

# **SUNY WHITE PAPER FOR THE COMMISSION ON HIGHER EDUCATION**

SEPTEMBER 24, 2007

## **EXECUTIVE SUMMARY**

The following series of white papers is the work of several volunteer working groups drawn from various SUNY campuses and constituencies including faculty, staff and administrators. The papers are submitted for consideration by the Commission on Higher Education.

There are three introductory themes that underlie the papers and our recommendations. First, excellence in public higher education is key to the economic, cultural, and civic well-being of the state; second, public higher education in the state of New York is already good, and with fairly straightforward steps can become world-class; and third, excellence requires a consistent, long-term commitment by the state and our constituents.

SUNY's mission is to offer access to a high-quality; affordable education that creates an educated workforce that will in turn enrich New York's economy. SUNY is a large and diverse institution that serves the entire state of New York. It enriches the local area not only by educating the young people, but also by applying scholarship to improve the quality of life and the economic vigor of the community. The individual universities and colleges also enrich their communities by attracting a cadre of highly-qualified faculty, staff and graduate students.

If New York's goal, as Governor Spitzer has noted several times, is to make the SUNY system among the best of all state university systems, it is necessary to look at its strengths while acknowledging those areas that need to improve. SUNY does have strengths. If one compares all public California universities and colleges or all public North Carolina universities and colleges with all of SUNY, one finds that SUNY excels in many measurements. SUNY has outstanding, even world-class programs at our various campuses. However, SUNY is currently under-funded to be competitive overall.

However, SUNY also has weaknesses, some of which are the natural product of its history. The state university is young – less than 60 years old. It struggled in its early years with differences between the Board of Trustees and the Board of Regents, with many policies and decisions made that hampered its growth and development. Just one example was the prohibition to do private fund-raising, which has left a legacy which SUNY still has to overcome. Although the

university had rapid expansion in size and investment in the Rockefeller years, it suffered major cut-backs, particularly in the 1990s.

At present three major budgetary problems constrain SUNY from competing at the highest levels. The first is the result of a combination of under-funding and rapid enrollment growth, leading to a deficit in full-time faculty. The second is a governance structure that treats SUNY as if it were just another state agency, limiting the freedom to compete that other state universities now possess. The third is decades of under investment in the capital plant and equipment, leaving the system with billions of dollars in deferred maintenance. A satisfactory resolution to these issues would result in a dramatic increase in the quality and competitiveness of SUNY. The resource issues - - faculty and buildings/equipment - - can be solved by a combination of increased and regular state funding, predictable tuition, and philanthropy. The "SUNY compact" is aimed at identifying necessary resources and providing a plan to obtain them. Addressing the governance issues will require straightforward legislative changes.

If the primary goal is to increase national and international competitiveness, then it is absolutely urgent that the issue of faculty numbers and quality take a central place in the recommendations of the commission and the actions of state government. It is high quality faculty who are at the base of a high quality university. But SUNY has not added sufficient numbers of faculty, and is at risk of losing many of the faculty currently at SUNY.

At present, the ratio of students to faculty is far too high: SUNY has too few faculty to teach its students at the level they deserve. Classes are too large, and there are too few faculty to provide the kind of advisement and co-curricular activities that enhance higher education.

Furthermore, dependence on adjunct or part-time faculty is also far too high. Part-time faculty tend not to provide the entire spectrum of service to students - - from advising to curriculum development. Universities tend to hire part-time faculty when they need instructors for a particular surge, but high quality institutions do not rely on them for long periods of time. SUNY has too many part-time faculty. When this problem is combined with the large demographic shift in faculty now taking place - - that is, the retirement of large numbers of faculty hired in the 1960s and 1970s when SUNY was expanding—the issue is dire. Overall, SUNY needs an additional 1000 faculty just to attain parity with comparable public universities nationally (Table 1). SUNY needs to add about 450 additional faculty in the doctoral sector alone just to achieve the average ratio of students to faculty for doctoral institutions. This number of new faculty would also mean that the doctoral institutions within SUNY would be at the average for percentage of full-time faculty. To reiterate, this is 450 additional faculty members just to get to the mean, not to become one of the leaders.

The Empire Innovation program needs to be expanded so that SUNY can recruit high-impact faculty.

**Table 1. SUNY Faculty Compared to National Public Peers**

Sectors	Student FTE/Full-time Faculty		% Full-time Faculty	
	National Peers	SUNY	National Peers	SUNY
<b>Doctoral</b>	12.7:1	13.9:1	78.4%	67.9%
<b>Comprehensive</b>	20.9:1	22.7:1	65.0%	49.8%
<b>Technology</b>	21.5:1	22.5:1	59.5%	55.2%
<b>Community College</b>	31.5:1	33.7:1	35.2%	33.1%

**Number of Additional Full-time Faculty for Parity with National Public Peers**

Sectors	Additional Full-time Faculty	
	Student/Faculty	% FT Faculty
<b>SUNY Total</b>	1,100	1,043
<b>Doctoral</b>	460	449
<b>Comprehensive</b>	290	447
<b>Technology</b>	43	27
<b>Community College</b>	307	120

Source: IPEDS and SUNY Office of Institutional Research Files using Fall 2005 and 2006 data.

Note: Analysis excludes contract colleges at Alfred and Cornell.

The case for this increase in full-time faculty and other measures to enhance the quality and impact of SUNY are addressed in the white papers. The commission has already received white papers from SUNY on the topic of governance and the need for regulatory reform. The series of papers attached here deal with academic quality in teaching, research and innovation, tuition, student success, transfer, workforce and access.

Among the recommendations these papers include are the following:

- SUNY faculty members must be hired from among those at the cutting edge of their fields, and must be permitted the opportunities to remain current and to learn new pedagogical techniques. Faculty travel, sabbaticals and programs for faculty development are urgent.
- As faculty are recruited, there must be attention to the factors that will also retain them. As the national and international environment becomes increasingly competitive, it is important to ensure that faculty be equipped with core facilities, instrumentation, technical staffing, access to high performance computing capabilities and to networked libraries, and support for research administrative services
- SUNY faculty must represent the international and intercultural environment in which our students will live and work. Hiring practices must aim at a diversification of faculty.
- Students need the opportunity to explore their communities and learn about the changing world environment. Support for study abroad, service learning opportunities and a variety of other student financial aid is essential.
- SUNY needs the equipment and research infrastructure to support scholarship, research, teaching and learning. Start-up funding for new faculty, and equipment for research and instruction need adequate and ongoing financial support.
- Research faculty members advise graduate students, who in turn become the leaders of the future. SUNY graduate stipends are currently uncompetitive and need to be increased. In addition, merit graduate fellowship programs are needed to attract a high quality and diverse graduate student population
- The brightest and best undergraduate students in New York and elsewhere should be recruited to our campuses. Bringing these students to our campuses is a first step in ensuring a more well-educated and economically competitive New York population. Although the TAP program is helpful, merit scholarships are also needed in order to compete for the best New York students.
- A tuition policy needs to be developed that will ensure predictable tuition costs for New York families. Tuition authority should be vested in the system Board of Trustees to ensure flexibility to allow for differences among the campuses.

- The Tuition Assistance Program (TAP) needs to be indexed to costs at various campuses, and coverage should be extended to part-time students.
- Tuition increases must not substitute for state support: the SUNY/CUNY compact should be adopted to stabilize base state support, with tuition being invested in improving the quality of students' academic experience, including purchase of the latest technology, state-of-the-art instructional equipment, study abroad support and so forth.
- Support for programs that provide peer mentoring, alumni mentoring, campus life and residential programs that increase academic success and student retention need to be expanded. Examples include the Educational Opportunity Programs, the Course Redesign Initiative, the degree-audit initiative, and investments in support systems for campus life initiatives, advising, service learning, and counseling
- Transfer and articulation within the system must be addressed, perhaps through the development of a system-wide course-to-course equivalency database for all degree program academic majors. The Teacher Education Transfer Template (TETT) may provide a prototype for a SUNY-wide transfer project modeled on the basis of the successful Florida Statewide Course Numbering System.
- All portions of SUNY can alleviate some of the transfer issues by developing specific learning outcomes that are expected for a student to complete any course at any college. Such explicit learning outcomes would permit senior colleges to assure themselves that courses met acceptable standards for transfer.
- To advance economic and workforce development, more collaboration with private industry should be supported. The SPIR (Strategic Partnership for Industrial Resurgence Program), which is a collaboration between our university engineering programs to improve manufacturing processes and improve business practices, should be expanded and its scope revisited.
- New York State needs to develop a strategic plan for adult and continuing education throughout the state that would prepare displaced workers for new careers and increase the quality of the state's labor force.
- Incentives and plans need to be developed for ever-better teacher preparation, particularly in the STEM (science, technology, engineering and mathematics) disciplines.
- A variety of programs can improve student success for first-generation or underrepresented students, as well as those from economically underprivileged backgrounds. These include STEM diversity scholarships, student mentoring programs, undergraduate research opportunities and service-learning internships.
- Share best practices to ensure student success such as first year seminars, supplemental instruction for high risk courses, placement testing, intrusive advising, learning communities, and early-warning and support systems for at-risk students.

## ACADEMIC QUALITY IN TEACHING AND LEARNING

### INTRODUCTION

Teaching and learning are the core missions of higher education, and therefore critical contributors to any institution's academic strength.

The current higher education environment raises many complex issues regarding teaching and learning. The ways students learn are dramatically shifting and expanding, requiring faculty to become more adept at using technology and alternate pedagogies. As a more diverse student population enters higher education, professors need to become adept at working with students from a greater range of cultural backgrounds and levels of academic preparedness. The move toward greater accountability in higher education also requires educators to pay greater attention assessing and documenting student learning outcomes.

Because of the range of higher education institutions in the SUNY System—each with a unique mission and a distinct student population—the specific issues related to academic quality in teaching and learning vary from campus to campus. Yet regardless of institution and student type, academic quality in teaching and learning is profoundly influenced by the curriculum (*what is taught*); the pedagogy used (*how the subject is learned*); and the faculty (*who is teaching*).

### THE CONTENT OF THE CURRICULUM

*A broad-based educational foundation.* Today's students, unlike their counterparts just a generation ago, are likely to change careers several times in their lives. In such an environment, students need a broad-based educational foundation that develops knowledge across the sciences, social sciences, humanities, and arts. This foundation or core curriculum provides the breadth of knowledge on which quality professional education can be built. Even as they develop mastery in a specialized field of study, students need to cultivate their abilities to think critically, to write persuasively, to understand the way different disciplines solve problems, to research a topic, and to communicate effectively.

*Knowledge at the cutting edge of disciplines.* Quality teaching and learning require that students graduate with current knowledge in their fields, even as many disciplines are in processes of rapid change. This knowledge includes the theoretical/conceptual building blocks of the field, as well as the standard methods of inquiry and analysis used in the discipline. Students also need

opportunities to test this knowledge in a range of increasingly complex situations such as through projects and internships.

*Global and intercultural perspectives.* American college students, as compared with their counterparts in other industrialized countries, tend to be less knowledgeable about world affairs. Yet these students are going to be competing in a global marketplace and need to develop a global awareness, including a comfort level in working in international and intercultural settings. Quality education therefore requires that international and intercultural perspectives are embedded in courses across the curriculum. In addition, students should have opportunities to participate in study abroad, international exchange, and service-learning programs which will give them opportunities to learn about and to interact meaningfully with people from different cultures and backgrounds.

*Interdisciplinarity.* One of the hallmarks of a quality education is its ability to encourage students to bridge disciplines. Although colleges and universities tend to structure their curricula around specific majors and departments, there are always opportunities to draw connections across disciplines in ways that deepen understanding of a topic and inspire students to apply knowledge from one field to another. Quality teaching and learning therefore probe the connections between disciplines and develop new knowledge at the intersection of disciplines.

## **THE NATURE OF PEDAGOGY**

The design of the curriculum (the content taught by the professor) must go hand in hand with the design of the pedagogy (the way students learn the content). In this regard there have been a number of recent developments in pedagogy that allow faculty to deliver content more effectively across the spectrum of learning styles of our students.

*Inquiry-based learning.* Given the rapidity with which knowledge and the content of disciplines changes today, faculty have rely on new models that emphasize how to learn instead of rote memorization. Inquiry-based or active learning is best described by the adage, "Tell me, and I forget; show me, and I remember; involve me, and I understand." It is widely recognized to be a useful alternative to the traditional lecture. Involving undergraduates in research, a practice which is gaining greater currency in colleges and universities, represents a form of inquiry-based learning.

