NJIT
New Jersey's Science & Technology University

STANDARD 1: MISSION AND GOALS

REPORT OF WORKING GROUP 1: THE NJIT MISSION— COMMITMENT TO THE PURSUIT OF EXCELLENCE

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TABLE OF CONTENTS

1.0 WORKING GROUP ASSESSMENT CHECKLIST FOR STANDARD 1

FUNDAMENTAL ELEMENTS OF MISSION AND GOALS	TEAM EVALUATION
(*Characteristics of Excellence in Higher Education: Requirements of Affiliation and Standards of Accreditation* (Philadelphia, PA: MSCHE, 2009)	4=EXEMPLARY 3=EMERGING EXCELLENCE 2=MEETS STANDARD 1=DEVELOPING COMPETENCY
➢ clearly defined mission and goals;	4
➢ mission and goals that relate to external as well as internal contexts and constituencies;	4
➢ institutional goals that are consistent with mission; and	3
➢ goals that focus on student learning, other outcomes, and institutional improvement	3

1.1 INTRODUCTION

1.1.1 Précis: The NJIT Mission and the Commitment to the Pursuit of Excellence

New Jersey Institute of Technology is a mission-centered university. Informed by a well-defined and closely monitored strategic planning process incorporating institutional assessment processes, the university accomplishes mission depth and shareholder collaboration. Responsive to national, regional, state, and local forces of change impacting the state's technological research university, NJIT exemplifies a commitment to education, research, economic development, and service.

1.1.2 An Overview of Group 1's Standard 1 Charge and Questions Addressed

To investigate NJIT's mission and goals and their clarity, consistency, and relationship to external and internal context and constituencies, the Steering Committee and Working Group 1 jointly developed the following charge questions:

1. 0 How has the institution's stated mission evolved since the 2002 publication of *An Emerging Presence: Self Study and Strategic Plan*? What evidence is there that the NJIT mission statement reflects this evolution? (Sections *1.2.1-1.2.2*)
1.1 How has the *NJIT Strategic Plan, 2004-2010* been shaped by the NJIT mission, vision, core values, value proposition, and goals? (Sections *1.2.2-1.2.2.5*)
1.2 Besides the NJIT strategic planning process, what other existing planning processes have influenced the NJIT mission? To what extent do these other planning processes complement the university mission? (Sections *1.2.3-1.2.8*)

1.3 What are the causal factors—external and internal forces that impact the university—for change? How can we determine the strength and influence of these forces? (Sections *1.2.3-1.2.5*)

1.4 To what extent have the strategic priorities of the *NJIT Strategic Plan, 2004-2010* been incorporated throughout the NJIT community? (Section *1.2.8*)

1.5 What strategies are used to assure mission differentiation for NJIT within the state and region? How effectively have we achieved mission differentiation—and thus mission focus—in relation to other universities in New Jersey? (Section *1.2.6*)

1.6 What is the process by which NJIT seeks new opportunities, and excludes others, given the desire for a focused mission strategy? (Sections *1.2.1.2, 1.2.1.4, and 1.2.6*)

1.7 In that we are identifying markets that are congruent with our mission, how effective are we in reaching those markets? (Section *1.2.6*)

1.8 What are the strategies by which NJIT deals with the challenges of global initiatives while serving its traditional community? (Sections *1.2.6-1.2.8*)

1.9 How effectively are NJIT''s mission and goals communicated to the NJIT community? (Sections *1.2.1.2, 1.2.1.4, and 1.3*)

1.10 How does the NJIT mission allow our schools and colleges to maintain their unique identities? (Sections *1.2.1.2, 1.2.1.4, and 1.2.6*)

1.11 What is the relationship between the present MSCHE self study and the emerging *NJIT Strategic Plan, 2010-2015*? (Section *1.2.1.4*)

1.2 SELF STUDY INQUIRY AND OUTCOMES

1.2.1 Mission Articulation from 2002 to 2011

In 1881, Newark, NJ, was the ideal setting for a school that would contribute greatly to scientific, economic, and social progress over the next 130 years. A center of industrial innovation, Newark saw the invention of malleable iron and patent leather. Thomas Edison created a laboratory and workshop in Newark. In addition to raw materials and manufacturing facilities, Newark's business leaders and other concerned citizens recognized that continuing prosperity depended on another key element: education. The city was already at the forefront of a national urban trend toward providing free public education at the elementary and high-school levels. With virtually all industries demanding greater technological knowledge and skills, Newark Technical School, NJIT's earliest predecessor institution, was founded to meet those needs. In the next 130 years, NJIT's fundamental mission focus on science and technology education would expand to include mission elements of research, the economic development of Newark and New Jersey, and public service. (See Working Group Report, Standard 4, for a history of NJIT's leadership and governance process).

1.2.1.1 2002 Self Study

NJIT would continue its urban focus in its mission statement first developed in 1992 and carried forward into the 2002 Middle States Decennial Review: "NJIT is a public, urban

research university, committed to the pursuit of excellence, in education, research, economic development, and service" (Self-Study, 2002). The vision statement was renewed and refined in 2000 by the Middle States Subcommittee on Mission and Goals. The statement became more focused and concise, emphasizing the educational, economic development, community service, and cultural vision for the university. Delineation of the mission included statements reflecting the university's long-standing commitment to students and the importance of student success as a core index of university effectiveness. The renewed vision statement was shared with the university community and was established as a guidepost for the development of goals and objectives for the next five to ten years.

1.2.1.2 The 2004-2010 Strategic Plan

Robert A. Altenkirch, the seventh president of NJIT, joined the university in 2002 and ushered in a focus on institutional goals expressed by, and articulated through, outcomes and their assessment. With mission and vision statements as a guide, approximately one hundred individuals from all sectors of the university community worked together to develop the 2004 Strategic Plan (Altenkirch, 2004). This planning process – moving from self study established in the Middle States review to articulation in strategic priorities and objectives in the next Strategic Plan – is now an established planning framework for NJIT: *ViSTa, A Strategic Planning Process for NJIT: Vision-Strategy-Tactics* (Altenkirch, 2002). (For a detailed description of the ViSTa process, see the Working Group Report, Standard 7.) With a strategic plan approved by the Board of Trustees, NJIT set out to determine ways to take the university to its next level of accomplishment while preserving and building upon a century-long tradition of excellence in education and, more recently—in September 1974, the Board of Trustees had approved changing the name of the university to New Jersey Institute of Technology, effective January 1, 1975, to reflect its emerging research leadership in the state—in applied research and partnerships with industry. The 2004 Mission Statement was modified to reflect the strategic priority of advancing NJIT as a research and technology university: "NJIT is the state's technological research university, committed to the pursuit of excellence" (Altenkirch, 2004). Its vision was stated clearly and concisely: "NJIT is a preeminent technological research university known for innovation, entrepreneurship, and engagement." And, at that time, the university set forth a clear program, *The Strategic Plan, 2004-2010*, "to be counted among the nation's leading public research universities, and, like those great state universities, to play a central role in the region's intellectual and economic development" (Altenkirch, 2004). Comparable resource allocation analysis of strategic priority areas is included in the report of Working Group 2 on Standard 2; here the focus is on strategic plan impact.

1.2.1.3 2007 Periodic Review Report

Stemming from NJIT's mission statement, the following goals were set in place and documented in NJIT's 2007 Periodic Review Report, *The Future's Edge*: to enhance educational programs; to strengthen the sense of campus community; to enhance and

focus research efforts; to deepen impact on the local and regional economy; to strengthen civic engagement; and to enhance the university's revenue base. Goals are only effective when they are moved into action. To assure mission penetration through the ViSTa plan—and, thus, to assure outcomes assessment and a process of continuous quality assurance—the President and the Steering Committee developed five strategic priorities with specific objectives. The university budget was concurrently designed to include dedicated funds intended solely for use in achieving the specific objectives set by these strategic priorities. With widespread participation, the President also established metrics with annual targets to mark progress toward achieving strategic priorities. These summary assessment scorecards were presented in the *The Future's Edge*, the 2007 Periodic Review Report, and made publicly available on the university website. The scorecard showed that in the summary areas of community and engagement the university is well ahead of the strategic planning targets. In education, research, and resources, the university was moving well toward achieving or surpassing the final targets.

