for the senior public institutions in FY 2002 to cover inflationary and salary program increases and assist with improvement efforts and growth to accommodate the increasing numbers of students seeking to enroll. Additional funding will move the state closer to the desired two-thirds share of state support, reduce the need for tuition increases to cover increasing operational and debt service expenses, and have a significant impact on the continued affordability, adequate capacity, and overall quality of the public four-year institutions. Restraint in tuition increases in this sector will also enhance access to higher education opportunities for citizens, reduce time to degree completion, and expedite entrance into the workforce.

At the same time, additional state funding will assist the colleges and universities in developing a high-tech workforce to support New Jersey's industry, economy, and societal needs. The state's colleges and universities must be competitive with the best in the nation. They require excellent faculty who are equipped with the latest technology and other resources to prepare students for the rapidly changing workforce that fuels the economy. Additional state support for the 12 four-year public colleges and universities will help them to meet these challenges without relying on students to pay an increasingly larger share of operating and debt service costs and without limiting access and opportunity for middle- and low-income students. It will also assist the institutions in

further enhancing their reputations and attracting more students from within and outside New Jersey.

In order to help maintain a strong sector of independent institutions that offers both access and choice, New Jersey's Independent College and University Assistance Act (ICUAA) provides state funding to the 14 independent institutions with a public mission. The act reaffirmed the state's commitment to the development and preservation of a planned and diverse system of higher education that encompasses both public and independent institutions. Subject to the availability of funds, the ICUAA calls for state aid to this sector based on the number of full-time equivalent New Jersey undergraduates enrolled multiplied by 25 percent of the level of direct support for the state college and university sector. This support recognizes the major contribution of the independent colleges and universities to the state's citizens and economy. These 14 institutions enrolled more than 56,000 students in 1999, and over 75 percent of their undergraduates were from New Jersey. Approximately 14 percent of New Jersey's undergraduate students and 34 percent of its graduate students attend public-mission independent institutions.

Like the public two- and four-year colleges, the independent institutions also require high-quality faculty and infrastructure to help fuel the economy by preparing leaders and a labor force to meet the challenges of the future. In 1995, the Commission's report on funding higher education called for the state to move toward full funding of the ICUAA statute. Consistent with that goal, the Commission recommends an FY 2002 appropriation for the independent institutions that will move the state toward the statutorily prescribed funding level for ICUAA, thereby strengthening the public-private partnership and the institutions' contributions to New Jersey.

EQUITABLE ACCESS AND STUDENT SUPPORT

Given that minority groups will make up nearly one-half of the population, and immigration is expected to account for almost two-thirds of the population growth, the nation cannot afford to underutilize any segment of the talent pool. All must be integrated into the workplace, recognizing issues of equity and the shortage of skilled workers at all levels. Diversity is undoubtedly the nation's greatest opportunity for the future.

Among the industrialized countries in the world, the United States is a leader in providing access to higher education. However, less educated workers of all racial groups continue to fall behind in earnings. All Americans must be equipped with the skills and knowledge needed to succeed. Endeavors to achieve this goal and expand access to higher education and the opportunities it offers must be intensified. The demand for increased skills and lifelong learning require even greater efforts to include workers who have been left behind and not shared in the prosperity.