*Effective use of technology.* In contrast to their counterparts just a generation ago, today's students have been raised in an era of digital media, audio, and text. They are electronically networked, mobile learners, used to multi-tasking and having access to information around the clock. Consequently, the creative use of technology in and out of the classroom provides a compelling way to connect

with these students, increase levels of information literacy, and enhance learning. The quality of student learning can be enriched, for example, through the use of multimedia, interactive course websites, electronic discussion boards, and web-enhanced instruction.

*Learning environments.* Academic quality in teaching and learning is also influenced by the learning environment. Class size is one such factor: smaller classes allow greater interaction with the professor and peers and allow for a more personalized learning experience. The creative use of new technologies can also bring about significant improvement in student learning outcomes in many learning contexts. Many colleges and universities are increasingly developing student learning communities, which bring small groups of students remain together in blocks of classes and sometimes in living environments as well. Such a model allows for peer learning and group mentoring of students.

*Service-learning:* When students engage in meaningful service in their communities and beyond, they put their academic knowledge into action to solve real-world problems. Service-learning goes beyond volunteerism to connect service to academic experience and to encourage reflection about learning. Academic quality in teaching and learning is enhanced through such an approach, since students must often test and confront their assumptions about the world and open their minds to new perspectives and possibilities. In the process they learn civic responsibility and strengthen their communities.

*Assessment of student learning.* All colleges and universities must now rigorously measure student learning to be accredited, to secure external funding, and to demonstrate effectiveness to Boards, parents, and legislators. Assessment of student learning is a dynamic and integrative process that begins with identifying a program or course's objectives and goals for student learning. Faculty can then define ways in which this mastery can be demonstrated. An analysis of the results of such a measurement provides important feedback to the professor and allows for program/course enhancement. Consequently regular documentation and periodic assessments of student learning outcomes are important components of quality of teaching and learning.

## **THE STRENGTH OF THE FACULTY**

*Academic credentials.* The ideal academic credentials for faculty vary greatly across disciplines and type of higher education institution. Whereas there are many excellent teachers/scholars that may not hold a terminal degree, in general, however, the terminal degree in the field is considered essential to ensuring that students receive the highest quality education. Faculty with a terminal degree are prepared to engage in the full breadth of the teaching, research, and service missions of a college or university. While the balance among the three expectations may vary by institutional type, these three activities collectively provide the base on which academic quality is built. For example,

faculty that are active in research and publishing remain at the cutting edge of their discipline and are able to bring the excitement of discovery to their students. At the same time, teaching undergraduates courses keeps faculty in touch with the broader context in which their research is situated. Likewise, service activities—such as service on boards of professional societies or community organizations—feed positively into teaching and research.

*Nature of the academic appointment.* Students perform best when taught by full-time, tenure-track professors. This is not because part-time faculty, contracted mainly to teach a few courses, are less qualified or concerned about their students. Rather it because a full-time appointment allows faculty to engage in the breath of activity— teaching, research, and service – that form the foundation for academic excellence. Due to higher education budget cuts, however, there has been a regrettable trend of filling faculty lines with part-time faculty (variously referred to as adjuncts, instructors, lecturers). Whereas such appointments provide a flexible way to deal with immediate needs, the increasing use of part-time faculty over a long period of time can erode the quality of teaching and learning.

*Faculty workload.* Another issue central to quality teaching and learning is faculty workload. The annual expectations placed on a professor in terms of teaching (the number of courses taught, number of weekly contact hours), research (number of refereed publications, conference presentations, artistic performances), and service (service on departmental and campus committees, administrative responsibilities) may vary greatly by institution and discipline. Regardless of institution, however, faculty workloads have been increasing over time. Full-time faculty are increasingly expected to bring in research funding, to be engaged in curriculum development and assessment, and to teach more classes. The growing reliance on part-time faculty means a commensurate increase in the committee work of each full-time faculty member. Quality teaching and learning relies upon ensuring workloads that allow faculty the time to develop new pedagogical approaches, to remain active as scholars, and to assess student learning.

*Faculty development.* Faculty development initiatives can have a far-reaching positive impact on academic quality. They provide a focused opportunity for faculty to learn about new instructional techniques and pedagogy, to embark on new scholarly projects, and to develop leadership, administrative, and governance skills. Together they serve to re-tool and re-energize faculty in their work. Being selected to lead or to participate in a faculty development workshop also represents a meaningful recognition for a job well done and can succeed in further motivating faculty in terms of service toward their institutions and professions. Regularly scheduled and readily available faculty development opportunities contribute vitally to the goal of achieving academic quality in teaching and learning.

## RECOMMENDATIONS

- Ensure that faculty have opportunities to keep at the cutting edge of their fields, to update their courses and programs, and learn new pedagogical techniques. This includes supporting faculty travel to conferences, funding sabbaticals, supporting faculty development initiatives, and providing release time for course and program development.
- Create a truly international and intercultural environment on campuses through recruitment and hiring practices that bring in students and faculty of diverse backgrounds, ethnicities, cultures, and beliefs.
- Increase student participation in study abroad programs and service-learning opportunities. This will require not just providing scholarships/financial aid but also providing incentives for faculty to develop more study abroad and service learning courses.
- Invest in teaching and learning centers on campus that can train faculty in the creative use of technology and alternate pedagogies. Provide teaching development grants to faculty to give them the necessary release time to redesign their courses.
- Ensure that students are taught primarily by full-time faculty with terminal degrees who are expected to remain engaged in scholarship and service. Full time faculty without terminal degrees who aspire to a career in academia should be encouraged, through mechanisms such as tuition remission at SUNY doctoral institutions and special sabbatical leaves, to obtain the terminal degree.
- Explore ways in which campuses within the SUNY system can exchange ideas and information on teaching techniques, student learning, and scholarship through open forums.

# RESEARCH AND INNOVATION AT THE STATE UNIVERSITY OF NEW YORK

## INTRODUCTION

The State University of New York system is the largest as well as the youngest public system of higher education in the nation. SUNY's strength lies in its 64 campus range and diversity - comprising research universities, comprehensive colleges, medical schools, and community and technical colleges. Most importantly, SUNY provides an accessible, affordable, and quality college education.

SUNY is at a critical juncture in its maturation and we welcome the broad view and the ambitious agenda of the Commission on Higher Education in surveying, analyzing, and developing a comprehensive plan for SUNY's future.

This document outlines specific recommendations for propelling SUNY to a leadership role in the knowledge economy of New York State and of the nation. Such leadership is critical to further developing excellence within the public university system that New York deserves and for which it has desperate economic and cultural needs, especially in several severely economically depressed regions. Research expenditures for SUNY using National Science Foundation comparative data (2005) were \$825 million, most of which comes from the strong research/medical/doctoral sector, but with contributions from all sectors. Based on this strength we further believe that SUNY can be the engine of innovation and of industrial and economic revival and vitality well into the future, if the State allocates its resources in support of SUNY prudently and strategically.

While assessments can vary, it is estimated that every \$1M of research funding that comes to a university creates tens of new jobs are created and the economy is enriched directly by at least double the actual expenditure, with significant additional revenue and economic dynamism created by accrual of taxes and multiplier effects. With this as our touchstone, we make the following recommendations:

- **FACULTY:** Recruit and retain excellent faculty who have demonstrated superior performance or potential as research leaders, and develop the infrastructure to support them, in sufficient numbers to drive sustained discovery, invention, and innovation across the disciplines, propel excellence in graduate and undergraduate education, and significantly increase extramural research funding.

- **BUILD ARENAS OF RESEARCH EXCELLENCE:** We further propose focusing resources on the following critical **arenas of excellence** that will build on existing strengths within SUNY campuses:
  - Biomedical, Clinical, Biotechnological, and Translational Research
  - Materials and Electronics Science and Engineering Research
  - Alternative Energy, Environment, and Clean Technology Research
- **DEVELOP THE TECHNOLOGICAL INFRASTRUCTURE:** Continually re-invest in the infrastructure of connectivity to sustain collaboration, communication, and shared computing across institutions and to link SUNY with both private and public entities throughout the State, nationally, and globally.

## **THE ROLE OF OUR NATION'S RESEARCH UNIVERSITIES**

The U.S. invests \$40 billion annually in academic research. This breathtaking figure speaks to the importance of basic and applied research to the nation, and why it is essential for New York to remain competitive in this environment. Although, methods for assessment vary, it is reasonable to suggest the following. On average, each research-active faculty member attracts and expends \$300K in research funding. For each \$1M of research expenditure, tens of new jobs are created, enriching the economy by at least double for each dollar of research grant expenditure. As a direct outcome of these expenditures approximately 10 percent of these additional funds are returned to the state via local and state tax revenue. However, these points still underestimate the greater impact of the resultant effects.

Collectively, SUNY schools have produced more than 750 patents, \$150M in royalties over the past 10 years, and established 47 start-up companies. In 2006 alone, 284 new invention disclosures were generated. While the statistics demonstrate value, they do not reflect, for example, the discovery of the principles behind magnetic resonance imaging, the PSA test for the early detection of prostate cancer, many well known computer algorithms, and a plethora of other basic and applied discoveries and innovation that have improved our quality of life, nor the Nobel prizes, and other top awards that our faculty have earned for themselves and the State of New York.

Virtually any serious discussion about the economic development of some locality or state begins with the critical importance of university-based research. Basic research produces innovation and discovery, applied research translates knowledge discovery into economic development, and social science and humanities help us to understand and prepare for the impact of the rapid changes unleashed by new technologies, as well as the complex behavior of humankind. In short, one of the best investments a State can make in its future

is in the research capacity of the public university and the intellectual capital that it generates. .

## **FACULTY QUALITY AND STRENGTH DRIVES RESEARCH AND INNOVATION**

The public investment in our nation's elite public universities is quite remarkable, as has been the pay off. Most of the states that are home to these elite institutions have supported the development of public universities that are the academic and research equals of their private peers. This strengthens numbers, expertise, and infrastructure available to advance an economy that is driven more and more by the ability to innovate and to capitalize on that innovation. We must build and expand the base of scholars who are recognized, nationally and internationally, and who provide extraordinary intellectual capital. That intellectual capital is essential for creating the right environment for advances in the knowledge-based global economy. This strategy has proven effective time after time in Texas, California, North Carolina, Maryland, Pennsylvania, Wisconsin, Michigan and Ohio. Each state has significantly invested in and built the public sector research infrastructure that complements their private institutions.

While not universally true, the size of an institution's faculty and student body, the depth of its financial support, and prioritized investment are the critical elements for making and sustaining premier research universities. Thus, targeting and strengthening faculty expertise is critical. Ultimately, the success or failure of New York's innovation will reside in the major products of higher education (1) innovation coming from knowledge discovery, and (2) the students, and our citizens, educated in that environment. It cannot be argued that producing the highest-quality scholarship while educating the same number of students is optimally done while reducing the number of full-time faculty engaged in research and scholarship. Yet that is what we have been doing.

There must be fundamental change if New York is to remain competitive. Faculty growth also extends SUNY's ability to educate increasing numbers of graduate and post-baccalaureate professional students. These new professionals with their advanced degrees from SUNY's world-class professional programs will be our state and region's next generation of physicians and lawyers, business leaders, engineers, and healthcare specialists.

It is not enough simply to hire faculty to achieve the research expansion and scholarly prominence we seek. The faculty who have to be hired to create the innovation environment required by the State must include senior high-impact hires. There is no reason that the goal of New York's research campuses should not be to bring the world's leading researchers and scholars to New York. Likewise, the brightest of junior faculty who have been involved in the most leading-edge research and scholarship must be attracted to the State, and be

mentored as their careers develop. This combination is essential to produce the next generation of innovation. These are lofty but achievable goals. All states know that the key to the future is, in part, maintaining and strengthening research universities. Its importance is also understood internationally. Thus, competition for such faculty expertise is fierce, but this cannot be left exclusively to the large private institutions. Building and maintaining the faculty envisioned, requires and drives the development of the requisite infrastructure for their scholarship. This combination creates the knowledge discovery-innovation-economic development environment evident in Triangle Park, Silicon Valley, Austin, and Ann Arbor.

Our specific recommendations include:

- **Hiring and retaining senior ‘high impact’ and extremely promising junior faculty.** The faculty marketplace is highly competitive. The best young faculty and more mobile, senior, high-impact faculty in laboratory-intensive disciplines command expensive start-up packages. But more importantly, need the requisite equipment and instrumentation to fulfill their promise of research and innovation for which they are recruited in the first place. In a knowledge-based competitive global economy, continuous innovation must be the goal, if the State is to be competitive. The hires should be made in arenas of excellence (see below) which build on current strengths. Thus, start-up support provides long-term infrastructure in areas that the State and University have prioritized, and also to counter outside offers for the leaders of our most productive research programs. In this environment, it is cheaper to maintain the strength of initial investment, than to reinvest. Simply put, it is cheaper to retain than recruit “impact” faculty.