In the Report to NJIT following analysis of NJIT's 2007 Periodic Review Report, MSCHE team leader Dr. Katherine Mayberry applauded development of an exemplary Strategic Plan that drives resource development and allocation (Mayberry, 2007). The response noted that progress toward reaching the strategic and enabling goals of the Strategic Plan was excellent.

1.2.1.4 The 2010-2015 Strategic Plan

On May 29, 2009, the familiar planning process—moving from self study established in the Middle States review to articulation in strategic priorities and objectives in the next Strategic Plan—began anew. NJIT 2010-2015 Strategic Plan Steering Committee proposed a vision, strategy, tactics, and metrics to strengthen the mission, vision, core values, value proposition, goals, strategic priorities, and strategic objectives of the university. Acting in resonance with the NJIT self study for the Middle States Commission on Higher Education, the Task Force proposed defined tactics to be executed to meet the Strategic Objectives. With the Board of Trustees approval in September 2010, the new strategic plan established four strategic priorities: to enhance to quality of academic and campus life for the university and community; to sustain a base of private support; to be nationally recognized for multidisciplinary, thematic core areas of integrated research and learning in sustainable systems, life and healthcare science and engineering, and digital initiatives; and to be nationally recognized for attracting high achieving students and faculty from diverse populations (Altenkirch, 2010). The combination makes clear that research and learning are intimately related and that institutional assessment and assessment of student learning are unified under a common framework. (See Working Group Reports, Standards 7 and 14. For a vision, strategy, and tactic regarding the thematic core areas, see Working Group 2, Recommendation 3.) To ensure unification of effort, the institutional vision continued to be cast in language emphasizing mission: NJIT is a preeminent science and technology research university known for innovation, entrepreneurship, and engagement. To support the new strategic

plan and ensure that the mission was articulated through assessment of student learning, Ian Gatley, our new provost who joined us in the spring of 2010, developed, disseminated, and assessed the NJIT core values, institutional learning goals, and core competencies. (For more on this university-wide model, see the Working Group Report, Standards 7 and 14)

1.2.2 Impact of the NJIT Strategic Plan, 2004- 2010

NJIT's strategic plan was designed to be a plan of action for the university's growth and development. Rather than align the work of constituents around departments, the plan aligned work around university objectives, and provided the pathway for enhancing our academic and research programs, the quality and diversity of our student body, our quality of life, and gaining the recognition for our accomplishments that we have earned. Specifically the plan identified five strategic priorities: (i) to develop a core of nationally recognized programs; (ii) to improve in research and intellectual property development; (iii) to enrich the quality of life of the university community; (iv) to attract high achieving students from diverse populations; and (v) to increase revenues from private sources (Altenkirch, 2004). Each of these priorities has been shaped by NJIT's mission. NJIT has historically had a three-pronged mission focusing on the pursuit of excellence in education, research and service; concurrently, our mission evolved to include an articulation of our dedication to economic development, a role in the state emphasized in *The Report of the Governor's Task Force on Higher Education* (Keane, 2010). From 2004 to 2010, our mission of providing students with an education to pursue productive careers and amplifying their potential, led to priorities (i) and (iv). Our focus on research and economic development is represented by priority (ii), while the pursuit of service excellence led to priorities (iii) and (v).

1.2.2.1 Developing a Core of Nationally Recognized Programs

An important priority in the 2004-2010 strategic plan focused on building three programs to national prominence by 2008. Mathematics, Architecture and Wireless Telecommunications were selected because these were programs that already had a level of national visibility. All three areas have demonstrated remarkable progress in recent years. The Department of Mathematical Sciences has made dramatic progress toward national prominence. It was ranked 10th in the nation in a study by Academic Analytics (2007) based on faculty scholarly productivity, which includes such factors as books published, journal publications, citations of journal articles, federal-grant dollars awarded, honors and awards. The Department of Mathematical Sciences has grown to a top-ranked, nationally recognized program offering a BS in Applied Mathematics, a BS in Applied Statistics, a BS in Mathematical Biology, and a BS in Mathematics of Finance and Actuarial Science. On the graduate level, the department hosts MS programs in Applied Mathematics, Applied Statistics, Computational Biology, Biostatistics, and Computational Finance, along with a PhD in Mathematical Sciences. The department's current enrollment includes 114 undergraduate majors and 140 minors in math, as well

as 70 students in graduate programs. The department currently has one of the most active research programs in the country among mathematics departments, with more than $2 million annually in external support. At the present writing, faculty researchers have 25 active grants from the National Science Foundation (NSF), as well as grants from the Office of Naval Research (ONR), the Air Force Office of Scientific Research, NASA, and private foundations and companies.

The New Jersey School of Architecture, already an established leader in computer-assisted architectural design, has begun a transition to a multi-disciplinary school giving rise to the College of Architecture and Design (CoAD). A BS degree in Industrial Design was added in 2005, and new BA programs were launched: Digital Design and Interior Design in 2008 and Fine Arts in 2009. The College's reputation continues to grow as faculty, students and alumni gain recognition regionally and nationally. CoAD has expanded degree offerings to allow students a broader range of educational choices and new areas in which to apply the "technology edge." The new School of Art and Design within CoAD is a case in point, offering the degrees in creative areas such as industrial design, interior design, digital design and fine art mentioned above, but with a 21st century twist in which students create their designs with the latest technological tools and software applications. The more comprehensive CoAd is more than a name change, it is a response to the unfulfilled educational needs within the State, which it strives to meet through the additional program offerings. Further, within the context of the University, CoAD strives to create a nexus between science and design with cross-discipline collaboration.

In the area of wireless technology, a team of researchers address issues such as privacy and security, interference and jamming, ever heavier user traffic, and rapid transmission of data through wireless networks. Current efforts focus on the concept of cooperative communications for wireless networks, such as cellular networks, sensor networks, and wireless ad hoc networks. The first strategic priority of the NJIT Strategic Plan, 2004-2010 was clearly met and exceeded.

1.2.2.2 Improve in Research and Intellectual Property Development

 At NJIT, we foster economic development through enterprise and workforce development and collaboration with government and businesses and through the development of intellectual property. During the plan period NJIT has built the largest Enterprise Development Center (EDC) in the state. The EDC is dedicated to helping NJ innovators develop, launch and commercialize their ideas. The EDC fosters economic growth in the state, workforce development, development of new technologies, entrepreneurship, sustainable growth, global competitiveness of NJ's businesses, and university access and industry collaboration. The portfolios of companies focus on the commercialization of scientific processes, products and services in key industry sectors. The EDC incubator has launched 85 businesses. In 2009 alone, the 95 companies in the incubator created more than 300 jobs, employed about 100 students part-time, and

posted a combined revenue of $40 million. Companies in the EDC have attracted a cumulative investment of approximately $58 million (in federal grants, VC/Angel funding, state grants, etc.). The National Business Incubation Association awarded its Soft Landings International Incubator designation to the EDC in 2010 in recognition of the EDC's work in providing services for nondomestic firms and its success in helping these firms enter the U.S. market (NJIT Newsroom, 2010).