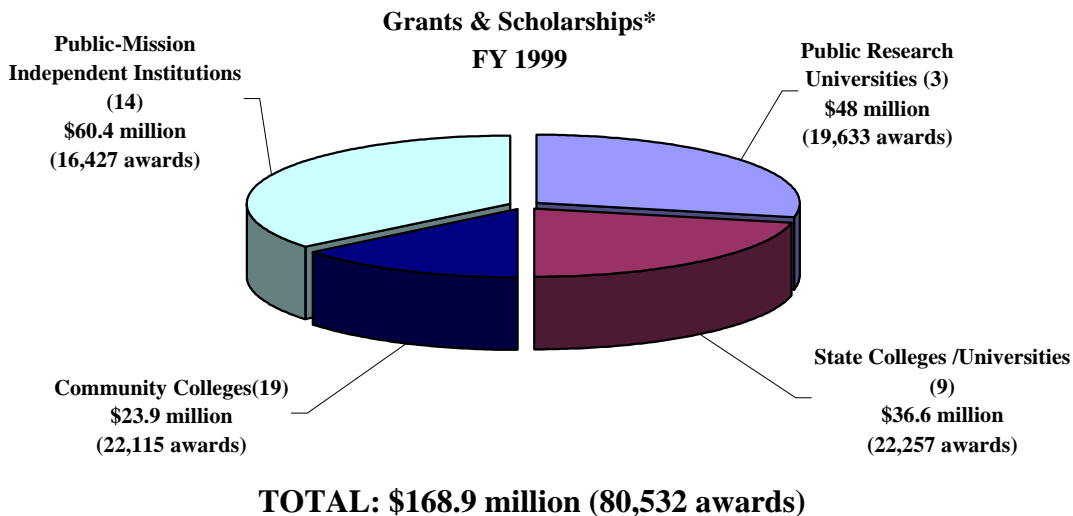
Nationally, educational attainment is rising, but gains vary considerably across racial and ethnic lines. According to the U.S. Department of Labor, 1997 was the first time the high school graduation rate for African Americans was statistically on par with the graduation rate for whites. However, the high school graduation rate for Hispanics, the fastest growing segment of the population, was more than 20 percent lower, with little increase

shown in the 1990s. Programs designed to achieve parity in higher education enrollment, academic performance, and graduation rates are central to capitalizing on the nation's diversity.

New Jersey has a highly educated and diverse populace. Demographic reports indicate that the state is and will continue to be one of the most diverse in the nation. Approximately 87 percent of the residents over age 25 have a high school diploma, and close to 31 percent have obtained a bachelor's degree or higher. This is well above the national average of 25 percent.

The attainment rates among New Jersey minority groups exceed national averages. Minority enrollment in college has increased steadily over the past 20 years, consistent with the national trend. Following a brief decline in the early 1980s, African American enrollment increased from 9.6 percent in 1986 to 12.5 percent in 1999. Hispanic enrollment grew from 4.4 percent in 1979 to 11.3 percent in 1999, and Asian enrollment grew from 1.2 percent in 1979 to 7.1 percent in 1999. While more students from all racial groups are attending college, African Americans and Hispanics continue to lag behind in college attendance and transfer and graduation rates in New Jersey as they do nationally.

New Jersey has a longstanding commitment to state student assistance programs that keep higher education affordable for all residents. The state is ranked second in the nation in the percentage of full-time undergraduates receiving need-based grant aid and in need-based dollars per student; it is sixth in financial aid of any kind as a percentage of total state higher education funding. A recent report in *Postsecondary Education Opportunity* cited New Jersey as one of the top three states in the nation in regard to providing opportunities for college enrollment for students from families with annual incomes below \$25,000. The report acknowledges New Jersey as a state where a student's chances to attend college have significantly increased over the past seven years.



* TAG, EOF, Merit Scholarships, and OSRP

Tuition Aid Grants (TAG): The state's primary need-based aid is provided through the Tuition Aid Grant program, which significantly reduces tuition costs for nearly one-third of all undergraduates attending public and independent colleges and universities in New Jersey. In FY 1999, nearly half of the 57,400 TAG recipients were from families with incomes under \$18,000 a year. Without the support of TAG, along with Educational Opportunity Fund grants, most of these low-income residents would likely be shut out of higher education and the career opportunities it affords.

In FY 2002, increasing TAG to maximum current year tuition levels for full-time students will help ensure access and affordability and continue the state's longstanding commitment to need-based aid. In recent years, support has escalated to extend TAG to the most economically disadvantaged part-time students as well, without limiting funds for those who attend full-time. The Higher Education Student Assistance Authority completed a study on resources and needs of part-time students. After discussing that study, the Authority adopted a recommendation to support funding to extend eligibility under the TAG program to part-time students in accordance with specific tenets established by the Authority. The Commission concurs with the Authority's recommendation and supports their intention to consider award values, funding, and expenditures for a part-time TAG program separately from the same considerations for the full-time TAG program.