Since 2000, there has been virtually no New York State or SUNY funding for faculty start-up needs. This fact, together with only incrementally increasing operating budgets, constrains faculty growth. It is necessary to create a more structured funding mechanism to provide the start-up needs of faculty research growth for our SUNY research universities.

- **Recruiting High-Quality Graduate Students.** The best graduate students insist on working with the best faculty members while receiving the most attractive support packages a university can offer. With time and advancement, they become increasingly important members of the research team, contributing ideas and generating independent results. Currently, graduate stipends are well below what is considered to be competitive. It is critical that graduate student stipends be raised to levels that can attract the very best U.S. and international graduate students to SUNY.

Graduate students are at once a product of the University, and a talented group contributing to the research and innovation environment of the

University and the State. Both are critical contributions to building New York's innovation environment into the future.

- **Investing broadly in Research Infrastructure.** It is not enough simply to hire faculty to achieve the research expansion and scholarly prominence that New York needs and SUNY deserves to have. Faculty require a truly dynamic and supportive campus environment and state-of-the-art infrastructure to create new knowledge, educate greater numbers of students, and devise the technology transfer and service programs that will have a transformative impact in the larger region and across the state.

Beyond space, exemplary faculty research requires high-performance computing capabilities, networked libraries that make available higher concentrations of digitized materials, and comprehensive pre- and post-award research administration services. Such infrastructure is required to be competitive for large federal training awards (e.g. National Institutes of Health, National Science Foundation, and Department of Energy) that are instrumental in recruiting and retaining high quality, diverse students, particularly graduate and professional students.

- **Capital Facilities.** New faculty will require office space. Furthermore, in those laboratory-intensive disciplines, faculty will require well-equipped space to house research teams of graduate students, postdoctoral fellows, and technicians. Interdisciplinary research often requires unique space. Investment is essential; a clear, but by no means only, example of the success of a unique approach to supporting research space is the College of Nanoscale Science and Engineering at Albany.

## **BUILD RESEARCH ARENAS OF EXCELLENCE**

National priorities, the global economy and its regional and state-wide impact point to several critical growth arenas that can benefit significantly from immediate and broad enhancement. These also provide the key to understanding SUNY's strengths and weaknesses and the investments required to become highly competitive. Finally, it is necessary to understand the structural requirements for maintaining maximum connectivity and collaboration in all areas of human endeavor.

- **Biomedical, Biotechnological, Clinical, and Translational Research**

The rationale for strengthening the State's biomedical research capabilities is compelling because of its direct and indirect impact on 1) the economic vitality of the region and State 2) the education of health care professionals; 3) enhanced quality of life; 4) the explosive opportunities from advances in our understanding of the genome and the function of stem cells.

New York's academic and research institutions ranked #1 in the percentage of NIH funds received for health-related initiatives prior to 1977. Through 1977, New York received over 16% of the total research funds allocated through the NIH. Unfortunately, New York's share of federal research investment has dramatically declined over the last 30 years. Sturman et al ("Losing ground: NIH Funding to New York State) published a study documenting this decline and its causes from 1971-1995. By 1999 New York had dropped to 3rd behind California and Massachusetts receiving only 9.7%. From 2003 through 2005 the percentage declined further to 8.7%. While the causes for this are many, the investment in biomedical infrastructure in the public sector by many states, including California has been greater than by New York. New York has some of the finest private medical centers in the country, both historically and now, and that has not changed. The strength of our public medical research facilities and the investment therein has simply not kept pace with other states.

What can be done? Realistic goals to reclaim a greater share of federal research dollars are a must. Such a goal should establish and define the critical infrastructure needs that must be addressed to make the goal a reality. Currently, under the NIH-Roadmap (<http://nihroadmap.nih.gov/>), the largest and most multi-disciplinary- competitive research and training program is the one to establish Clinical and Translational Research Centers of Excellence (CTSAs). SUNY must successfully compete for such awards, whose goals are to support the building of world-class research programs that link basic and clinical research and translate findings and discoveries to greatly improved interventions and bedside treatments. It is very clear that, in the near future, institutions without CTSAs will be at a serious disadvantage in the national competition for biomedical research resources. The CTSA institutions will be correctly perceived to constitute an academic and research elite even among the best research universities, and there will be substantial funding programs for which only CTSAs will be eligible. To succeed requires having competitive programs in the game. CTSA proposals funded thus far have reportedly included institutional and/or state commitments of \$5-40 million. SUNY's ability to partner with one another in the training of health-care professionals across sectors could provide unique opportunity because of the specific emphasis on training the CTSA.

New York has wisely decided to make investments in stem cell research or regenerative medicine. For these investments to provide the longest-term returns they should focus on intellectual infrastructure, although modest research project dollars could be considered because of limited federal funding. Large dollars spent here, should not be primarily spent on individual research projects with short-term expenditures for real and immediate gains, of which there would be many. Rather, state investment should be in infrastructure, or the future. The ominous trend of ever shrinking shares of NIH's research budget coming to New York points, in part, to the relative lack

of infrastructure building. Even in targeted programs, we must invest in permanent infrastructure to support the presence of this educational network and opportunity. New York is slipping further and further behind other states in biomedical research infrastructure. If the choice is between supporting individual research projects, and building infrastructure, the State would be positioning itself better if it were to invest in permanent infrastructure of talent. Our large and extremely prestigious private medical schools continue to lead the world but their capacity, though enormous and a source of immense pride in itself simply doesn't permit New York to effectively compete with states that are also investing heavily in their public biomedical infrastructure.

A significant State investment with a goal of providing the support necessary to become competitive for 6-7 NIH-supported CTSA's, or other national centers of health-care (biomedical) excellence is warranted. This would represent a long-term investment in upgrading New York's substantial biomedical research and clinical translation enterprise, one of the State's areas of great strength; the investment should be both short- and long-term. In setting priorities among meritorious programs, the commission should be thinking not only about the long-term development of higher education serving current and immediate future needs, but also about positioning the state to respond to opportunities that will present themselves in the future. An investment with the stated goal would enhance collaboration and provide meaningful additional capacity throughout New York.

- **Materials and Electronics Science and Engineering**

New York State has advantages of location, prior planning and investment, and some key collaboration with industrial partners, which offer great opportunity to invest in the broad area of materials and electronics science and engineering, an area of relative strength for New York. It is high technology, broad in its multidisciplinary coverage, and provides much potential for the future, while also paying current dividends. Specifically, concentration would be on the properties of nanoscale materials and incorporation of those materials into useful platforms. Those platforms may be biosensors for healthcare purposes, memory storage and transfer devices for faster and more efficient computers, chemical and/or disease agent sensors for homeland and forensic security purposes, and the list goes on.

What are SUNY's current strengths? Notable, but not exclusive examples include the presence of the Brookhaven National Laboratory on Long Island managed by Battelle Memorial Institute and Stony Brook. Recent advances in analytical capabilities at a world-class level include a new national Center of Functional Nanomaterials (a \$100M – Department of Energy facility), a new 78 teraflop high performance computer (ranked 6<sup>th</sup> in the world for computing speed), and the construction of the new synchrotron, NSLSII, that allows the use X-rays to explore the properties of materials at a level of brightness

approximately 10,000 times beyond what is currently possible at NSLS.. These improvements in infrastructure provide opportunities for basic research second-to-none.

Complementary to this are the development of the College of Nanoscale Science and Engineering at the University at Albany, and the connections the university has been able to make with industrial partners who see the advantage of the clustered infrastructure being built at U. Albany including its ability to drive applied innovations, and the highly competitive and federally supported Center for Advanced Technology and Integrated Electronics at Binghamton. The engineering schools at Binghamton University, University at Buffalo, Stony Brook University, Cornell, Rensselaer, Rochester and others can exploit these infrastructural investments and industrial partnerships to train engineers, including those with bio-medical interests, in the highest quality environments, especially if collaboration and connectivity are optimal. New materials protocols, new packaging of materials, new devices, packing of multiple devices for expanded multi-function in a single device, electronics, and photonics, can all be advanced to the most competitive in the nation, provided the right interdisciplinary clusters of faculty are transformed into broad Centers of Excellence.

Albany's success to date constitutes proof of concept and Stony Brook's and Brookhaven's successes in bring in much needed advanced infrastructure to the State are powerful milestones. International SEMATECH came here from Austin, Texas and Advanced Micro Devices (**NYSE: AMD**) from Europe precisely because we have built the infrastructure, people (faculty), equipment and space. Faculty recruited into such an environment will be the State's future. They train students, envision and refine new basic ideas, apply these to important problems, and collaborate with their industrial colleagues.

Additional investment in our present centers of excellence that permit expansion of their core expertise in this broad area would be a critical driver to increasing the reputation of New York's higher education institutions, and to the potential to compete at the highest levels in an area that will drive economic development at various places in the country and throughout the world.

- **Alternative Energy, Environment and Clean Technology**

The diminishing supplies and difficulty of refining oil demand research into new technologies and approaches for the production of clean, green alternative sources of energy. Multidisciplinary research efforts on the production of energy from renewable sources, organic or hydrogen, or sustainable sources, wind, geothermal, solar, nuclear will provide both basic and applied advances important to economic survival and development. Further, understanding policy, economics, and environmental regulations driving the political and societal will to implement alternative energy policies

will be important in placing New York in a leadership position in the development and use of alternative, cleaner sources of energy. Clusters of faculty in SUNY's Engineering and Environmental Colleges must advance our capabilities; whether it is the development of new methods to produce butanol from biological material, the safe production, use, and handling of hydrogen, or the conversion of solar and wind energy into electrical consumption. The need to reduce carbon dioxide emissions is also a major imperative. Bartering of carbon dioxide credits requires analysis and understanding. Scrubbing and filtering technologies that allow us to recapture potential pollutants, to be used or reused in valuable processes continues to be important. The value of our environment must be protected; investment in our research infrastructure and multidisciplinary faculty expertise in this arena is required to keep pace and will only become more and more important, as we move to the future.

## **COMMUNICATION AND CONNECTIVITY**

Finally, in the global innovation economy, the success of our efforts in any research area or field of human endeavor relies upon communication networks, and the connectivity with others. The two key elements to this are 1) the quality and strength of New York's information technology networks, and related computational capacities, and 2) our ability to navigate the world of international affairs.

The information technology resources needed to support an economy driven by high technology, bio-medical advances, and financial markets (i.e., a knowledge-based) in the future is critically dependent on the cyber infrastructure network and the computational resources available to the State. NYSERNet, the SUNY Learning Network, the SUNY Learning Environments, SUNY Connect, the SUNY-clcu portal, and others all provide a good semblance of networking. One is primarily a research network, some are primarily distance education or library networks, and others provide similarly specialized services. The SUNY networks are successful in providing access across the 64-campus system.

The most efficient cyber infrastructure networks of the future will have to provide access to remarkably powerful computational resources such as New York Blue, recently installed in partnership with Brookhaven National Laboratory, and its sister machine located at RPI. These networks and the equipment, whether it be storage, computing capacity, imaging capabilities, and/or class room and other educational capabilities, require informed centralized development and management of the 'plumbing' and the procedures for using it, coupled with the decentralized management and flexibility for research and scholarship at locations of different sizes throughout the state. The bandwidth and network infrastructure supporting data storage, computational modeling, education, advertising, film-making and other imaging, and distance learning all require common networks. High bandwidth, high speed networks support all aspects of

education, most aspects of the modern economy, and are critical to science and technology research, and will be so more and more. Real-time remote medicine, medical record keeping, and medical education are just now emerging.

SUNY proposes that, with its higher education partners, CUNY and CICU, higher education is in the best position to address the centralized investment in this critical infrastructure. Building in a fragmented way, is not the best nor the most economical way to address New York's communication and computational needs. A single network supporting research, distance education, libraries, and knowledge passage in real time is the prudent investment. We must claim leadership in this area. A bold approach to grid computing is a critical component of an innovation-based society. This capability would breakdown the traditional barriers to computational research, in which access to sufficient computational resources is often times an impediment to research. Grid computing promises to dramatically change this paradigm by using advanced communication networks to bring the power of high-performance computers directly to the researcher's desktop. Indeed, the recent formation of NYSGrid ([www.nysgrid.org](http://www.nysgrid.org)), a consortium of New York's higher education institutions, is recognition of the important role that cyber infrastructure and grid computing play in today's research and education environments.