We have also set and met a goal of improving our national ranking in research and intellectual property development by increasing the number of licenses from university held intellectual property to at least the average of a select set of benchmark peer institutions.   During the plan period the Office of Technology Development (OTD) was restructured and a new Patent Policy released. As a result Invention Disclosures have more than doubled from fewer than 30 in 2003 to an average of 80 in the last several years. A key metric universities use to evaluate their IP performance is the number of Invention Disclosures per million dollars of Sponsored Research. Over the past four years NJIT's ratio has been 90% or better (Note that the average is 45%). In 2009, NJIT ranked 15th of 170 US universities and research institutions responding to the annual AUTM survey. The pipeline of NJIT patent applications pending with the USPTO is almost 180. Table 1 summarizes the activity for the past 3 fiscal years. The number of issuing patents continues to increase. Another significant change coming out of the OTD restructuring is licensing revenue growth, which has increased from $16K in 2003 to more than $500K for FY2010. For FY2011, the current forecast is ~$250K.

Table 1.0 Patent and License Statistics

	FY2008	FY2009	FY2010	FY2011 YTD
Invention Disclosures	93	84	76	33
US Patent Applications*	65	97	60	24
US Issued Patents	11	13	17	21
IP Assets Licensed	103	117	234	196
License Income	$334K	$448K	$507.5K	$228K

NJIT's IP asset performance relative to a comparable set of institutions is above average. (Public: Michigan Technological University; Private: Lehigh University, Rensselaer Polytechnic Institute.) (For a list of the NJIT private and public benchmark institutions, see the Working Group Report, Standard 7.) Based on 2010 reporting for FY2009, NJIT ranks among identified benchmarks first in 5 of 11 metrics: sponsored research dollars, invention disclosures, licenses and options executed, licenses and options yielding

income, and patents filed. Significantly, this asset performance has been accomplished with legal fees that are next to minimal among our benchmark institutions.

Increasing research expenditures nevertheless remains a challenge. We are close to meeting the goal (60) for PhD graduates, now in 16 disciplines (vs. a target of 15). The number of commercial licenses from university held intellectual property (117) has well exceeded the target of 50. These priorities are less well known in the university as their impact is not widely understood among the general NJIT community.

1.2.2.3 Enrich the Quality of Life of the University Community

A key priority of the 2004 Strategic Plan was to improve the quality of campus life, focusing on campus appearance, administrative infrastructure, athletics and cultural activities. The reconfiguration and enhanced landscaping of the Campus Green, the installation of the artificial turf soccer field and running track, the now completed move to NCAA Division I Athletics are all acknowledged as contributing to a more attractive and engaging campus atmosphere. The number of cultural events and the growing attendance at such events are acknowledged in the student satisfaction survey results. The acquisition of Central High School, the addition of the Naimoli Center and the plans for the Greek Village are expected to increase classroom, living and programming space for the entire campus community.

Enhancing and enriching the quality of life of the university community and ensuring a focus on the student was an important priority in the 2004-2010 Strategic Plan. Back in 2002, the campus was a typical urban concrete landscape lacking distinction. Since then there has been a most profound change in its appearance. A concerted effort in campus beautification combined with the launching of our new university branding initiative has made a significant change in the look of the campus. As a result of the *Landscape Master Plan* (2005), NJIT's Newark campus has blossomed into an attractive, pleasant environment for students and staff within the concrete landscape of University Heights. The beautification efforts combined with signage and banners reinforce university branding to establish a distinct campus presence within the city of Newark.

NJIT is more involved than ever in its immediate community and promoting its potential as a vibrant cultural center. Enhancing campus life and the neighborhood around NJIT is important to the growth of NJIT as an urban university. In just the past few years, we've seen major revitalization coming as a result of the opening of the New Jersey Performing Arts Center and Bears and Eagles Riverfront Stadium, the home field of our Highlander baseball team, the opening of the Prudential Center, home to the New Jersey Devils professional hockey team as well as Highlander basketball.

As a major element of NJIT's engagement in regional economic development, NJIT is making a major contribution to the Newark Renaissance. The *Campus Gateway* project, launched in 2006, is a key effort to improve amenities available to the university and

revitalize the surrounding community. The project elements include enhanced housing, new commercial space with shops and restaurants, and will result in the establishment of a Greek Village for fraternities and sororities on campus property adjacent to Lock and Warren Streets, with an existing row of fraternity houses along Martin Luther King Boulevard to be converted to private town houses. The Newark Municipal Council has passed a resolution designating NJIT as the "sole and exclusive redeveloper" of properties specified in the Gateway plan, covering an area of 18 acres north of campus extending along Dr. Martin Luther King, Jr. Boulevard to Orange Street. NJIT was charged, through a Redevelopment Agreement with the City, with the responsibility of ensuring implementation in the best interests of all stakeholders (Altenkirch, 2008). The *Campus Gateway Project* plan will connect with a city project known as Transit Village. Together, the two projects, part of the City's Broad Street Station District Redevelopment Plan, will create a vital urban center in the heart of Newark's University Heights section. The campus revitalization plan comes at a time when the city is undergoing a major renaissance. Such leadership in community redevelopment is unique among public universities nationally; indeed, in the region, the only comparable effort was made at the University of Pennsylvania (Rodin, 2007).

Continuing physical transformation of the NJIT campus includes a 2008 delayed agreement to purchase adjacent Central High School with closing and NJIT ownership taking place in June 2010. Following renovation, the building now serves as a classroom building. Following further renovation, the building is planned to serve as a showcase of NJIT activities for visitors, to provide learning spaces, and to be a link to the surrounding community.

As further demonstration of our commitment to enrich the quality of life of the community, NJIT is now a full member of the NCAA Division I, with all of our athletics teams competing at the top level. We are already seeing the benefits of this in increased visibility both among peer institutions across the country and among student athletes we recruit. We have begun to build greater interest among the NJIT family for our athletics teams. Our baseball team plays at Bears and Eagles Riverfront Stadium, and some of our basketball games are played at Prudential Center. Using these state-of-the-art facilities has helped us draw alumni back to NJIT and also to Newark, which is equally important to us.

The university's *Campus Master Plan* (2008) strengthens and expands on progress to date including: renovation of aging buildings (Tiernan Hall's wet labs, Faculty Memorial classrooms, and Oak Residence Hall), expansion of the library, development of new academic sites throughout the campus to create a sense of place and awareness of ongoing research, enhancement of athletics facilities to support Division I status, increase campus recreational opportunities and allow the community to be actively engaged in future sporting events, and establishment of well-defined campus edges with prominent gateway buildings, with visitors arriving at the campus on Summit Street approach via a tree-lined pedestrian mall closed to traffic.

This section of our working group report has documented the evolution of NJIT's mission, vision, core values, value proposition, and goals from 2002 to 2011. Have we been able to demonstrate that our stated mission is clear and generally understood by the entire campus? The remainder of this section provides evidence of the various ways that we have achieved mission differentiation from others and penetration within our community. We will show that the institution's mission clearly defines its purpose within the context of excellence in higher education and indicates those shareholders the institution serves and that which the institution has accomplished. The mission and goals, as we demonstrate, are developed and recognized by the institution with the participation of its members and governing body and shape its programs and practices and to assess its effectiveness.

1.2.2.4 Increased enrollment and graduation of high achieving students from diverse national and international populations

Enrollment of the highest-achieving students, those in the Albert Dorman Honors College, has grown to 661, from 9% of the undergraduate population in 2002 to almost 11% of the undergraduate population in 2010. We achieved our Strategic Plan target enrollment for women and Hispanics, and have grown the percentage of African-American students. The SAT profile for incoming freshmen was maintained while the headcount for FTFTF reached an all-time high. NJIT students achieved national recognition in such venues as the Steel Bridge Competition, the East Coast Venture Challenge, AIAA Competitions, the Mini-Baja Competition, to name a few. Improving graduation rate has remained a challenge.

1.2.2.5 Increased revenue from private sources

Goals for gift revenue and total number of donors as set out in the 2004-10 Strategic Plan were met, while the total number of alumni donors remained level. Emphasis on external support is retained as part of the present Strategic Plan.