Education Opportunity Fund (EOF): Although minority enrollment continues to increase, the state must ensure that all New Jerseyans are able to contribute to and participate in our economic prosperity. The Educational Opportunity Fund Program exemplifies the state's commitment to higher education access and success. Since 1968 the program has assisted students who must overcome economic and educational disadvantages in order to achieve their academic potential.

Recognized as one of the nation's premier state programs to enhance higher education access and opportunity, EOF provides supplemental financial aid to help defray college costs and expenses as well as campus-based academic support services. In FY 2001, student grants were increased, providing an additional \$100 per student at public institutions and \$200 for those attending independent colleges and universities. Considering the academic and social hurdles EOF students must overcome, EOF's counseling, tutoring, academic, career exploration, pre-freshman, and other support programs are also absolutely vital to their success at the college level. It is the link between financial aid and intensive academic and student support services that distinguishes EOF from other student assistance programs.

The EOF program has demonstrated significant achievement, easing access to college for roughly 12,400 students annually and improving short-term student retention. For example, third semester retention rates among EOF students at the state colleges increased from 64 percent in fall 1986 to over 80 percent by fall 1998. Given New Jersey's growing number of immigrants and minorities and the increasing importance of a college degree in our high-tech economy, EOF must build on this success to help more students overcome disadvantaged backgrounds to succeed in college and achieve their educational goals.

As we begin the 21st century, the EOF community is committed to narrowing the gap between transfer and graduation rates for low-income and minority students and those who do not face educational or economic disadvantages. Addressing this challenge will not only ensure a brighter future for more New Jerseyans, but will also enhance the state's overall economic prosperity and quality of life by narrowing the gap between the "haves" and the "have-nots."

To this end and consistent with the recommendation of the Fund's Board of Directors, increased state funding to strengthen the capacity of campus EOF student services is a top priority for FY 2002. State Article IV funding for the campus-based support programs requires a partnership with institutions, which must provide at least a dollar-for-dollar funding match. An increase in state Article IV program support will enable the individual campus programs to enhance student support services and have a greater impact on transfer and graduation rates.

The Fund's Board of Directors also stresses the ongoing challenge to ensure that finances are not a deterrent to college attendance for EOF students. While Article III academic year grants did increase in FY 2001, some students and their families continue to face extraordinary costs relative to their incomes, even when EOF, TAG, and federal Pell grants are considered.

College Bound: Efforts directed toward the educational advancement of disadvantaged children prior to entering college have proven effective across the nation. New Jersey's College Bound Grant Program was established in 1986 to address the educational needs and aspirations of disadvantaged, at-risk youth in grades six through twelve. Without a funding increase in the past 10 years, this exemplary program has supported precollege enrichment activities to help students in Abbott school districts complete secondary school and successfully pursue a postsecondary education in the sciences, mathematics, or technology. Like EOF, the program has proven to have an enduring effect on participants' future academic and career pursuits.

The College Bound program currently serves approximately 2,100 students in 15 programs run by New Jersey colleges and universities. Students from low-income families face many barriers to attending college. Nationally, only about one student in four from a low-income family background makes it to college at all between the ages of 18 and 24 years. To help New Jersey students overcome these obstacles, the College Bound programs reinforce the state's school reform efforts in Abbott districts. The per student cost of College Bound is significantly less than comparable programs at the federal level. In FY 1999, the state's contribution to the program was \$1,381 per student, whereas the federal government's contribution to Upward Bound was \$4,164 per student. Nevertheless, the College Bound programs have achieved success; over 80 percent of the seniors participating in the program in 1999 attended college upon high school graduation.