## **RECOMMENDATIONS**

- **FACULTY ENHANCEMENT IN RESEARCH ARENAS OF EXCELLENCE**

The Empire Innovation Program, established to attract the best qualified researchers and scholars to New York as faculty members (impact hires and members of clusters) should be expanded. Clearly, the addition of over 300 faculty to the SUNY System alone is necessary, with another 200 in support of biomedical research and education. (see below) These faculty should be exceptional, and their recruitment highly competitive. Assuming an average salary of \$140,000 and start-up funds of \$400,000 (equipment and space) each faculty member requires a permanent investment of an average of \$200,000 permanent funds and \$400,000 in one-time funds. This investment will not cover the entire start-up package of a senior hire, or a junior hire where cutting-edge analytical equipment is required, and the Universities should be expected to match the State's investment. The total investment here is \$60,000,000 in permanent funds and \$120,000,000 in one-time funds. Budgeted over a five year period, \$12,000,000 in permanent funds per year, plus \$10,000,000 permanent investment in equipment funds per year (i.e. \$50,000,000 in permanent funds would allow start-up costs to be recycled through these hires), would underwrite the needed expansion of faculty in critical areas outlined above. Total investment over 5 years would be \$110,000,000.

- **FACULTY ENHANCEMENT IN BIOMEDICAL RESEARCH – SUNY MEDICAL SCHOOLS**

Addition of 200 faculty in this sector alone would require \$40,000,000 in permanent funds and \$80,000,000 in start-up costs. Again, over 5 years, \$8,000,000 per year, plus \$10,000,000 in permanent equipment (or start-up) in each of the first four years, would provide the requisite investment in the faculty and related infrastructure. The total investment would be \$80,000,000 over 5 years.

- **RESEARCH CENTER OF EXCELLENCE SUPPORT**

Three primary areas of research have been identified. In each case, there are currently centers of excellence supported in part by the State, and in some cases by industry. We are requesting an additional \$50,000,000 apiece to enhance the development of research-innovation hubs. At the biomedical research level, 1) the funds will be used to promote the development of Clinical and Translational Research Centers; at the materials properties level 2) the funds will be used to promote nanotechnology research, and the development of electronic, bio-, and sensor devices and networks; and 3) finally to promote research on alternative fuels, and cleaner environments. The investment would be \$150,000,000 competitively awarded to collaborative centers or clusters excellence in the targeted arenas.

- **CONNECTIVITY, COMMUNICATION, AND COMPUTATION**

The State of Louisiana, arguably the poorest, or one of the poorest states in the nation has, recently invested over \$65 million to establish a state-wide high speed network and computational resources that will ultimately connect most of the institutions of higher education in the state. The investment is in a single network and high-performance computing equipment that serve the needs of the highest-end research, and library and outreach functions. The State of New York has invested in high-end computing, and in a variety of networks. The State should make a significant investment in a single network that brings the highest speed and bandwidth to its best research campuses, as well as to its comprehensive colleges, and many of its community colleges. Upgrade of the present networks and connections throughout the state would require an investment of \$75 million or \$15 million a year for five years. The robustness of this network would support the highest caliber scientific research, distance education activities, health-care related uses, library connectivity, and be the framework on which grid computing up and down the higher education system would become available. NYSERNet is the starting point. The total investment would be \$75M to advance the state's research, education, and knowledge transfer capabilities.

- **GRADUATE STIPENDS**

Graduate stipends are currently not competitive with peer institutions. Research and brain gain in the State of New York requires us to be competitive for best

trained and highest quality students nationally and internationally. Whether these students are in our best science and technology programs, our social science and humanities programs, or our professional graduate programs, including professional master's programs; research and innovation does not optimally occur without an excellent, competitive graduate education program.

- **REDUCE UNNECESSARY ROADBLOCKS TO KNOWLEDGE-DEVELOPMENT**

Finally, we are requesting for the public sector universities, the elimination of regulations and requirements that unnecessarily impede research and knowledge-development. For example, common practice for private institutions is a post-audit for major equipment purposes instead of multiple pre-audit screenings that take time measured in months to more than a year in some cases. This puts us at competitive disadvantage with others, and such barriers should be reduced or eliminated wherever possible.

## **PREDICTABLE TUITION AND FUNDING POLICY**

## **BACKGROUND**

When the State University was formed in 1948, it was established with the goal of creating one of the leading and largest public higher education systems in the country. While SUNY remains the largest unified university system, it has not yet reached the intended stature.

New York State's approach to higher education funding has caused the University to fall behind many of its national peers, limiting the resources available to the University. The national average increase in tuition and fees at four-year public colleges went from \$2,334 in 1992-93 to \$5,836 in 2006-07. By contrast, SUNY's state operated campuses have increased tuition only twice over the same period (28.3% in 1995-96 and 27.9% in 2003-04). These tuition trends have changed the relative standing of SUNY's national average. In 1992-93, SUNY tuition and fees were \$587, or 25.1%, above the national average. By 2006-07, SUNY tuition and fees were \$311, or 5.3%, below the national average. Had SUNY state operated campuses increased tuition and fees at the national average, SUNY tuition and fees would now stand at just over \$7,300 or about \$1,775 higher than the current rate of \$5,525 per academic year.

The overall funding differences are even more dramatic when considering the impact of reductions in state funding including a 1995-96 tuition increase of \$750 more than offset by \$850 per student reduction in state funding, and 2003-04 tuition increase of \$950 more than offset by a \$1,200 reduction in state funding. Consequently, over the past 15 years, the net impact of each SUNY tuition increase has actually been a net overall funding decrease.

SUNY tuition increases show a series of years with no increases followed by large hikes. Such drastic increases are problematic for both the University and its students. Without being able to count on what revenues will be available in any year, it is very difficult for the University to plan strategically for the future. In addition, parents and students are at a significant disadvantage in planning the finances needed for a SUNY education if tuition can rise so steeply and unpredictably.

## **PEER TUITION TRENDS**

SUNY tuition lags behind public institutions in New England, the Midwest, and the Mid-Atlantic States in the tuition and fees charged its students.

**Four-Year Public Institutions  
In State Undergraduate Tuition/Fees  
(2006-07)**

		<b>\$ Diff SUNY</b>	<b>% +/- SUNY</b>
<b>New England</b>	\$7,658	\$2,133	38.6%
<b>Midwest</b>	\$7,075	\$1,550	28.1%
<b>Middle States</b>	\$6,860	\$1,335	24.2%
<b>SUNY</b>	<b>\$5,525</b>	<b>\$0</b>	<b>0.0%</b>
<b>Southwest</b>	\$5,462	(\$63)	-1.1%
<b>South</b>	\$4,739	(\$786)	-14.2%
<b>West</b>	\$4,646	(\$879)	-15.9%
<b>National Average</b>	\$5,836	\$311	5.6%

A further pattern of consistently lower resident and out-of-state tuition for SUNY, when compared to nearby states, occurs in state-by-state comparisons (Table 1), and also for differing types of SUNY campuses (see doctoral-granting university comparisons in Table 2 and comprehensive college comparisons in Table 3). Given that three neighboring states (New Jersey, Pennsylvania, and Ohio) have some of the highest tuitions in the nation and also provide higher per student state support, the case for changing how all SUNY institutions are funded becomes even stronger.

**THE PLAN**

This paper provides a proposal for a predictable funding policy for the State University of New York that invests in educational programs, attracts top faculty and students, and preserves access for qualified students.

It is a proposal for the deregulation of tuition and for devolving tuition authority to the SUNY Board of Trustees that will:

- Provide the University with a predictable source of incremental tuition revenue, while ensuring that State funding is provided for mandatory cost increases, including personal service costs, inflation, energy and planned enrollment increases;
- Develop tuition rates based on differences in program mix, institutional quality, or geographical considerations such as lower non-resident rates for campuses located near population centers in adjacent states, and for distance learning;

- Be capped by the Higher Education Price Index (HEPI);
- Use annual incremental tuition revenue to improve academic quality, most notably by increasing the number of full-time faculty at State-operated campuses.
- Be included as a key component of a SUNY Compact with New York State.

The six key elements of the plan are:

- **Annually Indexed Tuition Rates.** Beginning in fall 2008, and annually thereafter, the resident tuition rate increases, established by the SUNY Board of Trustees, will normally be based on the Higher Education Price Index (HEPI). The Board of Trustees may set tuition in a range up to HEPI.
- **Conditions for Indexed Tuition Rates.** The index would be followed by the SUNY Board of Trustees as long as the following conditions are met:
  - There is no reduction from prior year State tax dollar funding, after reflecting mandatory contractual salary increases; and
  - Incremental State tax dollar support is provided for subsequent mandated collective bargaining costs (e.g. salaries, benefits, etc.), inflation, energy, approved enrollment increases and any other costs mandated by State statutes, rules or regulations outside of the scope of the University's influence.
- **Deregulation of Tuition.** The SUNY Board of Trustees requires the flexibility to approve campus based tuition to reflect varying market conditions, including differences in student demand and differing costs of educational offerings. The majority of other states support differential tuition. For example, as shown in Appendix Table 4, a total of 41 states allow higher tuition for doctoral-granting campuses. Further, many states allow for differences between campuses, normally within a range established by the governing board. In order for SUNY to move to the front ranks of higher education, the SUNY Board of Trustees requires the flexibility to adjust for differences between campuses. Any approved difference in resident tuition should be limited to a rate that never exceeds one and a half times the "normal" rate. For an undergraduate it is defined as the current resident undergraduate tuition of \$4,350, plus any subsequent HEPI adjustments.
- **Tuition Assistance Plan (TAP)**  
The issue of affordability for the neediest students is largely dealt with for State residents through the TAP program, which ensures nearly 50% of all

SUNY students receive this need based aid and, of those 60% receive full SUNY tuition, but not the maximum TAP award, which currently is only available to students attending private universities. This disparity in TAP awards to students, based on type of institution a student attends, deserves careful reconsideration. Additionally, in order for the tuition plan proposed in this paper to succeed, the maximum TAP award will need to be indexed to tuition increases above the cap.

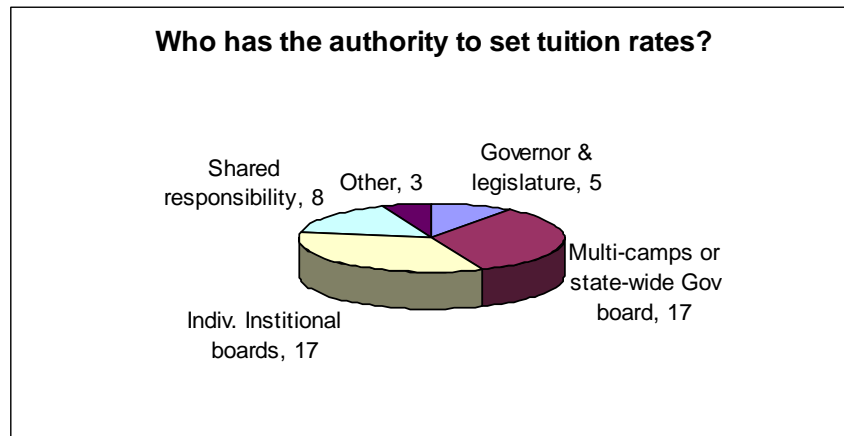
- **Non-resident Undergraduate and Graduate Students.** Increases in non-resident undergraduate tuition rates and tuition rates for all masters, doctoral, and first professional students would not be subject to the above limitations or guarantees. In practice, increases in these rates would always exceed resident tuition rate increases and would be set based upon market considerations. Currently, SUNY non-resident undergraduate tuition is \$10,610, ranking 34<sup>th</sup> in the nation.
- **Investments in Academic Quality.** Indexing will begin in 2008-09 and the additional revenue would be reinvested in areas that directly improve the quality of students' academic experience, including full-time faculty, purchase of the latest technology, and state-of-the-art instructional equipment, just to name a few. All reinvestment of this revenue would be in accordance with a plan developed by the University and submitted to the Director of the Budget, Chairman of the Senate Finance Committee, Chairman of the Assembly Ways and Means Committee, and the Chairs of the Senate and Assembly Higher Education committees.

By removing the determination of the tuition rate from a political process, which is unpredictable and on a timetable far different from the University's, we would actually give much greater predictability to the cost of education for students and their parents and ensure their costs would not rise beyond a given range in any year. The tax-dollar funding formula and tuition plan presented in this paper would be far more rational and predictable and just better policy for the State, for SUNY students, and for their parents.

The plan proposed in this paper would bring rationality to University funding without sacrificing accountability. It would provide the University the flexibility and self determination necessary for it to grow into one of the leading public universities in the country. This kind of an approach to funding is appropriate for a University reaching maturity in its operations, its research, its service to the State and the country, and its ability to provide an outstanding education to hundreds of thousands of New York citizens each year.