1.2.3 Additional Impacts on NJIT Mission

As demonstrated above, the NJIT planning process, its management made cohesive by the ViSTa process, has resulted in a deep sense of mission penetration. Additional initiatives resulting from the 2004–2010 and 2010-2015 Strategic Plans deepen the mission further from alumni to administrators to the individual student. The individual mission and strategic plans of NJIT's five colleges both impact and inform the overall institutional mission.

In keeping with the strategic priority—to enhance and enrich the quality of life of the university community and ensure a focus on the student (Altenkirch, 2004)—NJIT initiated a project to reengineer systematically its administrative and academic processes; begun in June 2008 this multi-year, campus-wide effort would improve customer and

student satisfaction. Hence the efforts to implement new ERP (Enterprise Resource Planning) systems at NJIT have been branded as *Project ORBIT* (Organizational Reengineering using Banner Information) (Bishof, Kelly, Ullman, 2010).

As of the present writing, Banner Information has been successfully implemented to provide a single integrated database for the university's core student, financial, and human resource operations. The integrated database has eliminated a silo approach in many cross-functional university processes. Students, faculty and staff have easy access to information through web browsers. New reporting features provide improved access to information academic chairpersons, deans, and other department heads need to make effective decisions and efficiently manage their operations.

In keeping with the strategic priority of increasing revenue from private sources in the 2004-2010 strategic plan, NJIT began a strategic planning process in May 2003 for the Alumni Association of NJIT. With a Strategic Planning Committee composed of representatives of the university's senior leadership, the NJIT Alumni Association, other alumni, faculty and staff, the group developed specific strategic areas of organization/structure/governance, communications, and programs/services. In its milestone assessment report of 2009, NJIT had met the following objectives: increase gift revenue from private sources; increase total number of donors; launch and complete two focused capital campaigns; and launch the quiet phase of a comprehensive campaign. The objective of increasing the percentage of alumni donors was still in process. Aligned with the former strategic plan, the 2010-2015 Strategic Plan reinforced NJIT's goal to sustain a base of private support with an additional objective to develop and implement a communications and messaging plan focusing on selected key messages.

NJIT's six individual Colleges and Schools have strategic plans that allow them to track their penetration of the NJIT mission: the Albert Dorman Honors College, College of Computing Sciences, College of Architecture and Design, College of Science and Liberal Arts, Newark College of Engineering, and the School of Management. As noted in Working Group Report for Standard 2, the university-wide strategic planning process and progress toward meeting the goals and objectives of the plan are very transparent. However, while all academic units have strategic plans, not all have adopted the ViSTa planning process in the formulation of their plans. (To achieve the adoption of a uniform accountability plan for each of the NJIT colleges and schools, see our first recommendation in this report, as well as the first recommendation from the Working Group Report for Standard 7.) One example of implementation of the ViSTa planning process suggesting the strength of a uniform model is present in *A Strategic Plan for the College of Science and Liberal Arts: 2009-2014*. Dean Fadi Deek (2009) notes that CSLA has developed a coherent overall image of its structure, mission and strategic agenda for education and research since its earlier planning document in 2004. The CSLA mission remains consistent—to conduct the highest caliber of scholarly research, to provide all undergraduates with the fundamentals needed for lifelong learning through our general education courses, and to prepare the next generation of leaders through a broad array of

undergraduate and graduate programs and professional education opportunities. Such consistency and deepening is assisted by use of the ViSTa model. Following that model, the academic plan was constructed with input from all CSLA units: the Department of Biological Sciences (Federated with Rutgers-Newark); the Department of Chemistry and Environmental Science; the Department of History (Federated with Rutgers-Newark); the Department of Humanities; the Department of Mathematical Sciences; the Department of Physics; the Program in Science, Technology, and Society; and the Rutgers-NJIT Theatre Arts and technology Program.

The CSLA academic plan is informed by three existing models. The first is the unified model of assessment developed by Provost Ian Gatley. His paradigm of assessment incorporates articulation of our core value with evaluation of our institutional learning goals for degree programs and our NJIT core competencies for our General University Requirements. (For more on this university-wide model, see Working Group Report, Standards 7 and 14.) The second, consistent with regional accreditation practices, is informed by outcomes assessment systems developed by the Middle States Commission on Higher Education. Especially, the monograph entitled *Student Learning Assessment: Options and Resources* (2008) was helpful in allowing CSLA to track NJIT mission penetration within CSLA, as was the recent publication of *Planning and Assessment in Higher Education* (Middaugh, 2010). The third model, the NJIT ViSTa plan allows CSLA to track its vision, strategies, and tactics in their congruence with the emerging *NJIT Strategic Plan, 2010 to 2015 (*Altenkirch, 2010). Taken together, these three models allow articulation of the CSLA Academic Plan.

To demonstrate mission penetration from the institution to the college and then to a program and its courses, we may use the example of the Program Review Reports, as described in the Working Group Report on Standard 14. Shown in the abbreviated table below, one CSLA program, the Master of Science in Professional and Technical Communication, extended institutional values through programmatic values into objectives and outcomes.

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**Table 1.1 Institutional, General, and MS·PTC Goals and
Educational Objectives**

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Institutional Level Goals	General Program Goals	Specific MS·PTC Program Goals	MS·PTC Educational Objectives
Prepare students for productive careers and amplify their potential for lifelong personal and professional growth	Awareness of learning as lifelong educational activity; awareness of economic opportunity as integral to individual and community advancement.	MS·PTC prepares students for technical communication field with employer recognized core competencies; Professional ePortfolio demonstrates core competencies to showcase skills for career beginning, changing, or promotion.	Communication. Mastery of Own Discipline. Audience analysis, ability to adapt communication to situation, genre knowledge, understanding of rhetorical situation, rhetorical problem solving, cultural interpretation, reflective practice, disciplinary history, general, transferable skills in analyzing texts, communicating effectively; Style, correctness, organization; Visual communication, format, graphics.

Significant here is that this program does not benefit from regional or program accreditation by an established agency. While NJIT has a long and successful history of degree programs accredited by the Accreditation Board for Engineering and Technology, the Association to Advance Collegiate Schools of Business, and the National Architectural Accrediting Board, the NJIT Program Review Process demands that all degree programs undergo peer review to assure the kind of documented plan for assessment achieved by the MS in Professional and Technical Communication. (For more on the NJIT Program Review Process, see Working Group Report on Standard 14.)

1.2.4 Causal Factors Associated with Change

Internal and external forces determine the state and future trajectory of the university. The major external forces are a) state budget appropriations, b) the rapidly changing professional landscape, c) new student demographics, and d) emerging political currents. In turn, the main internal forces are a) changing student profiles, b) evolving research funding priorities, c) student demographics and d) enrollment challenges and opportunities.