An increase in FY 2002 will increase and improve services, allowing for additional campus-based programs and expanding the number of Abbott district students served. Further, it will provide for an adequate investment in the computer hardware and software and scientific equipment needed to support high-quality precollege exposure and

enrichment in the sciences, mathematics, and technology. According to a 1999 U.S. Department of Commerce report, the gap in Internet access between those in the highest and lowest income levels grew by 29 percent from 1997 to 1998. College Bound helps to bridge that gap with after-school, weekend, and summer programs that allow students to understand and benefit from the Internet and become skilled in the technology that drives the future.

When College Bound helps disadvantaged, at-risk students stay in school, do well, and go to college, New Jersey reaps vast benefits. These students will become part of the state's educated citizenry. They will be more employable, earn higher incomes, pay more taxes, and contribute to their communities.

Increased investment in College Bound also will enable the programs to leverage funding from other sources, such as the federal government, foundations, and corporations. Last year the state appropriation for College Bound and institutional contributions provided a match to enable the Commission to obtain a five-year \$10 million federal GEAR UP grant.

CAPITAL AND RELATED SUPPORT

Establishing and preserving a safe and adequate physical plant are critical to educating the populace, recruiting and retaining students, fostering research and development, and enhancing the overall quality of higher education. Colleges and universities across the nation are faced with the challenge of keeping facilities and equipment current in order to prepare students for the rapidly changing workplace and to contribute to the research and development that underlies the nation's economy and future. Funding for institutional facilities, technology infrastructure, and other equipment is essential to the nation's success in the information-based economy.

To meet the challenge of maintaining modern facilities and providing students with access to world-class instruction and technology, New Jersey currently supports five targeted capital programs for higher education: Chapter 12 for community colleges, the Higher Education Facilities Trust Fund, the Equipment Leasing Fund, the Technology Infrastructure Fund, and the newly created Capital Improvement Fund to address deferred maintenance and renewal at the four-year institutions. Each of these programs helps to keep the colleges and universities current, competitive, and responsive to student and research needs. The state's recognition of the need to renew and possibly expand these programs as needed is vital.

The FY 2001 commitment to renew the \$100 million Equipment Leasing Fund allows institutions to make significant new investments to keep up with the fast-paced emergence of new equipment and technology. Recognizing the need to continually replace and upgrade today's high-tech equipment, consideration should be given to raising the cap on this fund and issuing an additional \$100 million in bonds within the next two to three years. The need for increased assistance in procuring equipment is driven by high-tech workforce needs and rapidly obsolescing equipment, and staggering the availability of dollars from the Equipment Leasing Fund will avoid the six to seven year lag in availability of state assistance.

The return on the state's investment in capital programs is considerable. A noteworthy example is the \$50 million Higher Education Technology Infrastructure Fund, which was established in 1997. The 45 eligible institutions expeditiously moved to enhance their campus technology infrastructures, enabling advanced student and faculty connectivity and growth in distance learning capabilities. A centralized electronic library (VALE) was established to allow the colleges and universities to share full-text, reference databases and provide access to journals, business directories, and government publications. Perhaps most important, an unprecedented collaborative effort was undertaken to establish a broadband, systemwide telecommunications network, which is close to realization.

Support for these enhancements to campuses are crucial to institutional quality and economic advancement. However, an annual appropriation to assist the state's senior public institutions with capital maintenance and renewal is also a necessary and sound investment that will benefit students and the state.

New Jersey is located at the heart of the nation's most prosperous and culturally rich marketplace. The state is a global pioneer and leader in science and research, communications, pharmaceuticals, computer technology, and biotechnology. Clearly, the state's prominence contributes greatly to the robust economy and the resulting good it produces. On the other hand, such prominence also carries with it responsibilities and challenges relative to higher education's role in the economy. Continued investment in facility and equipment infrastructure is essential to developing the workforce and research required to meet the high-tech, rapidly advancing needs of employers.

INVESTMENT IN EXCELLENCE

New Jersey's system of higher education aspires to be among the best in the world, embracing excellence, access, and affordability. The 1999 update of the long-range plan for higher education cites the considerable progress made since 1996 in addressing the critical state issues around which the plan is designed. It also calls for more deliberate planning and bold action to achieve the goal of being among the best.