Such an approach is neither radical nor experimental. A number of other systems have similar types of funding approaches. A recent study of

accountability and flexibility in public higher education<sup>1</sup> surveyed over 100 financial officers at the state and campus levels from all 50 states on a series of questions on the budgetary systems and practices in their state. One of the major issues in most states is the authority to set tuition. The Governor and legislature were deemed to have primary authority for tuition setting in only five states; multi-campus boards or state-wide coordinating agencies were identified in 16 states; and the individual institutions were deemed to have this authority in 17 states. Respondents viewed this as a shared responsibility between the governor and legislature and the higher education system in 8 states, and at least 4 states noted that this issue was currently a matter of contention.



## CONCLUSION

The State University of New York is a maturing institution that is poised to make a leap into the top echelon of public university systems in the country. What is necessary for this move is a new level of flexibility with corresponding accountability. Not flexibility only in regulatory relief, but rather a combination of reliable, predictable State tax dollar support through a funding formula based on maintenance of effort and flexibility at the campus level in setting tuition to meet mission, program mix and competition. This would provide a firm foundation upon which the University can continue to build its excellence in instruction, research and public service. It will provide not only a rational tuition policy, but an overall rational funding policy that will provide for a margin of excellence that was previously unattainable.

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<sup>1</sup> "Accountability and Deregulation of Public Higher Education", Leif Hartmark, Higher Education Program, Rockefeller Institute of Government, (forthcoming)

**Table 1**  
**All Public Colleges and Universities**  
**2006-07 Average Tuition and Fees**

	<u>In-State</u>	<u>Rank</u>	<u>Out-of-State</u>	<u>Rank</u>	<u>Out-of-State as a % of In-State</u>
New Jersey	\$8,942	1	\$14,589	21	163.2%
Pennsylvania	8,718	2	15,339	13	175.9%
Michigan	7,604	6	16,582	6	218.1%
Ohio	7,363	7	14,711	20	199.8%
Illinois	7,315	8	14,821	18	202.6%
Minnesota	7,175	9	11,037	40	153.8%
Maryland	6,993	10	16,078	9	229.9%
Wisconsin	5,782	22	13,936	26	241.0%
<b>SUNY*</b>	<b>5,341</b>	<b>23</b>	<b>11,443</b>	<b>34</b>	<b>214.2%</b>
Texas	5,233	25	13,676	28	261.3%
California	4,393	35	16,560	7	377.0%
<b>CUNY</b>	<b>4,309</b>	<b>37</b>	<b>11,109</b>	<b>39</b>	<b>257.8%</b>
North Carolina	3,827	42	14,131	23	369.2%
Georgia	3,469	48	12,054	32	347.5%
Florida	3,124	50	14,810	19	474.1%

Note: Rank is based on all states, and is for informational purposes only.

\*SUNY average is tuition (\$4350) + average broad-based fees (\$991). Average shown earlier in report is as directly reported by campuses as part of the annual College Board survey and may include other fees.

Table 2

**AAU Public Universities**  
**2005-06 Average Tuition and Fees**

	<u>In-State</u>	<u>Rank</u>	<u>Out-of-State</u>	<u>Rank</u>	<u>Out-of-State as a % of In- State</u>
University of California-San Francisco	\$19,682	1	\$31,927	1	162.2%
Cornell University	17,367	2	30,367	2	174.9%
Pennsylvania State University	11,508	3	21,744	12	188.9%
University of Pittsburgh	11,436	4	20,784	13	181.7%
University of Michigan	9,798	5	28,570	3	291.6%
University of Illinois-Urbana	8,634	6	22,720	11	263.1%
University of Minnesota	8,622	7	20,252	15	234.9%
Michigan State University	8,108	8	19,808	19	244.3%
The Ohio State University	8,082	9	19,305	21	238.9%
University of Maryland	7,821	10	20,145	16	257.6%
University of Missouri-Columbia	7,415	11	17,192	25	231.9%
University of Virginia	7,370	12	24,290	9	329.6%
Indiana University	7,112	13	19,508	20	274.3%
University of California-Santa Barbara	6,997	14	24,817	4	354.7%
University of Texas-Austin	6,972	15	16,310	27	233.9%
University of California-Irvine	6,770	16	24,590	5	363.2%
University of California-San Diego	6,685	17	24,505	6	366.6%
University of California-Berkeley	6,512	18	24,332	7	373.6%
University of California-Los Angeles	6,504	19	24,324	8	374.0%
Purdue University	6,458	20	19,824	18	307.0%
Texas A & M University	6,399	21	14,679	29	229.4%
University of Wisconsin	6,284	22	20,284	14	322.8%
<b>University at Buffalo</b>	<b>6,068</b>	<b>23</b>	<b>13,238</b>	<b>34</b>	<b>218.2%</b>
Iowa State University	5,634	24	15,724	28	279.1%
University of Oregon	5,613	25	17,445	23	310.8%
University of Iowa	5,612	26	16,995	26	302.8%
University of Washington	5,610	27	19,907	17	354.8%
<b>Stony Brook University</b>	<b>5,575</b>	<b>28</b>	<b>11,835</b>	<b>35</b>	<b>212.3%</b>
University of Nebraska	5,540	29	14,450	30	260.8%
University of Kansas	5,413	30	13,866	31	256.2%
University of Colorado-Boulder	5,372	31	22,826	10	424.9%
University of North Carolina	4,613	32	18,411	22	399.1%
University of Arizona	4,498	33	13,682	32	304.2%
University of Toronto	3,985	34	13,437	33	337.2%
University of Florida	3,094	35	17,222	24	556.6%
Rutgers	N/A	N/A	N/A	N/A	N/A
University of Missouri-Kansas City	N/A	N/A	N/A	N/A	N/A
University of Missouri-Rolla	N/A	N/A	N/A	N/A	N/A
University of Missouri-St. Louis	N/A	N/A	N/A	N/A	N/A

**Table 3**

<b>Comprehensive/Masters Colleges</b>					
<b>2006-07 Average Tuition and Fees</b>					
	<u>In-State</u>	<u>Rank</u>	<u>Out-of-State</u>	<u>Rank</u>	<u>Out-of-State as a % of In-State</u>
New Jersey	\$8,880	1	\$14,426	10	162.5%
Pennsylvania	6,821	4	13,314	20	195.2%
Ohio	6,697	6	12,205	27	182.2%
Illinois	6,637	7	13,800	15	207.9%
Michigan	6,608	8	14,074	13	213.0%
Minnesota	6,573	9	11,776	30	179.2%
Maryland	6,115	11	14,381	11	235.2%
Wisconsin	5,635	18	13,129	22	233.0%
<b>SUNY</b>	<b>4,957</b>	<b>26</b>	<b>11,416</b>	<b>31</b>	<b>230.3%</b>
Texas	4,784	28	13,021	23	272.2%
<b>CUNY</b>	<b>4,333</b>	<b>34</b>	<b>11,133</b>	<b>34</b>	<b>256.9%</b>
North Carolina	3,643	40	13,375	19	367.1%
Georgia	3,364	44	11,290	33	335.6%
Florida	3,309	45	15,704	4	474.6%
California	3,219	46	13,389	18	415.9%

Note: Rank is based on all states, and is for informational purposes only.

**Table 4**

<b>States that ...</b>	<b>States</b>
have higher tuition for doctoral granting campuses than for masters / bachelors colleges <b>(41)</b>	Alabama, Arkansas, California, Colorado, Connecticut, Delaware, Georgia, Hawaii, Illinois, Indiana, Kansas, Kentucky, Louisiana, Maine, Maryland, Massachusetts, Michigan, Minnesota, Missouri, Montana, Nebraska, New Hampshire, Mississippi, New Jersey, New Mexico, North Carolina, North Dakota, Ohio, Oklahoma, Oregon, Pennsylvania, Rhode Island, South Carolina, Tennessee, Texas, Utah, Vermont, Virginia, Washington, West Virginia, Wisconsin
are without both doctoral granting and masters/ bachelors campuses <b>(5)</b>	Arizona, District of Columbia, Iowa, Nevada, Wyoming
don't have higher tuition for doctoral granting campuses compared to master's / bachelors <b>(5)</b>	Alaska, Florida*, Idaho, <b>New York</b> , South Dakota

## STATE UNIVERSITY OF NEW YORK STUDENT SUCCESS

### INTRODUCTION AND BACKGROUND INFORMATION

Timeline and perspective are both important considerations when assessing student success. From the students' perspective there are short term objectives, such as learning new skills or facts that will assist them in understanding the world, there are intermediate objectives like earning a degree or getting into graduate school, and then there are long term objectives which include living a life, as a community leader and productive citizen, that is rich in personal and professional opportunity. From the institutional perspective, colleges have a responsibility to understand their role in providing a rich academic, cultural and social environment that facilitates student success and, through this understanding, establish a nurturing place. The metrics associated with each of these perspectives and timelines are radically different, but they all play an important part in developing an understanding of what it takes to foster student growth and be a first-rate college or university.

Terenzini<sup>1</sup> suggested that the question colleges should be asking is, "What aspects of students' experience over which the institution has some control tend to promote retention or attrition?" Each of our institutions continues to grapple with the question in order to develop, implement, and assess policies that will enhance campus life and improve retention. George Kuh, in a recent Chronicle of Higher Education article entitled "*How to Help Students Achieve*", indicates that a key to academic success for students is their engagement –the time and energy they devote to their studies and other educationally purposeful activities, in and outside of the classroom, positively influence their grades and persistence.

### RETENTION AND GRADUATION

Traditional measures of student success in higher education include retention rates, graduation rates, satisfaction surveys, engagement data, and transfer and job placement data. Both individual campuses and SUNY System Administration collect and analyze these sources of data and compare results, over time and among institutions. Research on persistence has been studied extensively and institutions and System Administration have developed and enacted multiple strategies to encourage and assist student retention to graduation.

SUNY System Administration data include by campus and sector:

- First-time, full-time student retention rates
- New transfer student retention rates

- First-time, full-time student graduation rates (Associate or Baccalaureate)
- Success rates of two year college students after transfer (by initial institution)
- Full-time transfer student graduation rates (Baccalaureate)
- Successful Educational Outcomes which factors in a student transferring to another institution in addition to graduating

System Administration also has the capability of developing the above reports for student cohorts based on factors such as gender, race/ethnicity and academic program to assist campuses in assessing results from specific strategies they implemented to increase retention to graduation as appropriate.

When compared to public institutions nationally for the 2004 first time full-time cohort, SUNY institutions exceed in retaining students across all sectors with an 82.4% retention rate for all SUNY four-year institutions compared to 73.0% nationally. Community College comparisons are significant also with SUNY Community Colleges retaining 62.3% of first time full-time students compares with the national average of 57.3%<sup>1</sup>.

Similarly, data indicate higher graduation rates for SUNY state operated institutions compared to four-year public institutions nationally.

**Four, Five and Six Year Graduation Rates  
For First-time, Full-time Baccalaureate Students  
Entering in Fall 1999, as of Fall 2005  
For SUNY and National Four-Year Publics**

Sector	Baccalaureate Graduation Rates		
	Four-Year	Five-Year	Six-Year
<b>SUNY</b>	<b>42.0%</b>	<b>57.0%</b>	<b>59.9%</b>
National Four-Year Publics	27.5%	48.1%	54.0%

As shown, SUNY's baccalaureate graduation rate of 59.9% exceeds the national six-year average (54%) by nearly six percent. When successful educational outcomes (all degrees, transfers and those still persisting toward a degree) are considered, more than 88.6% of SUNY baccalaureate students are successful. These data account for the swirl, associated with multi-institution matriculated students who transfer within SUNY four-year colleges and universities, but does not include students who leave SUNY institutions prior to graduation and migrate to private colleges or public colleges outside of New York State.

**Community College Three-year Graduation Rates  
and Successful Educational Outcomes**

<b>Indicator (source/survey)</b>	<b>SUNY Community Colleges</b>	<b>National Community College Average</b>	<b>Northeast Community College Average</b>
<b>% First-Time, Full-Time Students Graduating within Three Years (IPEDS GRS, Fall 2002 cohort as of 2005)</b>	24.4%	22.0%	18.0%
<b>% Successful Educational Outcomes in Three Years: Graduation Rate plus Transfer without Degree (IPEDS GRS, Fall 2002 cohort as of 2005)</b>	42.4%	39.4%	35.4%
<b>% Students Transferring to a Four-Year Institution (College Board 2003-2006)</b>	61.2%	60.3%	59.9%

As indicated above, SUNY’s community college graduation rates, successful educational outcomes (graduation rate plus transfer without a degree) and transfer rates, exceed the national community college average and the average for community colleges in the northeast US.

Even though the data for SUNY colleges and universities demonstrate a level of performance higher than the average scores for similar institutions nationally, each SUNY campus Memorandum of Understanding II (2005-2010) contains a commitment to improve retention and graduation rates even further. The commitments are supported by strategies specific to each institution and range from exploring and adopting best practices from aspirational peer institutions to implementing measures for improvement as determined by analysis of the Student Opinion Survey (SOS) or student engagement surveys.