Figure 1.0 Revenue and Tuition, 1994-2008
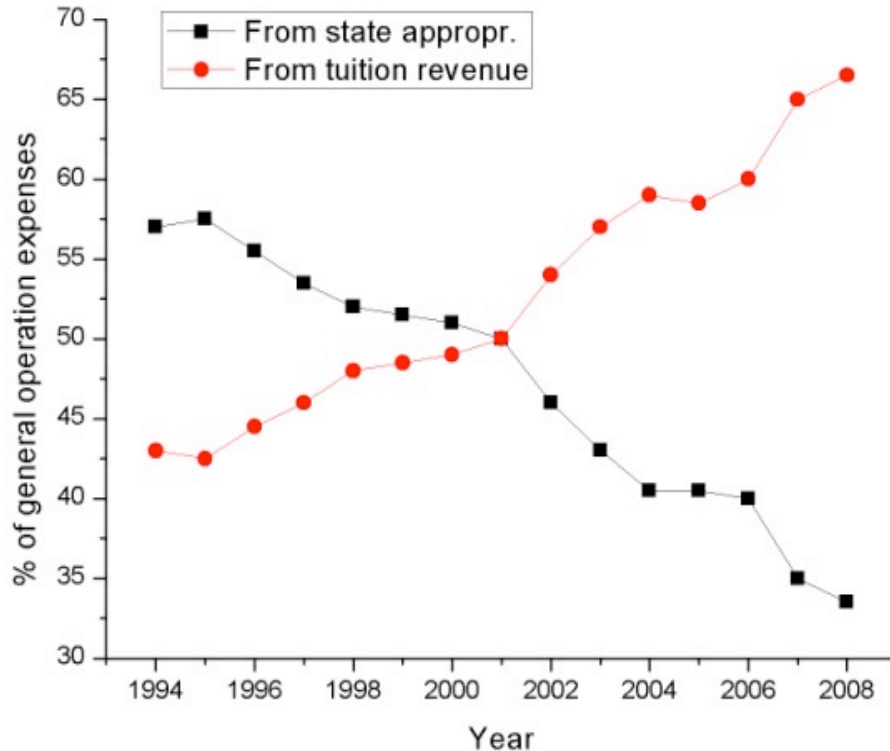
As Figure 1.0 demonstrates, the source of the university revenues experienced a qualitative shift around year 2000-2001, when state budget appropriations became a smaller fraction of the total university budget, and tuition revenues became the main source. Including other sources (such as research funds) the total budget has slightly increased over the past 10 years. NJ is a state that uses collective bargaining, which has become a partially unfunded mandate at present, and thus a new challenge. (For a detailed report on state funding, see Working Group Report on Standard 3.) 1.2.4.1 Profession landscape.

All professions, particularly engineering, architecture, and the basic sciences have significantly changed in recent years, and are expected to change even further in the future. This imposes a requirement to implement changes in curriculum and in staff preparedness and training. (For more on our preparations and accountability measures to examine faculty performance in teaching, research, service, and economic development, see Working Group Report for Standard 7, with special attention to the metrics associated with the Faculty Performance Based Salary Increase Distribution System.)

1.2.4.2 Student Demographics

We have passed the zenith of college-bound student population, which implies an increasingly more competitive recruitment process, throwing into question an approach that relies on continuous population growth. Relative to graduate students in particular, national immigration policies are changing and a stronger reliance on US nationals may be important. Critically examining the nature and effectiveness of new teaching modality approaches (e.g. distance learning) is necessary. (For more on student demographics, see Working Group Report on Standard 8.)

1.2.4.3 Political Currents.

As the *Report of the Governor's Task Force on Higher Education* (Kean, December 2010) and Executive Order 51 (Christie, 2011) highlight, NJ state universities must be increasingly able to compete for out-of-state students as well as to retain in-state students. The Report emphasizes the present imbalance of outmigration versus immigration of eligible college students. Approximately 20% of highly qualified NJ resident students leave the state for higher education opportunities elsewhere, but only a fraction come to NJ from out-of-state. Likewise, the Report and Executive Order 51 indicate that the organization of senior universities, and in particular the reorganization of medical schools, is under review at the state level. President Altenkirch has remarked in his January 4th, 2011, remarks to the faculty that "the report recommends that other operations of UMDNJ be addressed including the future of medical education in Newark and South Jersey, although the report is vague/silent on what that might be" and that "economic benefits would flow from a focused effort to restructure and revitalize the components of UMDNJ in Newark. New Jersey's public research institutions—Rutgers University and NJIT—must step up and provide the leadership needed to provide the resources and knowledge to achieve this essential vision."

1.2.5 Internal Forces

While external forces continue to impact the NJIT mission and goals, so, too, do internal forces.

1.2.5.1 Research Funding Reports

Research funding has been successful and is reflected in fast growth in the procurement of external funds from federal, state, and private sources, as well as from earmark appropriations. As these appropriations become more uncertain in the future, dependence on the other sources of funding mentioned will increase. At NJIT the Sponsored Research Administration (SRA), as part of the Office of Research and Development, advises and assists faculty and staff members of the NJIT Community in all aspects of externally funded research projects and other scholarly activities—from the identification of a potential sponsor and the preparation of a proposal, through various

administrative functions (related to budgets, personnel, sub-contracts, reporting and accountability, and negotiations with the sponsor) during the course of the project, to the submission of the documents required to close out the project.

1.2.5.2 Enrollment Data

Because tuition now constitutes the largest fraction of University revenue, enrollment at all levels constitutes a major internal force to drive change. Undergraduate enrollment is growing, and graduate enrollment is steady, as Figure 1.1 illustrates.

Figure 1.1 Enrollment Patterns, 2000-2010
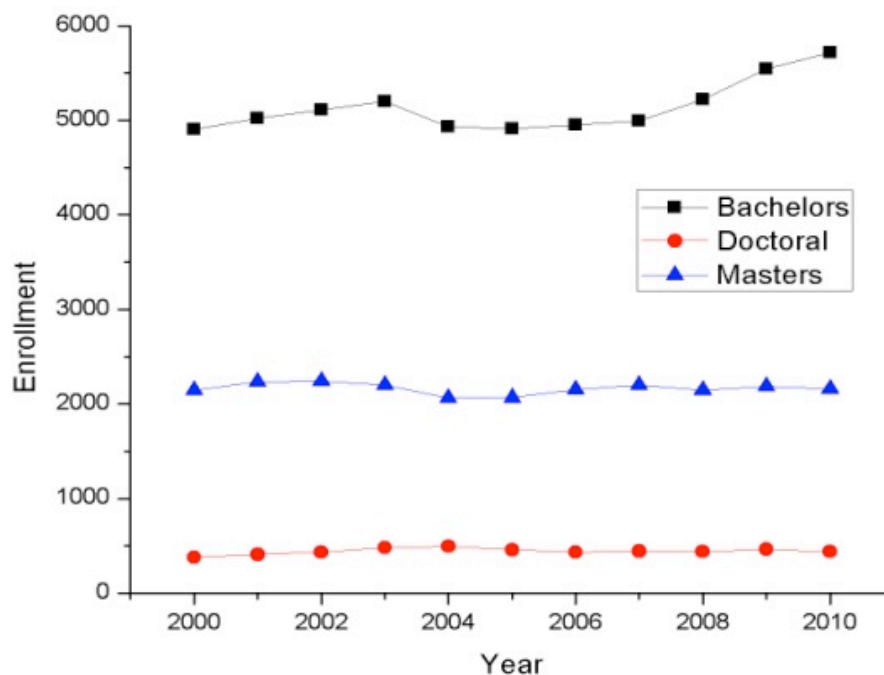
Investment, to satisfy properly the needs of these undergraduate and graduate students, is an important force for change.

1.2.5.3 Honors College and the Medical School at St. George's University

As Figure 1.2 demonstrates, the Albert Dorman Honors College has been effective in recruiting high achieving students and a growing number of these are simultaneously pre-admitted to medical schools via accelerated programs, particularly to St. Georges University in Grenada (currently approximately 3% of all Honors students). This population of students brings quality to NJIT, strengthens the connections with medical schools especially at a time when NJIT's association with a medical school is under review. The extent of the investment to support and expand this program is an important internal factor for change.