Over the past several years, many states have significantly increased investments in higher education institutions, recognizing that knowledge is the principal engine of economic growth and societal well-being. Initiatives designed to enhance excellence within the colleges and universities while directly addressing statewide economic development and societal goals provide dual dividends: students benefit from the enhanced quality of programs and the state benefits from higher education's efforts to address critical state needs. Annual state investments targeted to such needs will strengthen New Jersey's overall competitiveness in the global economy.

HIGH-TECH WORKFORCE EXCELLENCE GRANTS

The FY 2001 \$165 million economic development package, *New Jersey Jobs for the New Economy*, is designed to increase the state's competitiveness in the creation of high

technology jobs and ensure that all citizens share in the state's technology advances and economic success. Recognizing the central role higher education plays in advancing technology and economic growth, the initiative includes a High-Tech Workforce Excellence Grant program, which build on the strengths of New Jersey's colleges and universities.

As a result of the \$15 million competitive grant program, nine outstanding high-tech education projects received funds to create a pipeline of graduates to meet future workforce needs. At the same time, the top quality technology-related programs will help to create, attract, and retain high-tech companies and jobs in New Jersey. The nine programs, ranging from sophisticated engineering and biomedical programs to improved training for math and science teachers, demonstrate the synergy that exists between higher education and New Jersey's high-tech workforce. An appropriation for a second round of grants in FY 2002 will further develop outstanding high-tech academic programs that are essential to meet the demands of New Jersey's highly competitive marketplace.

The excellence grants are consistent with *New Jersey's Plan for Higher Education: 1999 Update*, which calls for state resources to assist institutions in the pursuit of excellence in areas that coincide with state priorities. There is great promise that in addition to spurring the economic well-being of the state, higher education excellence grants will significantly help to move New Jersey's colleges and universities into the upper echelon nationally. As the excellence program evolves in future years, other academic disciplines that are related to state goals should be targeted. The grant program has the potential to attract students and faculty to New Jersey institutions by enhancing programs in a wide range of academic disciplines. For many students and faculty, the strength of disciplines and programs, the quality of faculty, and institutional reputation play a primary role in choosing a college or university.

By investing in excellence at selected colleges, the state will help them become institutions of choice for more New Jersey resident students and attract those from out of state. Similarly, it will attract talented faculty and enhance institutional prominence among the business and government communities. The excellence grants will provide a significant return on investment over time.

TEACHER PREPARATION AND DEVELOPMENT

The preparation of the state's future leaders and workforce begins at an early age and is influenced enormously by teachers from preschool through high school. Teacher quality is recognized as important across the nation. However, after more than a decade of school reform efforts, the nation still has not succeeded in making systemic improvements in teaching and learning. Reform efforts have focused primarily on addressing core content standards, student assessment, and other equally important areas, with little attention to teacher preparation, professional development, or teacher standards.

Over the past three years, however, there has been an unprecedented convergence of opinion on the need to improve teacher quality in order to effect true school reform. The

National Commission on Teaching and America's Future reported in 1996 saying, "What matters most as Americans prepare for a new century is the quality of teaching in American schools." The American Council on Education recently stated that the nation will effectively adapt to the new economy only if the quality of teachers entering the profession improves. And the American Association of State Colleges and Universities called upon higher education institutions to accept responsibility for ensuring they produce excellent teachers.

As states across the nation and the federal government place teacher quality at the top of the agenda, colleges and universities face an enormous challenge and responsibility. The consensus around the need to renew teacher education programs and ensure the quality of all teachers comes at a time when the nation estimates the need for more than two million new teachers over the next decade to meet enrollment increases, fill vacancies due to retirements, and replace thousands of teachers who leave each year in search of new careers. Higher education must therefore prepare more teachers and ensure that they are prepared to effectively undertake their role as educators in a new economy that depends more than ever on knowledge and its application.