**STUDENT ENGAGEMENT**

While the above mentioned measures are used to gauge academic integration of students, research also indicates that, especially for residential students, social integration is an imperative to assure persistence.

Student satisfaction and engagement at SUNY institutions have been measured over time and the results compiled by sector, including:

- The SUNY Student Opinion Survey, administered on a three year cycle
- The Community College Survey of Student Engagement (CCSSE) and the National Survey of Student Engagement (NSSE), administered selectively by campus in the past, to be part of the SUNY-wide Strengthened Campus-Based Assessment Initiative beginning in Spring 2008

Other surveys administered by some campuses include:

- The Foundations of Excellence in the First College Year Program, a national program designed to evaluate and improve student success in the first college year, and
- American College Health Association's student survey or the CORE survey, are both nationally recognized longitudinal surveys on student behaviors and perceptions related to alcohol use, drug use, and student engagement and persistence.

While national comparisons are not possible with the SUNY Student Opinion Survey, the last administration of the survey asked questions that make it possible to focus on the perceptions of specific groups of students (e.g., gender, race/ethnicity, class level, and native/transfer). In the near future, the CCSSE/NSSE survey will provide SUNY colleges a rich information source for assessing student engagement in the academic environment. This information is available not only for SUNY colleges and universities but for national comparisons as well.

SUNY campuses already have in place innumerable activities and programs suggested by Kuh's research as fostering engagement that leads to students' academic success.

### **BEST PRACTICES FOR STUDENT SUCCESS EMPLOYED BY SUNY CAMPUSES**

- **Teach students how to use college resources effectively.**
  - Orientation and advising- to introduce students to the college and provide familiarity with the campus facilities and programs.
  - First-year seminars- semester long classes that encourage formation of study groups and provide information ranging from study skills to club activities.
  - Supplemental instruction- extended course instruction offered by peer tutors in high risk courses; provide course enrichment under faculty members supervision.
  - Placement testing- to insure students are in courses for which they are prepared.
  - Intrusive advising- which can involve contacting students who have not declared a major and those whose grades are low.
  - Learning communities- both residential and non-residential provide common ground both in and out of the classroom and provide skills needed to succeed in college.

- **Networks and early-warning systems to support students when they need help.**
  - Academic advisors and student affairs professionals work together on campuses to develop early-warning and support systems for at-risk students. Assessment tools are also available to help gather useful information in the identification of high risk students. (i.e. ACT Entering Student Questionnaire, Educational Benchmarking, MAP Works)
  
- **Connecting students in a meaningful way with some activity or positive role model.**
  - Many campuses have developed peer and professional mentoring systems to help at risk students. Educational Opportunity Programs across the state include peer and alumni mentoring components, and many campus life and residential programs involve upper-class students in mentoring with entering freshman.

Along with the programs and initiatives individual campuses have in place to assist students in succeeding. As a System, SUNY has initiated system-wide initiatives to support student success including:

- The SUNY-CRI (Course Redesign Initiative) to assist faculty in the redesign of large enrollment courses to improve student learning and retention
- Development of a system-wide degree-audit system that will allow students to follow and assess their progress toward graduation
- Provision of educational outcomes data to 2-year institutions for students who transferred into SUNY 4-year institutions
- Provision of data on successful educational outcomes for students who have transferred into 4-year institutions
- General education requirement, with courses transferable throughout the System, for all students graduating with a baccalaureate degree.
- Assessment of student learning outcomes imbedded in general education programs and program review for each academic major

Within five years, Institutional Research will implement a new information system, which will support studies of student success based on the curriculum and how the student engages the curriculum. This information, in conjunction with the data above, will provide SUNY a rich source of information concerning student success.

## RECOMMENDATIONS AND RESOURCES

- **Reward Colleges for Student Success**

Institute a program providing aid to public colleges and universities based on successful student outcomes in the previous year – similar to the NYS Legislative annual appropriation to independent colleges commonly referred to as Bundy Aid. The funds could be used by the campus to support activities and programs to improve student retention and engagement.

- **Support Funding for Substance Abuse Issues**

Alcohol and drug use by students is one of the most pervasive issues that colleges face today. It directly impacts on student learning, student retention and student excellence. There is no state-wide support or coordination of alcohol and drug prevention, intervention programs, or resources in higher education.

## **STATE UNIVERSITY OF NEW YORK – TRANSFER AND ARTICULATION POLICIES**

### **INTRODUCTION AND BACKGROUND INFORMATION**

States that have a central coordinating board or system of higher education enjoy greater success in transfer of students from associate degree to baccalaureate degree institutions. In demonstration, a study by the National Center for Public Policy and Higher Education (NCPPE) concluded that New York, Florida, and North Carolina – each of which has systems or coordinating boards – have more effective credit transfer than states with no statewide coordination.<sup>1</sup>

In fact, some states without systems or coordination have policies that impede transfer (e.g., by restricting incentives for five-year or six-year graduation rates to students who complete all their studies in the same baccalaureate institution). The NCPPE study also pointed out that one of the most highly effective measures to facilitate access to higher education by disadvantaged students is to provide convenient access for associate degree students to senior institutions, since a higher percentage of these students first enter higher education in community colleges.

By adopting policies that strengthen and codify transfer of credit, systems of higher education improve service to the full range of students who enter college in associate degree institutions.

### **TRANSFER AND ARTICULATION IN SUNY**

As the largest, most institutionally diverse provider of public higher education in the nation, SUNY has long been a leader in transfer articulation, or the transition of community college students into four-year institutions, and well over 8,000 SUNY community college students transfer to upper-division SUNY institutions each year. During the last 40 years, the SUNY Board of Trustees has established a set of policies to address various aspects of transfer from AS and AA degree programs to baccalaureate programs at senior colleges. Specific policies approved are as follows:

- those guaranteeing AS and AA degree recipients access to baccalaureate programs (1972);
- those assuring junior status for AS and AA graduates in parallel programs (1980);<sup>1</sup>
- those granting full credit for general education courses transferred (1987);
- those reaffirming prior policy and assuring equitability and access to services for AA and AS graduates in baccalaureate programs, and giving priority of access to SUNY and CUNY transfers over others (1990); and

- those delineating the SUNY General Education Requirement (SUNY-GER) and the provisions for transferring GE courses (1999).

As this series of resolutions affirms, the SUNY Board of Trustees has paid careful and ongoing attention to transfer students. Especially notable was Board Resolution 98-421, which created the SUNY-GER for bachelor's degree recipients, significantly facilitating transfer into upper-division institutions since it resulted in associate-degree-granting institutions agreeing to provide at least 7 out of 10 SUNY-GER subject categories in both AA and AS programs.

It remains the case; however, that truly seamless transfer between two- and four-year institutions increasingly requires articulation policies that operate at the program and course levels. There has been no lack of concerted effort in this area on the part of SUNY System Administration in recent years. For example, both cycles of SUNY's Mission Review process focused on tightening existing articulation agreements, developing new agreements, developing more jointly registered programs, and increasing inter-campus collaboration.

Further, SUNY's Intra-SUNY Transfer Action Plan, which began as a result of Mission Review I, intended to ensure ease of transfer by focusing on two specific issues: data collection and analysis, in order to compare time to baccalaureate completion for community college graduates; and academic matters, including the development of templates for associate degree programs.

In support of these activities, SUNY's guidelines for new program development require institutions submitting AA or AS program proposals to include letters from the chief academic officers of two baccalaureate-granting institutions verifying course equivalencies and confirming that graduates of the proposed program can transfer into a registered baccalaureate program at their institutions and graduate in two additional years of study. Similarly, proposals for baccalaureate programs that anticipate transfer student enrollment must include evidence of consultation with at least two appropriate two-year colleges to assure articulation with pertinent degree programs and completion within two additional years of full-time study.

### Current Challenges

Despite all these efforts, improvements are still needed to assure seamless transfer and articulation, with the following challenges especially daunting at present:

- the fact that not all AA and AS degree-earning students have completed 7 out of 10 SUNY-GER subject categories at the time they enter a senior SUNY institution, for a number of reasons that require additional study

- (e.g., too few courses that meet this requirement are being offered at the associate-degree-granting institutions, the fact that the SUNY-GER is not embedded in all associate degree curricular requirements);
- the fact that credits earned by students at associate-degree-granting institutions are not fully accepted by senior SUNY institutions and that there is inconsistency among the senior institutions in this regard;
  - limited capacity on the part of SUNY senior institutions to accommodate transfer students geographically and into specific programs, since this student population tends to be highly place bound; and
  - the fact that, in order to graduate from a four- or five-year academic program in a timely fashion, some students have to start taking upper-division courses in the sophomore year.

Together, these factors serve to hinder effective transfer to a significant degree. More important, they likely result in students' transferring to the private sector since, overall, New York's private institutions are more likely to grant students full transferability of credits. In addition to not benefiting the State University, this consequence results in these students' carrying a greater financial burden compared to those students who do transfer to a senior SUNY institution.

### Possible Solutions

At present, it appears necessary for SUNY to focus concerted attention and efforts on improving seamless transfer and articulation for students, especially at the level of academic majors. One strategy is to continue to develop and implement institution-to-institution articulation agreements. Because this strategy is so time-consuming and, ultimately, specific to institutional pairs, it also seems appropriate to work simultaneously on more broad-based initiatives.

In 2001, the Board of Trustees endorsed the establishment of a Teacher Education Transfer Template (TETT) project, to date SUNY's largest transfer initiative focused on the major. The TETT stipulated that students completing AA and AS degree programs structured for compatibility with senior college teacher education programs would, when admitted to teacher education programs, gain full acceptance of the first two years of study toward completion of the teacher education program at the senior college. The TETT has been structured for almost all of the associate-degree-granting colleges, and has been accepted and implemented at a majority of the senior college teacher education programs.

The key element of the TETT is that it is based on a course-to-course articulation between SUNY associate-degree-granting institutions and SUNY senior colleges in seven discipline majors and a professional education core of courses. Working templates – accessible via the Web – serve as valuable resources to

students and faculty, supporting advisement and curricular/program development and thereby facilitating transfer and articulation.

Given the relative success of the TETT, it is reasonable to suggest that this project could serve as a conceptual model and prototype for a SUNY-wide transfer project focused on other academic majors. Florida has in fact already implemented such an initiative, the linchpin of which is a Statewide Course Numbering System (SCNS), which provides a database of post-secondary courses at public vocational-technical centers, community colleges, universities, and participating nonpublic institutions.<sup>1</sup> Overseen by the Florida Department of Education, the SCNS aims to provide seamless articulation for Florida's K-20 system.

## **RECOMMENDATIONS**

The following recommendations are offered as a means of improving the transfer of students and credit between SUNY associate-degree-granting institutions and SUNY senior institutions. Fundamental to the successful implementation of these recommendations is that SUNY System Administration play an aggressive role in leading this effort and working with individual institutions to assure full cooperation and participation.

- Acknowledge that, as a system of higher education, SUNY can be most effective for the broadest range of students in the State by having effective transfer of credit, particularly at the program level.
- Ensure that all existing transfer projects and policies (e.g., TETT) are fully implemented and enforced.
- Retain and improve the existing system of General Education course acceptability. Because the courses taken by students in associate degree programs are already designated as acceptable to senior colleges to fulfill the SUNY-GER, the need to build a course-to-course articulation for this requirement is negated.
- Establish a System-wide course-to-course equivalency database for all (or at least a large proportion) of degree program academic majors. Such a system would replace the hundreds of labor-intensive articulation agreements that currently exist between two institutions and which must be updated regularly. A large portion of a course-to-course equivalency database can be developed through the codification of course acceptability that already exists in every SUNY senior institution for the evaluation of transcripts of associate degree transfer students. The database compiled for the TETT project already contains such data for 33 two-year colleges and 12 four-year colleges for seven of the most common transfer majors.

- Emphasize the development of learning outcomes by senior colleges, in consultation with associate-degree-granting institutions, for lower-division courses in major degree programs so these courses meet acceptable transfer standards.
- Provide community college students access to upper-division courses in targeted academic programs during the sophomore year.
- Explore strategies that would encourage senior institutions to accept more transfer students from within their geographic region (e.g., incentive funding).

## WORKFORCE AND ECONOMIC DEVELOPMENT THE STATE UNIVERSITY OF NEW YORK

### INTRODUCTION

While clarity demands that the terms economic development and workforce development should not be used interchangeably, they are critically interrelated, as the U.S. Department of Labor acknowledged in its WIRED (Workforce Innovation in Regional Economic Development) program initiated in 2005. The State University of New York system is the most important workforce and economic development entity in New York. While economic and workforce development do not constitute the sole mission of the University, they are certainly among the core missions.