Figure 1.2 Albert Dorman Honors College Enrollment at NJIT, 2000-2010
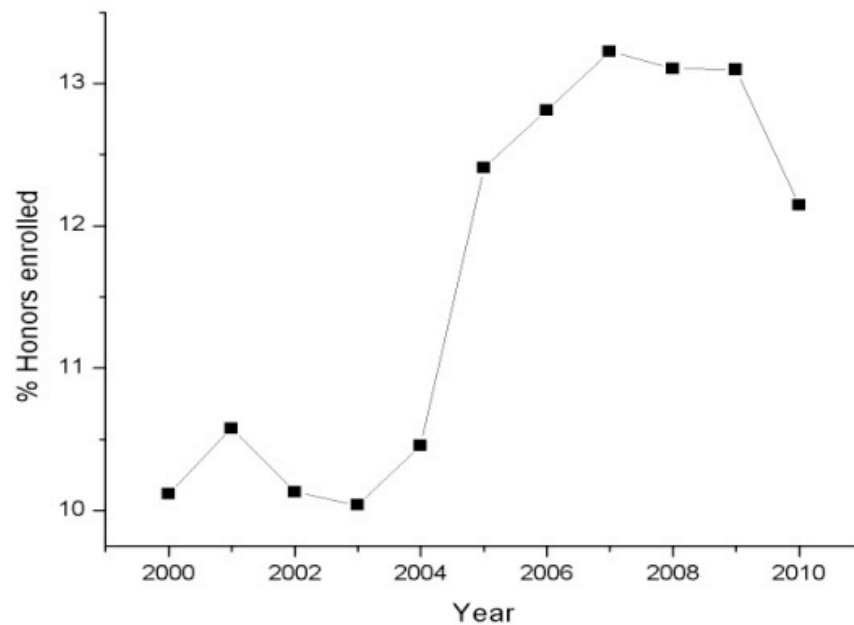
1.2.6 Mission Differentiation for Existing and Potential Markets

NJIT is the State's only technologically intensive public University, and we strive to maintain this unique identity. A private benchmark university within our State is Stevens Institute of Technology:

- *Stevens Institute of Technology Mission Statement* - Stevens creates new knowledge and educates and inspires students to acquire the competencies needed to lead in scientific discovery and in the creation, application and management of technology to solve complex problems and to build new enterprises (Stevens, 2011).

In addition to this regional university, NJIT includes among its benchmark group universities in the eastern US. Included below are mission statements for two universities that are similar to the NJIT mission:

- *Rensselaer Polytechnic Institute* - To achieve greater prominence in the 21st century as a top-tier world-class technological research university with global reach and global impact (RPI, 2011).
- *Georgia Institute of Technology* - Technological change is fundamental to the advancement of the human condition. The Georgia Tech community—students, staff, faculty, and alumni—will realize our motto of "Progress and Service" through effectiveness and innovation in teaching and learning, our research advances, and entrepreneurship in all sectors of society. We will be leaders in improving the

human condition in Georgia, the United States, and around the globe (Georgia Tech, 2011).

Clearly, our mission and goals are distinct from these benchmark universities in our attention: to education that is both professional and lifelong; to research in focused areas of application;, to collaborative economic development with the business community, and; to service that is policy, educationally, and community-based.

From 2002-2011, NJIT has consistently strived to achieve key metrics that demonstrate mission accomplishment and differentiate it from state and regional benchmark universities. Notably these metrics have enabled us to transition from a Tier 2 to a Tier 1 research intensive university. Tier 1 is a category assigned by *U.S. News and World Report* to the schools that rank in approximately the top 75% in each of the categories and receive a numerical ranking from the publication. Tier 2 is assigned to the bottom 25% schools, and they do not receive a numerical rank. Listed below are specific University achievements that help differentiate us from other local universities.

- The *Princeton Review* has ranked NJIT among the nation's top 50 public undergraduate institutions for outstanding value. According to *The Princeton Review*, NJIT "stands today as one of the nation's most prominent research schools, specializing in nanotechnology, solar physics, and polymer science… and retains its reputation as New Jersey's top choice for the hard sciences." . The *Princeton Review* also named NJIT among its Best 371 Colleges for 2010.
- *U.S. News & World Report's 2011 Annual Guide to America's Best Colleges* named NJIT among the nation's top tier of national universities. In addition, it was featured among a new list of 100 national universities: 'A-plus schools for B students.' NJIT also ranked fourth in Campus Diversity.
- The *Bloomberg BusinessWeek* survey of U.S. colleges ranked NJIT in the top 10 percent of 852 colleges and universities for return on investment and classified the university as one of four undergraduate higher education "best buys" in New Jersey based on potential income earned.
- NJIT was named a member of the worldwide Open Courseware Consortium organization created by MIT to provide free and open digital publication of high-quality educational materials, organized as courses. Some 35 NJIT courses are available through the consortium. NJIT is the only institution of higher learning throughout New Jersey and New York to have achieved this distinction.
- NJIT is the 2009 recipient of the Rising University Star Award from the National Action Council for Minorities in Engineering. The award recognizes the achievements of universities that are contributing to increased diversity in engineering, science and technology.
- *Diverse Issues in Higher Education* once again listed NJIT among the nation's top 100 colleges and universities for awarding undergraduate degrees to students from underserved groups. The university ranked in the top 25 in engineering, computer

and information science and architecture, and in the top 50 for mathematics and statistics.

- We've expanded our degree offerings to allow students a broader range of educational choices and new areas in which to apply the technology edge. The new School of Art and Design is a case in point, offering degrees in creative areas such as industrial design, interior design, digital design and fine art, but with a 21st century twist – students create their designs with the latest technological tools and software applications. We've also added technology-rich degree programs in such disciplines as communications and media; law, technology, and culture; business and computing specialties; and teacher certification.

- A decade ago, educational and research programs in biomedical engineering and life sciences were almost nonexistent at NJIT. Today, biomedicine is the most pervasive focal area in the university. Founded in 2002, the Department of Biomedical Engineering has grown and developed rapidly, with more than 400 students and $2.5 million annually in grant support. Related degree programs and research projects can be found throughout the university in such specialties as bioinformatics, bioelectronics, biology, healthcare systems management, and pharmaceutical engineering, management and chemistry. Moreover, the College of Science and Liberal Arts has identified as one of its academic priorities to be the evolution of the bioscience theme across all of its departments. Most recently, in 2010, the B.S. in Biophysics and the B.S. in Biochemistry were added to the College's degree offerings.

- The environment is not a new subject for NJIT. In fact, when the York Center for Environmental Engineering and Science was opened in the early '90s, it was the largest and best equipped facility of its kind. But our focus has shifted from hazardous waste management and remediation. Today, we have architects designing sustainable housing and schools, civil engineers concerned with water quality, and biologists monitoring fish communities and other ecosystems. The extent of NJIT's international involvement may be somewhat surprising. Our faculty have research partnerships all over the world. Our solar physics group, for example, participates in projects from Antarctica to Hawaii.

- NJIT has been ranked in 11th in the nation for awarding bachelor's degrees in engineering to African Americans in the 2009 *Diverse: Issues in Higher Education*. It has also ranked 16th nationally for awarding undergraduate degrees in engineering to Hispanics and 19th for awarding them to minorities in general.

- Finally, NJIT is now a full member of the NCAA Division I, with all of our athletics teams competing at the top level. We are already seeing the benefits of this in increased visibility both among our peer institutions across the country and among the student athletes we recruit. We've also begun to build more interest among the NJIT family for our athletics teams. Our baseball team plays at Bears and Eagles Riverfront Stadium, and some of our basketball games are played at Prudential Center. Using these state-of-the-art facilities has helped us draw alumni back to NJIT and also to Newark, which is equally important to us.

- NJIT faculty received 27 new grants from the National Science Foundation during 2009-2010.
- University researchers gained 15 new patents in 2009-2010.
- The 2009 President's Higher Education Community Service Honor Roll recognized NJIT for an exemplary commitment to service and volunteerism.

From 2002-2011, NJIT has consistently strived to improve its various rankings, notably from a Tier 2 to a Tier 1 university. Table 1 summarizes the various university achievements.