The level of need for new teachers will vary among states; New Jersey's population is not expected to increase as much as many other parts of the nation. Nevertheless, the state will experience a significant demand for new teachers. While there will be comparatively modest enrollment increases, there will be large-scale retirements and continuing resignations. In addition, New Jersey faces the need for large numbers of new teachers for three- and four-year-olds to meet the state's Supreme Court mandate growing out of the *Abbott v. Burke* decision. In fact, the effort to improve the quality of education in the state's most disadvantaged school districts will require more and better-prepared teachers in all grades in the Abbott districts. Like other states, New Jersey also faces pressures to decrease class sizes in the early grades and to address shortages in bilingual education, foreign language, special education, and math and science. The state also faces aggressive recruiting competition. Many states are already offering signing bonuses and recruiting aggressively beyond their own borders.

Concurrent with this increased demand are the findings of a number of large-scale studies that provide evidence that the most significant factor in student achievement is the quality of the teacher. There is widespread agreement that teachers must be well prepared in subject areas, understand their students and what they need, and master the professional skills required to make learning come alive. Unfortunately, this is not always the case as evidenced by the significant inequities in teacher quality that currently exist. Recent studies show that poor and minority children – those who are most dependent on their teachers – are more likely to have ineffective teachers, which contributes mightily to the achievement gap between poor and minority children and others.

The challenge, then, goes beyond preparing two million new highly qualified teachers. The nation must also aggressively overcome inequities in teacher quality – deepening knowledge of subjects and how to teach them. The recent report from the American Council on Education, *To Touch the Future*, calls upon the institutions to transform the way teachers are taught.

New Jersey's future prosperity is inextricably linked to its success in preparing high-quality teachers who can provide all citizens with the learning foundation to be

productive members of society. State efforts are underway to improve teacher quality in several ways:

- The State Department of Education (DOE), working with the P-12 and higher education systems, is in the process of reviewing and revising the state regulations for teacher education programs and certification of educational professionals.
- The grade-point average necessary for teacher certification was recently raised to 2.75.
- The DOE is engaged in state-supported teacher recruitment efforts.
- A two-year beginning teacher-mentoring program is getting underway.
- Teachers are now required to complete 100 hours of approved professional development every five years.
- Professional development schools received additional state funding to expand existing and establish new P-16 partnerships.
- The state continues to implement an NSF Statewide Systemic Initiative (SSI) grant to improve science and mathematics instruction.
- Individual colleges continue to undertake various initiatives to enhance teacher preparation and professional development programs.

Higher education plays a role in most of the above initiatives – in some cases a very significant role. Each of these initiatives is important in building a quality teaching corps. Additional efforts must be considered to expand the capacity of colleges and universities to prepare high-quality teachers; expand the recruitment and retention of minority teachers; address the critical teacher shortages in preschool, special education, and mathematics and science; recruit and retain effective teachers in disadvantaged areas; and raise the overall desirability of teaching as a profession. The New Jersey Commission on Higher Education and Department of Education are working jointly to develop a series of related initiatives to comprehensively address these teacher quality and shortage issues.

Much of the responsibility for improving the quality of the educators in our nation's schools depends heavily upon the strength and effectiveness of teacher preparation and development programs provided by colleges and universities in collaboration with the elementary and secondary schools. In many states, special support is now directed specifically to teacher preparation and professional development programs to assist the colleges and universities as they address the challenge of training and retraining more and better-prepared teachers for the 21st century.

With overall enrollment growth in higher education and widely ranging responsibilities and concerns, the state is working in tandem with the institutions to ensure that teacher quality resides atop the state's educational agenda. A special state appropriation in the FY 2002 budget would help colleges and universities that have teacher preparation programs to construct a comprehensive approach to change, with a focus on four primary goals:

- 1) Moving the education of teachers to the top of institutional agendas and articulating the centrality of teacher preparation to the roles and missions of institutions, with a focus on the role of arts and sciences faculty;
- 2) Increasing the state's capacity to produce highly effective teachers to fulfill ever-growing demands and shortages;

- 3) Improving teacher preparation and professional development in a manner that links knowledge and performance expectations for teachers with the content standards for P-12 students; and
- 4) Expanding collaborative efforts with P-12 schools in areas such as curriculum development, mentoring, induction, and professional development.