Workforce development generally refers to the education and training of skilled workers for jobs demanded by the economy. Effective workforce development is essential to effective economic development and a healthy economy. Educational institutions engage in workforce development through credit and non-credit programs of general education, professional preparation, career and technical education, and retraining and skills development. The workforce is viewed in broad terms – from physicians to teachers to electronics technicians – all occupations that are served by SUNY’s diverse structure. Recognizing the value of **all** education to the maintenance and advancement of a civil society, it is also important to recognize that, ultimately, **all** education involves developing the knowledge and skills of the workforce as well. A SUNY education provides students with the general knowledge and specific skills necessary to succeed in the workplace as well as in the global community, outcomes of career education coupled with liberal arts education. SUNY’s mission is to further workforce development by educating graduates poised to meet the needs of today and who can anticipate future trends and demand.

Taking a broader view, economic development is the interaction of a variety of strategies where the outcomes are economic growth, expansion of capital investment, job creation and increased earnings. The strategies involved often include capitalization, development of infrastructure, basic and applied research coupled with technology transfer, planning, promotion, community and housing development, business financing, and workforce development. All of these facets work in collaboration to support economic growth. Economic development is focused on investment in long-term future growth. Two of the most important conclusions that have emerged from two decades of academic and business research on economic development refer to the critical locus of efforts and their scope and duration: (1) economic development is regional, and (2) in a global economy, economic development efforts must be continuous.

With its 64 campuses dispersed throughout the state, SUNY is uniquely positioned to provide the impetus for regional innovation and economic growth

tailored to specific regional needs and opportunities yet animated by a broad statewide vision and able to call upon the resources of other campuses to complement and augment local efforts. Colleges and universities are integral to the communities and regions in which they are located and make a monumental contribution to their economic, social, and cultural fabric and to the lives of citizens. Their very existence represents the ideal in community and economic development.

SUNY campuses anchor their specific regional economies, while collectively bolstering economic development around the state in the following ways:

## **WORKFORCE DEVELOPMENT**

- SUNY boasts more than two million graduates and an incredible diversity of academic offerings and opportunities.
- SUNY is both a producer and consumer of the New York workforce with more than 81,000 employees throughout the state. It is higher education that enables graduates to earn on average about \$1 million more than non-degreed individuals over a working lifetime.
- SUNY is a primary provider of educated workers in New York State.
  - Programs are highly responsive to industry and individual needs;
  - A SUNY campus is within reach of every geographic location in the State;
  - Programs support all economic sectors and industries;
    - Emerging industries (e.g. nanotechnology and green technologies)
    - High technology fields (e.g. engineering and computer technologies, information technology, biomedical technologies, and biotechnology)
    - High growth fields (e.g. homeland security and national defense)
    - High demand fields (e.g. nursing and allied health, teaching, medicine, business)
    - Established industries (e.g. financial services, business services, and other service fields)
- The 34 state-operated campuses support general and professional education for all industries, particularly the state's high demand and licensed professions, including teaching, nursing and allied health, medicine, and advanced business and finance.
- In 2005-06, SUNY produced 6,898 graduates in education, and 3,769 graduates in nursing
- The eight colleges of technology and the 30 community colleges provide education and training for a comprehensive array of technology-based industries and fields that are critical to the state and regional economies, including business, engineering, computer and information technologies,

- nursing and allied health technologies, mechanical and engineering technologies, public service, and hospitality
- All SUNY programs provide immediate access to highly-skilled jobs in the workforce, with opportunities for career advancement and further education
  - All SUNY campuses offer integrated service programs that include clinical experiences, internships and service learning which provide valuable experiences for students
  - There are approximately 7,000 degree programs at SUNY which serve all industries of the State. Of the 417,583 total students (fall 2006) the majority are enrolled in high-skill, career-track programs.
  - Additionally, 1.4 million students are registered in SUNY non-credit programs, with one-half of that cohort enrolled in vocational and professional courses, and one-third from business and industry organizations.
  - Most campuses have staff dedicated to workforce and economic development.
  - SUNY offers comprehensive university-wide non-credit workforce development programs including Educational Opportunity Centers, Bridge Programs, and Community College employer training grants which all have a significant impact on employers and citizens.

## **ECONOMIC DEVELOPMENT**

- SUNY campuses, singly and collectively, make critical contributions to the economic development of the state through:
  - Centers of Excellence, STAR Centers and the Empire Innovation Program
    - Including nanoelectronics at the University at Albany, Bioinformatics and Life Sciences at the University at Buffalo, Wireless and Information Technology, Disease Modeling and Therapy Discovery at the University at Buffalo, Biomolecular Diagnostics and Therapeutics at Stony Brook University
  - SUNY's Strategic Partnership for Industrial Resurgence Program (SPIR), a collaborative university-industry venture that focuses the multidisciplinary advanced technology resources of SUNY's colleges of engineering to improve manufacturing processes and accelerate new product development. This initiative has generated millions of dollars in return in industry investment and external funding
  - The seven Centers for Advanced Technology (CATs), managed by NYSTAR, which link the academic and research resources of New York's research universities with companies identified as having high economic growth potential. This program has generated hundreds of millions of dollars in corporate revenues and savings, and thousands of jobs

- Faculty-led and sponsored research in both basic and applied areas.
  - An example of the research contribution to the State's economy is nanotechnology, which contributes millions of dollars per year to New York's economy
  - Another is the New York State Center for Excellence in Wireless and Information Technology which has already generated some \$50 million in competitive federal research awards, \$12.5 million in private investment for partner companies, and more than 550 jobs at partner companies.
- Patents and licenses and related income;
- Technology transfer to support business development and creation;
- Collaboration with private industry.
- The faculty at the doctoral campuses in 2005-2006 alone earned 78 patents and licenses and \$10.8 million in royalty income.
- There is a significant amount of activity in the area of technology transfer, including business incubators and technology parks on various SUNY campuses.
  - Incubators develop and keep new companies in the state and college vicinity, create new jobs and spur the local and state economy, as well as retain faculty
- In 2005-2006, the SUNY campuses received 7,435 awards which generated \$781.8 million in external funding for a wide variety of research and sponsored programs, a major investment in regional economies.
- This external funding creates jobs (over 17,000 for the above-mentioned projects) and a significant investment in local, regional and State economies.
- SUNY's colleges and universities make significant contributions to regional economies through participation in business partnerships and investments in local communities.
- Small Business Development Centers, funded by the U.S. Small Business Administration, with matching funds from SUNY, provide confidential one-on-one counseling on all aspects of small business management at no cost to prospective entrepreneurs, start-ups, and new and established small businesses.
- Many colleges offer programs and degrees in entrepreneurship and are constantly developing new programs in partnership with business and industry.

## **ISSUES**

There are several issues which confront SUNY in optimizing its potential as one of the largest state entities for workforce and economic development:

- To be able to realize the full potential of its economic and workforce development capabilities, SUNY needs to become a full partner in policy-

making initiatives and planning opportunities, a role that it has not heretofore enjoyed.

- A strong and comprehensive state policy and support for workforce development has been lacking. Coordination of existing efforts and programs has been lacking.
- There is no strategic plan for adult and continuing education across the State.
- The capital and operating investment in the research enterprise and infrastructure, while significant, has not been sufficient to bring New York State to a necessary position of national prominence and competitiveness for federal funding.
  - There is an inadequate number and type of faculty to conduct cutting-edge research, both basic and applied.
  - There is insufficient support and funding to assist the SUNY Research Foundation and the campuses to commercialize and bring ideas to the marketplace.
- There is untapped potential for research and technology transfer on all the SUNY campuses.
- There is no funding available to support the development and startup of new or expanded programs to serve emerging industry needs.
  - There is limited funding available to offset the high costs of high technology, high demand programs.
- There is little funding available to support non-credit industry-based training programs. Until its elimination during the fiscal crisis of the early 1990's, community colleges received FTE-based aid for non-credit vocational and workforce training.
- SUNY campuses are unable to access sources of workforce development funding from other agencies; there is little coordination of resources such as Department of Labor and BOCES.
- Workforce training has not been a priority of the Workforce Investment Act program.
- The SUNY/State Education Department program approval process is lengthy and has a negative impact on colleges' efforts to respond to emerging industry needs on a timely basis.
- There are insufficient efforts to promote and support career opportunities for students and prospective students.

## **RECOMMENDATIONS**

Several recommendations are intended to address the issues described above:

- Put SUNY "at the table" for the discussions and implementation of economic and workforce development policy and strategy.
- Create a system of coordinated planning and delivery of workforce development in the State and regions.

- Coordinate delivery of programs and funding across agencies.
- Create a statewide strategic plan for adult and continuing education.
- Create a SUNY Business and Economic Development Office at System Administration.
- Create a competitive investment in the SUNY research infrastructure, including faculty and facilities
  - Increase funding for the basic SPIR program and expand it by taking it state-wide. Create a Center Collaboration Fund to enable SPIR program to work with Centers of Excellence, STAR Centers and CATs at their own campuses and at other SUNY campuses where their resources can advance the technology development and commercialization missions of those centers
  - Provide greater support for technology transfer activities
- Create funding streams for:
  - Supporting high-cost yet high demand technical programs;
  - Enabling the development and startup of new or expanded programs in emerging industries;
  - Reinstating the FTE-based non-credit vocational and technical training funding;
  - Increasing funding for industry-based contract courses;
  - Increasing service programs including internships, clinical experiences and service learning;
- Enable SUNY campuses to access workforce development funding available through other agencies (e.g. Department of Labor).
- Make workforce training a priority of the State's Workforce Investment Act program and overall workforce strategy.
- Streamline and shorten the academic program approval process. Institute provisional approvals for new programs and locally approved certificate programs.
- Develop more alternative delivery sites and methodologies.
- Make career pathways and opportunities better defined and more convenient and accessible for working adults.
- Take the leadership on campuses for informing the public about new career opportunities, particularly regarding opportunities in new and emerging industries (new technology: podcasts, webinars, chat rooms, etc.).
- Place greater emphasis on STEM initiatives (teacher preparation, continuing education for teachers, mentors).
- Provide high schools and middle schools with guidance counselors that are better informed about career and educational opportunities.

# **ACCESS, EQUITY AND EXCELLENCE AND THE PUBLIC UNIVERSITY**

## **INTRODUCTION**

At their best, public universities provide an educational service (or a collective good) that enhances people's quality of life, imparts skills that are transferable to a wide range of economic endeavors (thus contributing to a flexible and adaptive labor force), harmonizes social relations by promoting understanding across racial and ethnic divides, heightens appreciation of the world and the U.S. role in this world, and instills the principle of life-long learning. America's ascendancy as a world power has been attributed not only to its industrial and technical prowess, but to a national system of affordable and accessible public higher education that is the foundation for economic development and scientific advancement. Equal access to higher education for all members of society, rather than a privileged few, has distinguished the United States from European educational systems for the better part of the 20<sup>th</sup> century. Since its inception in the late 1940s, access to public higher education for the people of New York has been a hallmark of SUNY.

One of the critical challenges facing SUNY in the 21<sup>st</sup> century is obtaining the requisite state funding to undertake a variety of initiatives to fulfill its obligation of providing access to New Yorkers; a population that is becoming increasingly multiracial, multiethnic and multilingual and that is suffering poverty rates above the national average. The people of New York expect the State University of New York system to deliver on these objectives.

We are confident this challenge can be met if New York State makes strategic investments in SUNY to develop initiatives to increase representation of faculty, graduate and undergraduate students from populations that have traditionally been underrepresented in public higher education. Access to education is only part of the solution. SUNY will need to sustain a vibrant academic environment that will attract excellent scholars, talented graduate students and our best and brightest high school students. Continued support for opportunity programs will contribute to increased recruitment and retention of students from economically underprivileged sectors of the state and from groups that are historically underrepresented in higher education.

The university's 2004-08 Master Plan reaffirms the principle that "as a public university SUNY remains committed to ensuring access to the full range of populations served; thus diversity...will be a priority."<sup>1</sup> As a public institution supported primarily by taxes and tuition, SUNY bears a special responsibility for its workforce and student body to reflect the composition of New York State's population. The SUNY Master Plan also affirms the relationship between academic excellence and diversity. World-class universities have adopted measures to increase the diversity of their professoriate and academic staff, graduate and undergraduate student body and educational programs as part of a

broader strategy to achieve academic excellence. Universities committed to diversity provide their students with an educational experience that prepares them to live and work productively in our multiracial and multiethnic democratic society.