AY	Achievements
2010/2011	*U.S. News & World Report's 2011 Annual Guide to America's Best Colleges* named NJIT among the nation's top tier of national universities. In addition, it was featured among a new list of 100 national universities: 'A-plus schools for B students.' NJIT also ranked fourth in Campus Diversity. - NJIT was featured in *Princeton Review's Guide to 311 Green Colleges.* - The bioscience theme evolves across the College of Science and Liberal Arts with new degree programs in biochemistry and biophysics.
2009/2010	- The 2009 President's Higher Education Community Service Honor Roll recognized NJIT for an exemplary commitment to service and volunteerism. - NJIT finished second among 300 universities participating in the UNICEF/ACUI (Association of College Unions International) Campus Challenge by raising nearly $10,000 to aid earthquake victims in Haiti. - NJIT's School of Management was ranked among the nation's top business schools by the Princeton Review in its 2010 edition of The Best 301 Business. - NJIT's Department of Computer Science was ranked among the top 100 departments in the world by the Academic Ranking of World Universities (ARWU) published by the Center for World-Class Universities and the Institute of Higher Education of Shanghai Jiao Tong University, China. - The Department of Mechanical and Industrial Engineering at Newark College of Engineering has been awarded the 2010 American Society of Mechanical Engineers (ASME) Lucy and Charles W.E. Clarke Scholarship. - NJIT faculty received 27 new grants from the National Science Foundation during 2009-2010. - University researchers gained 15 new patents in 2009-2010.
2008/2009	- The *Princeton Review* has ranked **NJIT** among the nation's top 50 public undergraduate institutions for outstanding value. According to *The Princeton Review*, NJIT "stands today as one of the nation's most prominent research schools, specializing in nanotechnology, solar physics, and polymer science… and retains its reputation as New Jersey's top choice for the hard sciences." *U.S. News & World Report's 2010 Annual Guide to America's Best Colleges* has named **NJIT** among the nation's top tier of national research universities offering a range of undergraduate majors and master's and doctoral degrees. NJIT is now ranked 115 among the nation's best national universities. The university is also seventh in the nation in campus diversity. **NJIT** is the 2009 recipient of the Rising University Star Award from the National Action Council for Minorities in Engineering. The award recognizes

the achievements of universities that are contributing to increased diversity in engineering, science and technology.

- *Diverse Issues in Higher Education* once again listed NJIT among the nation's top 100 colleges and universities for awarding undergraduate degrees to students from underserved groups. The university ranked in the top 25 in engineering, computer and information science and architecture, and in the top 50 for mathematics and statistics.
- NJIT has received a proclamation from N.J. Governor Jon S. Corzine recognizing the university and Panasonic "for their continued commitment to developing the creative thinking and technical skills of New Jersey's students." NJIT student interns help to design the Panasonic Creative Design Challenge, with NJIT faculty and staff serving as judges. Since 1991, NJIT has partnered with Panasonic in the competition sponsored by the company, which tests many skills as high school teams vie for college scholarships and other prizes.
- NJIT received a 2009 Wealth Engine Award for Educational Fundraising from the Council for Advancement and Support of Education (CASE), an award that honors superior fundraising programs across the country. NJIT merited an Overall Improvement Award based on the judges' analysis of three years of fundraising data submitted to the Council's annual survey.
- We've expanded our degree offerings to allow students a broader range of educational choices and new areas in which to apply the "technology edge." The new School of Art + Design is a case in point, offering degrees in creative areas such as industrial design, interior design, digital design and fine art, but with a 21st century twist – students create their designs with the latest technological tools and software applications. We've also added technology-rich degree programs in such disciplines as communications and media, pre-law, business and computing specialties, and teacher certification.
- A decade ago, educational and research programs in biomedical engineering and life sciences were almost nonexistent at NJIT. Today, biomedicine is the most pervasive focal area in the university. Founded in 2002, the Department of Biomedical Engineering has grown and developed rapidly, with more than 400 students and $2.5 million annually in grant support. Related degree programs and research projects can be found throughout the university in such specialties as bioinformatics, bioelectronics, biology, healthcare systems management, and pharmaceutical engineering, management and chemistry.
- The environment is not a new subject for NJIT. In fact, when the York Center for Environmental Engineering and Science was opened in the early '90s, it was the biggest and best equipped facility of its kind. But our focus has shifted from hazardous waste management and remediation. Today, we have architects designing sustainable housing and schools, civil engineers concerned with water quality, and biologists monitoring fish communities and other ecosystems. The extent of NJIT's international involvement may be somewhat surprising. Our faculty have research partnerships all over the world. Our solar physics group, for example, participates in projects from Antarctica to Hawaii.
- Our students in Engineers Without Borders are helping a town in Haiti purify its water supply. Our biomedical engineers are collaborating with researchers at British universities through theWhite Rose Health Innovation

	Partnership. At the same time, we are ever committed to Newark and New Jersey's cities, as researchers look at transportation and housing issues, while our graduate students work with high school teachers to bring more youngsters into science and engineering.
	• Finally, NJIT is now a full member of the **NCAA Division I**, with all of our athletics teams competing at the top level. We are already seeing the benefits of this in increased visibility both among our peer institutions across the country and among the student athletes we recruit. We've also begun to build more interest among the NJIT family for our athletics teams. Our baseball team plays at Bears and Eagles Riverfront Stadium, and some of our basketball games are played at Prudential Center. Using these state-of-the-art facilities has helped us draw alumni back to NJIT and also to Newark, which is equally important to us.
	• Twenty-two NJIT faculty members received new grants from the National Science Foundation.
	• University researchers gained 13 new U.S. patents.
2007/2008	• *U.S. News and World Report* ranked **NJIT** among top national universities.
	• *Princeton Review* named **NJIT** a best college and best Northeastern college.
	• **NJIT** ranks among the top 200 American research universities in an annual study by The Center at the University of Florida.
	• The university placed among the NSF top 50 colleges without a medical school for research expenditures.
	• In a study by Academic Analytics, as reported in the *Chronicle of Higher Education,* **NJIT's** Department of Mathematical Sciences was tenth in the nation among 375 universities that offer a PhD degree based on the Department's faculty scholarly productivity.
	• *Princeton Review* ranked **NJIT** among the 25 Most Connected Campuses in the nation.
	• **NJIT** was seventh among national universities in the *U.S. News* ranking of campus diversity.
	• The university also ranked as a national leader in graduating African-American, Asian-American and Hispanic engineers and computer scientists, according to *Diverse Issues in Higher Education.* Among these rankings,
	• **NJIT** was third in the nation in graduating African-American students with master's degrees in engineering, and 10th in the nation in engineering master's degrees awarded to students of all minority groups.
	• **NJIT** is a *U.S. News* top 100 engineering program at a doctoral university.
	• The university was tenth in the nation in mathematics and ninth in information systems based on faculty scholarly productivity in a study by Academic Analytics.
	• NJIT's College of Computing Sciences was ranked among the top 56 graduate schools of information technology in the "Schools to Watch" special report by *Computerworld.*
	• Middle States Commission on Higher Education reaffirmed NJIT's accreditation with the next evaluation visit scheduled for 2011-2012. The reviewers expressed a very favorable opinion of NJIT, its fiscal management, academic programs, research and development activities, and planning and assessment efforts.