Such an initiative would strike at the very core of teacher quality by assisting the institutions in their move toward comprehensive program improvement and increased capacity to prepare highly effective educators. It has the potential to become the linchpin program in the state's efforts to improve teacher quality, which in turn will lay the groundwork for parity in educational opportunity and workforce preparedness for all racial, ethnic, and socio-economic groups.

Recognizing the diversity among the institutions, a state incentive grant to be used over one to three years should be provided to each college or university with a teacher preparation program. The Commission and Department of Education are working with the state colleges and universities and representatives from other institutions that have teacher education programs to define criteria that will guide disbursement and use of the grant funds. Each institution will develop a plan to address the above goals, and funds will be available for use following a review by the Commission, in consultation with the Commissioner of Education. Special emphasis should be placed on implementation of practices and programs proven to be effective, and enhanced efforts to facilitate the smooth transfer of teacher candidates from two- to four-year colleges should also be a priority. Ongoing state support for senior public institutions is recommended through additional state-funded positions that are necessary in order to increase the institutions' capacity to meet the growing demand for more teachers. In addition, the senior public institutions may request that a portion of their grant funds be included in their base budgets to assist in supporting ongoing salaries for new faculty hired to increase capacity.

The Department of Education is working with representatives from the state colleges and universities and with the Commission to shape two related initiatives. The first is a targeted effort to recruit highly qualified, undergraduate and post-baccalaureate teacher candidates of color, as well as highly skilled candidates for areas of shortage such as math, science, special education, and preschool. The Department, in consultation with the Commission, would oversee a program to provide bonuses for such candidates who teach in Abbott school districts. The program could have an immediate effect in FY 2002 by placing more highly qualified new teachers in disadvantaged schools. It could also have a long-term effect by enticing more students of color and students interested in math, science, special education, and preschool to complete teacher preparation programs and teach in an Abbott district.

The second related initiative is focused on teacher retention and quality. The Department, in consultation with the Commission, would provide grants to the six state colleges and universities that prepare the majority of new teachers in the state. The institutions (The College of New Jersey, Kean University, Montclair State University, New Jersey City University, Rowan University, and William Paterson University) would establish Professional Development Academies. These six academies would be learner-centered, content-based, and tied to the Core Curriculum Content Standards. They would provide

two- to three-week paid summer sessions for current teachers, as well as ongoing seminars during the school year. Elementary and secondary students could participate in summer Learner's Academies on campus, which would provide academic enrichment for students and a laboratory setting for teachers to try out new strategies and ideas.

Together, these three, targeted initiatives have the potential to significantly advance school reform efforts and meet state needs. They will positively impact schools statewide and play a particularly important role in the effort to provide parity in the state's Abbott school districts. High-quality educators are among the state's most precious resources, and the investment in these initiatives will reap significant returns. However, the issue of an adequate number of high quality educators extends beyond preschool to grade 12. In future years, planning efforts should consider a means to better recruit, retain, and develop high-quality diverse faculties for colleges and universities as well, recognizing that a large turnover is expected in the first decade of the 21st century.

RESEARCH AND ECONOMIC DEVELOPMENT

Research and development is critical to the nation's economic competitiveness in the 21st century, and academic research plays a major role. According to the National Science Foundation, in 1998, an estimated \$26.2 billion was spent on R&D at academic institutions. A 1999 licensing survey by the Association of University Technology Managers (AUTM) indicates close to \$34 billion in economic activity and 280,000 jobs directly attributable to the commercialization of academic research in 1998. The AUTM survey also reported 4,808 new U.S. patent applications that yielded 3,668 new licenses among AUTM members' institutions.