## **DIVERSITY, POVERTY & ACCESS**

New York has one of the most racially and ethnically diversified populations in the nation, and continually undergoes significant demographic change. It is also an economically diverse state, with sweeping differences in the socio-economic profiles of its numerous counties. These are challenges to achieving an economically just society and to the formation of a common national civic culture. However, these vexing characteristics of our society can be mitigated by providing accessible, affordable, quality public higher education to the people of New York State.

Educational equity, particularly enhanced access for the economically disadvantaged populations of the state must be a SUNY priority. While SUNY's educational mission cannot be confined to work force development, it has a special responsibility to provide the residents of New York an educational experience that empowers them with the requisite competences and skills so that they may achieve their potential. Countless numbers of studies document that education is the single best avenue to escape poverty. Historically public higher education has played an important role in leveling the economic playing field and creating new opportunities for upward social mobility for the economically disadvantaged. It is incumbent on SUNY to recommit to this promise to provide an affordable and quality education that is the basis for upward social mobility for its residents and citizens.

This is an especially critical task for SUNY since poverty rates in upstate cities are approximately 30 percent. The poverty rate is much greater than the rest of the state, and is increasing at twice the national rate. Overall poverty rates in New York have increased from six percent in 1990 to 10 percent in 2005.<sup>ii</sup> Enhanced access for economically underprivileged sectors, combined with new educational equity initiatives aimed at the impoverished rural areas of the state is essential.

By enhancing educational access to economically disadvantaged sectors, SUNY can help to reduce poverty rates, and the accompanying economic marginalization, social alienation and deterioration of the family that disproportionately afflicts the poor. Although poverty affects many sectors of New York's population, it is particularly acute for Latinos and African Americans.

## **ACCESS, INCLUSION, AND DEMOGRAPHIC CHANGES**

The percentage of individuals from traditionally underrepresented groups who are attending SUNY is lower than expected given their numbers in the state

population. Consequently, any initiatives designed to maximize access to affordable, quality education should make special efforts to recruit students from these under served sectors of the state's population. In its official publications SUNY recognizes its responsibility to employ a workforce and educate a student body that is representative of the state's population. However, SUNY has not been able to recruit and retain senior administrators, faculty, graduate and undergraduate students in sufficient numbers to overcome the long-standing under-representation of people of color.

For example, the Latino population of New York grew by 33.1 percent between 1990 and 2000, and made up 15.1 percent of the state's population. By 2006 Latinos made up 16.1 percent of the state's population. Yet, Latinos accounted for only 5 percent of the student population in the state-operated/funded units of SUNY. African Americans are also underrepresented in SUNY, although their percentages are better than those for Latinos. In 2005 African Americans accounted for about 7 percent of the student population in SUNY state-operated/funded campuses. Blacks comprised 17.4 percent of the state's population for the same period. As is the case with Latinos, Blacks are also seriously under represented in the SUNY campuses. The numbers are also dismal for Native Americans and Asian/Pacific Islanders.

The figures on Black and Latino student enrollments in SUNY universities and colleges are consistent with the findings published in an Education Trust study of public flagship universities that documents disproportionate under representation of low-income and minority students. The study reported that the percentage of students who are Black, Latino or Native American was 12 percent for the flagship universities nationwide and 24 percent for all colleges and universities.<sup>iii</sup> The corresponding percentage for all State operated/funded SUNY institutions was 12.3 percent in Fall 2005. The low enrollment of minority populations is surprising given the demographics of the state. It is incumbent on SUNY to develop new initiatives to redress the significant gap in representation

The report observes that flagship public universities are failing to make progress "in better serving the vast breadth of our citizenry." Although SUNY does not have a flagship university, the low percentage of students from historically under represented populations enrolled in its doctoral granting institutions are comparable to the public flagship universities. New York State should provide SUNY with the resources to implement effective strategies and best practices, so that it can stand as an exception to this discouraging national trend in public higher education.

Black and Latino representation in the faculty ranks of the state-operated/funded campus also fails to reflect the composition of the state's population. In 2006 only 6 percent of the faculty in research universities (centers) were Black, Latino and American Indian/Alaskan. In the comprehensive colleges only 7 percent of the faculty were from these underrepresented communities. An analysis of

Latino faculty employment by the office of Assemblyman Peter Rivera reveals that SUNY lags substantially behind the state's private universities and the City University of New York in the number of Latinos in its full time professorial ranks. SUNY has made significant advances in achieving gender balance in its graduate student population. In Fall 2006 females comprised 58.6 percent of graduates in all SUNY Institutions.

The Woodrow Wilson Foundation reported African Americans and Latinos are the largest underrepresented group in higher education relative to their numbers in the general population. The report notes that only 7 percent of the Ph.D.s U.S. universities conferred on U.S. citizens in 2003 went to Latino or African American students.<sup>iv</sup> Currently, students from these minority groups make up 8.1 percent of the graduate student enrollment in SUNY, only marginally better than the figures cited in the Woodrow Wilson report.

It is alarming that African American and Latino representation in tenure track ranks is actually below the percentage of doctorates conferred to this sector of our population. The implications for SUNY are significant, since the presence of more faculty from historically underrepresented sectors of our society will enhance the university's prospects of achieving greater success. Moreover, New York State may face a serious social policy issue in that as incoming generations of students will be increasingly drawn from Latino, Black and other non-white populations, their professors and teachers will remain overwhelmingly white.

## **ACCESS, THE OFFICE OF DIVERSITY AND THE OPPORTUNITY PROGRAMS**

SUNY officials are aware that in order to effectively address its institutional aspirations for excellence and respond to broader social concerns expressed by diverse constituencies, it has to enhance its record of access, particularly for those sectors of the population that have traditionally been underrepresented in higher education. The Office of Diversity and Educational Equity was established specifically to increase access to educational opportunity on a system-wide level and aid in the diversification of SUNY's workforce. Once it is adequately funded, the Office of Diversity will work closely with campus units to devise measures to increase the numbers of faculty and students from groups historically underrepresented in higher education and from economically disadvantaged sectors regardless of gender, sexual orientation or disability status. In conjunction with campus units, innovative approaches will be employed to recruit and retain a diversified faculty body of stellar academic quality, and attract and support training for superb graduate students from disenfranchised communities. Substantial funds will be required for the Office of Diversity to aggressively recruit highly sought after scholars of underserved and underrepresented communities, and to provide them with competitive start up packages and support to mount and sustain an active research profile. Coordinated initiatives to effectively identify, recruit and situate outstanding scholars in the most academically

favorable setting within our system are necessary. If SUNY is to reach a level of parity with its peer institutions, New York State will need to substantially increase the size of its professoriate. The Office of Diversity can assist in this broader initiative to elevate the standing of our university system by expanding the size and quality of its faculty.

The Office of Provost of Diversity and Educational Equity will assist campus units in creating an academic infrastructure to improve undergraduate success rates. An array of targeted initiatives including, but not limited to, STEM diversity scholarships, special undergraduate scholarships programs, student mentoring programs, guided undergraduate research opportunities, and public service internships, will enhance recruitment and success outcomes for students from communities traditionally underrepresented in higher education, as well as students from economically underprivileged sectors. It is worth noting that undergraduate success is positively correlated with a diversified faculty.

The Office of Diversity and Educational Equity will partner with all campuses to fortify existing areas of excellence and/or to develop academic initiatives that advance their distinctive mission. Ultimately the goal is to strive for academic excellence in the context of carefully devised programs to enhance access for scholars and students of color, economically underprivileged students, and from other sectors of our population not adequately represented in higher education. SUNY has a remarkable wealth of experienced professionals who have a normative commitment to enhancing the diversity of this fine institution and the quality of the educational experience it offers its students. This is a resource that the Office of Diversity will mobilize to develop system-wide diversity initiatives that will elevate SUNY's national reputation. Through the creative marshaling of resources, collaboration with campus units, and strategic investments, the Office of Diversity will develop a more focused approach aimed at enhancing access, diversity and academic excellence.

## **COMMUNITY COLLEGES AND ACCESS**

Community colleges can play a crucial role in preparing students for success in four-year institutions. The Association of Presidents of Public Community Colleges (APPCC) reports that:

The primary mission of New York's community colleges is to provide access to all persons with a high school or equivalent credential, or who have the ability to benefit from post-secondary education.

One of the critical issues facing the community colleges is their obligation to accept all students with a high school degree who apply for enrollment, even if these students lack the basic skills to succeed in college. Lack of adequate funding restricts the ability of the community colleges to render the intensive

academic support needed for these students to be accepted into the colleges and to succeed academically. The community colleges require a funding mechanism to provide basic-skills education necessary for students to transition to the colleges. When the Office of Diversity and Educational Equity acquires the requisite resources and staff capabilities, it can work, if invited to do so, with the leadership of the community college system to explore, devise and underwrite promising efforts to facilitate the preparation, graduation and transition of students into SUNY's baccalaureate granting institutions. A number of community colleges are located in rural areas that are experiencing high levels of unemployment and structural poverty. Any system-wide educational equity initiative must be sensitive to this reality, and partner with the community colleges in developing targeted programs to enhance recruitment and success for students from these communities.

## **ACCESS AND OPPORTUNITY PROGRAMS**

The Office of Diversity and Educational Equity has been assigned responsibility for the Educational Opportunity Program (EOP) and the University Center for Academic and Work Development (UCAWD). Both programs were conceived as academically oriented programs with the responsibility of enhancing access for students from urban communities underserved by SUNY. These programs became entry points into higher education for students with varying levels of academic preparation. EOP enhances access for underserved populations by providing motivated, albeit under prepared, students with the opportunity to realize their academic potential; providing developmental support to improve the student's academic skills and capabilities, and providing financial assistance. Although, EOP was never conceived as an agency charged with promoting diversity, nonetheless thousands of students from populations that have traditionally been under represented in higher education have been beneficiaries of this program. More than 11,000 EOP students are currently enrolled on 45 campuses. Approximately 78 percent of these students attended four-year institutions. Despite its proven record of success the current funding levels are inadequate for EOP to provide service adequate to the growing student demand.

The Equal Opportunity Centers, one of three units that comprise UCAWD, have implemented initiatives specifically designed to provide higher education access to qualified residents of the state. Through its college preparation and remediation programs over 950 students have transitioned into SUNY, according to UCAWD. The Bridge program complements the task of the EOC by enabling students to prepare for positions in high demand occupations that often require professional licenses. Articulation agreements with campus programs allow students to obtain advanced credit for courses completed at an EOC. Other UCAWD initiatives have enhanced access to public higher education for underrepresented, and economically disadvantaged minorities. In 2006 12,070 students were enrolled in EOC.

Although SUNY's opportunity programs have a demonstrated record of success, additional investments are needed to provide support for students from economically disadvantaged sectors that fall outside the programs' eligibility requirements. Additional funding will be requested to enhance access and success for these students. The Office of Diversity and Educational Equity would partner with EOP/EOC to organize best practices workshops on the array of programs that can enhance student rates of academic success among students from underrepresented and underserved sectors of New York State.

## **ACCESS, DIVERSITY AND EXCELLENCE**

SUNY faces a challenge that if successfully met will elevate the stature of our university. New York is undergoing a demographic transition of a magnitude and diversity not experienced in this state in over a century. Moreover, sweeping technological changes, economic restructuring resulting in relentless deterioration of traditional industries, disruptions to local labor markets caused by the globalization of the state's economy, impose remarkable pressures on SUNY to reassess how it can meet its responsibility to society. SUNY can respond to this challenge by developing a new vision that integrates the goals of expanded access, diversification of the faculty and student body, and new educational approaches that prepare students to meet more rigorous academic.

Individuals who are academically prepared and have acquired the cognitive skills that only higher education can provide will be able to adjust to the changing labor market conditions. By maximizing access to quality higher education SUNY can educate broad sectors of New York State's population to meet the challenges of a changing economy and population. Access to quality public higher education is paramount for New York State's continued development. Successful initiatives to diversify SUNY's faculty and student body will not only enhance the quality of the academic experience, but prepare its graduates to compete effectively in a demographically changing world buffeted by global economic forces.

SUNY is poised to develop a unique model for success based on the implementation of concrete programs that promote an academically rewarding synergy of access, diversity and excellence.

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<sup>i</sup> Mission Review II, p.21.

<sup>ii</sup> [http://www.fiscalpolicy.org/publications2007/SOWNY/SWNY07\\_ExecutiveSummary.pdf](http://www.fiscalpolicy.org/publications2007/SOWNY/SWNY07_ExecutiveSummary.pdf).

<sup>iii</sup> Danette Gerald and Kati Haycock. *Engines of Inequality: Diminishing Equity in the Nation's Premier Public Universities*. Education Trust, 2006.

<sup>iv</sup> Woodrow Wilson National Fellowship Foundation, *Diversity and the Ph.D.*, May 2005, p. 12.