Louis P. Berneman, AUTM's President and Managing Director for the Center for Technology Transfer at the University of Pennsylvania, stated, "Woven together, these numbers tell a compelling story of how new technology derived from academic research is a fundamental pillar of industrial advancement. Knowledge – its creation, storage, transmission, and application – is the principal source of our increasingly good health, unprecedented economic growth, and unrivaled global society."

The National Science Foundation reports that academic institutions are realizing financial benefits from their research results, and university gross income from patenting and licenses reached \$483 million in 1998. In addition to generating income, patent and license discoveries also commercialize research results funded primarily by the federal government for the public good; recruit, reward, and retain faculty and students; encourage collaboration with industry; and promote economic growth.

NEW JERSEY RESEARCH AND DEVELOPMENT

Academic and corporate research is instrumental in creating new businesses and jobs, spawning new industries, and improving productivity in New Jersey. With one of the highest concentrations of technical professionals in the nation, New Jersey is home to more than 500 research and development laboratories and employs over 140,000 research development scientists and technicians. Over \$8 billion is spent in New Jersey on private

R&D annually -- more per worker than any other state. Nevertheless, the state competes with other states and countries for high-tech entrepreneurs, companies, and technically trained workers. Therefore, New Jersey business, academia, and government must work together to support research and technology, developing a solid leadership role in the 21st century.

Approximately 90 percent of the federal R&D dollars nationally go to doctorate-granting institutions. In New Jersey, relatively small state investments in university research infrastructure have produced highly leveraged returns in external support dollars. Academic research and partnerships with industry have served public policy goals in diverse areas such as health care, environmental engineering, food production, communications technology, and transportation infrastructure. During the years between 1987 and 1997, the state's universities collectively increased their research expenditures by well over one-fourth, spending approximately \$369 million. However, New Jersey institutions continue to be below the national average in research funding from the federal government and they lag in industry support as well.

In FY 2001 the state appropriated \$10 million to increase university research capacity and provide matching state dollars for federal grants. This represents a strategic investment to ensure that New Jersey's research universities are competitive and able to contribute effectively to the needs of the high-tech, information economy. Continued support in the FY 2002 budget will increase federal and corporate research dollars flowing to New Jersey's research universities.

CLOSING COMMENTS

Clearly, the 21st century holds both daunting challenges and exceptional promise for the state and the nation. Hopefully the economic expansion of the last decade will continue, and New Jersey is well positioned to capitalize on the abundant opportunities a booming economy affords. However, as a state, we must act aggressively to ensure our continued competitiveness, future prosperity, and societal well-being. This is especially critical with respect to the human capital that fuels economic growth and sustains our technological advantages.

Higher education is an essential component of New Jersey's knowledge infrastructure, vital in developing the current and future workforce and contributing to research and development. Our 56 public and independent colleges and universities prepare individuals for a broad array of career opportunities and meet the ever-increasing demand for lifelong learning and job-related skills. Accessible, affordable higher education institutions are critical to ensuring that economic opportunities are available to all, regardless of their background or socioeconomic level.

Historically, the economic and social benefits accrued by citizens and the state have repaid New Jersey's ongoing investment in higher education many times over. Now, the dawn of the 21st century presents a unique opportunity to redouble those past gains and

cement our position as a leading high-tech state. The state's strong fiscal position – a result of the economic prosperity higher education has helped to fuel – makes possible the higher level of investment needed to keep our colleges and universities responsive, competitive, and accessible. Increasing state spending in FY 2002 for operating aid, student assistance and support programs, and campus infrastructure and high-tech equipment will directly benefit New Jersey's economy and its quality of life. At the same time, new commitments to improve teacher preparation and professional development and expand our high-tech workforce will create a pipeline of individuals with the skills and knowledge to lead our state into an increasingly complex and competitive future.

Investments in higher education are no longer discretionary; they are imperatives for ensuring tomorrow's future. The increased investments recommended for FY 2002 will have a momentous impact on the state's economic vitality in the years to come. Continued support is also necessary for the other ongoing programs that help keep higher education accessible and affordable for all New Jerseyans. Together they will ensure the state's economic prosperity and equitable opportunities for all of its citizens.