	• The TECHS-NJ program, a collaboration with Rutgers-Newark, the Newark Public Schools, and the Newark Museum funded by an NSF grant, provides scholarships to NJIT and Rutgers-Newark students who earn a teaching certificate along with their undergraduate degree in science or mathematics and agree to teach in New Jersey's high-needs schools after graduation. The program, directed at NJIT by Bruce Bukiet, associate professor of mathematics, has enrolled seven students, four of whom will begin their teaching careers in 2009. • University researchers gained 12 U.S. patents in 2007-2008.
2006/2007	• *Diverse Issues in Higher Education* ranked New Jersey Institute of Technology (NJIT) among the nation's leading schools for graduating minority students: ▪ 18th in the United States, and first in New Jersey, for graduating African-American students with bachelor's degrees in engineering. ▪ 26th in the United States, and first in New Jersey, for graduating Hispanic students with baccalaureates in engineering. ▪ 25th in the United States, and first in New Jersey, for graduating Hispanic students with baccalaureates in computer and information sciences. ▪ Seventh in the United States, and first in New Jersey, for graduating Asian-American students with undergraduate degrees in computer science. ▪ 38th in the United States, and second in New Jersey, for graduating Asian-American students with baccalaureate degrees in engineering. • NJIT is one of an elite group of universities invited to join Apple's iTunes U, and one of only 16 featured as a link in the main iTunes store. The program allows students and visitors to download podcasts of selected lectures to their iPods. • An NSF study ranked NJIT 7th in the nation for growth in the area of most cited articles. Citations of university research increased 72 percent over the 15-year period (1988-2003) that the study analyzed. • NJIT's School of Management was ranked among the "Best 282 Business Schools" by Princeton Review. • The university's Enterprise Development Center was cited by the Council on Competitiveness as a benchmark example of a high-tech business incubator that is contributing to the success of a regional economy. • The College of Computing Sciences ranked 22nd in the nation for awarding bachelor's degrees in computer science; sixth nationally for awarding master's degrees; and 25th for awarding doctoral degrees in computer science, according to the most recently published data compiled by the National Science Foundation (NSF) and reported in *Computing Research News*.
2005/2006	• Ranked by *U.S. News and World Report* among the top national universities and the top public universities, NJIT is also tied for 10th in the nation for ethnic diversity on campus in the annual survey. • NJIT has been designated by *The Princeton Review* as a "Top 25 Most Connected College" and a national "Best Value College." • The School of Management (SOM) has been designated among the 2007 Best 282 Business Schools by *Princeton Review*. • The College of Science and Liberal Arts (CSLA) launched two new programs in health professions in cooperation with UMDNJ School of Health Related Professions. Both the BS/Doctor of Physical Therapy and the BS/Master's in

	Physician Assistant are six-year dual programs in which the final undergraduate year is also the first year of the professional program.
	• A new BS in Concrete Industry Management of Technology was established at Newark College of Engineering (NCE) with support from industry. A national coalition of concrete-related businesses and trade groups is providing internships, speakers, research support and networking as well as scholarship funding. The program emphasizes management, communications and problem-solving skills as well as technologies used in the concrete industry.
	• NJIT launched a number of educational partnerships to make the university's programs more accessible to students throughout New Jersey, including:
	• A BS in Information Technology offered at Camden County College with concentrations in network security, management, and criminal justice and law.
	• An accelerated BS/MS in computer science or mathematics with William Paterson University.
	• An accelerated BS/MS in computer science or information systems with New Jersey City University.
	• NJIT established a Research Experience for Undergraduates program in computer networking and security, led by John Carpinelli, Professor of Electrical and Computer Engineering. Funded by the National Science Foundation, the summer program allows students from all over the country to participate in research projects involving the very latest technologies.
	• NJIT is offering companies and government agencies a new certificate program designed to combat digital and physical terrorism. Available at the company's own site or via distance learning, the six course program offers practical, hands-on counter-terrorism and cyber-security strategies.
2004/2005	• In the listings published in June 2005, Black Issues in Higher Education once again ranks NJIT among the nation's leading schools for graduating minority students:
	▪ 19th in the United States in graduating minority students with bachelor's degrees in engineering.
	▪ 13th in the nation, 1st in New Jersey in graduating minority students in computer and information sciences.
	▪ 9th in the nation, 1st in New Jersey in awarding engineering degrees to African-American students. The total baccalaureate diplomas awarded to African-Americans increased 50% over the previous year.
	▪ 16th in the United States, 1st in New Jersey in graduating Hispanic students with undergraduate degrees in engineering.
	▪ 27th in the United States for graduating Asian-American students with baccalaureates degrees in engineering.
	▪ 8th in the United States in graduating Asian-American students with baccalaureate degrees in computer and information sciences.
	• NJIT also ranked 1st in the nation in awarding master's degrees in computing sciences to Asian-American students and 9th in the nation for awarding master's degrees in engineering to African-American students.
	• NJIT was named among the top 500 world universities in a study by the Institute of Higher Education, Shanghai Jiao Tong University. Institutions were judged on quality of education, quality of faculty, research output and size; only 170 U.S. institutions were ranked in the top 500.

	• New Jersey Institute of Technology received an Educational Visionary Excellence Award from INROADS/ Northern New Jersey, Inc., a non-profit group that helps minority students get internships with major companies. The university has worked with INROADS for nearly ten years, helping 120 NJIT students obtain internships with companies such as Lucent Technologies, Pfizer and PSE&G. • NJIT's Educational Opportunity Program has received two major awards from the National Action Council for Minorities in Engineering (NACME). The NACME Scholars Award, in recognition of NJIT's success in recruiting and graduating minority students in the technical professions, provided scholarship funding to ten EOP students. The NACME Gala Award, also providing awards for ten students, recognized NJIT's unique and creative academic support programs. • NJIT awarded 1,821 bachelor's, master's and doctoral degrees at annual commencement exercises held for the first time at Continental Airlines Arena. The larger venue allowed the university to conduct a single, unified graduation program. In previous years, the university held both winter and spring commencements. Arthur F. Ryan, chairman and chief executive officer of Prudential Financial, Inc., received an honorary doctoral degree for his outstanding professional achievements in the financial industry and for his commitment to academic excellence and community service.
2003/2004	• NJIT ranked among the nation's top national doctoral universities and among the top 100 engineering schools with doctoral degree programs, according to the *U.S. News & World Report's 2004 Annual Guide to America's Best Colleges*. The University was tied with MIT for ninth in the nation for campus diversity in the survey. • In a *U.S. News* survey of 152 online programs, NJIT placed seventh in the nation, second among public universities, in eLearning enrollments among "America's Best Online Graduate Degree Programs." • NJIT has been designated a Center of Academic Excellence in Information Assurance Education by the National Security Agency. Ali Akansu, professor of electrical engineer, spearheaded the proposal activity that led to the designation. • According to Forbes.com, NJIT ranks among the nation's 25 "most connected" campuses. • NJIT ranks among "Top American Research Universities" in an annual study by The Center at the University of Florida. With growth of some 355 percent since 1991, the university's program ranks among the fastest-growing university R&D programs in the country and among the top five research programs among the nation's technological universities. • *Black Issues in Higher Education* ranks NJIT among the nation's leading schools for graduating minority students. • NJIT was named the first recipient of the Excellence in Technology Education Award presented by New Jersey Technology Council (NJTC). NJTC annually recognizes outstanding technology companies and individuals who contribute to "growth, achievement and excellence in diverse technology sectors of New Jersey." Recognized in a new category that honors an educational institution that has excelled in promoting technology in New Jersey," NJIT was nominated

	for the award by James A. Coleman, Jr., Esq., chairman of International Matex Tank Terminals, a member of the University's Board of Overseers, and by Anthony Thomas, chief technology officer at Horizon Blue Cross/Blue Shield. • NJIT's men's soccer program has been accepted into the NCAA's Division I. • Two companies in NJIT's Enterprise Development Center (EDC) were honored at the NJTC 2004 Venture Fair. Great American Technologies Inc., (GAT), a company that designed the first hands-free, infrared earpiece for the hands-free cell phone market, was named best communications company. Urovalve, a company that invented a device for men who have urination problems, was named most socially responsive company.
2002/2003	• NJIT gained Tier 2 status in the *U.S. News and World Report* survey, placing us in the top half of the leading national doctoral universities.

1.2.7. Captured and Potential Opportunities

NJIT faces many challenges, including changing demographics among its student population, increased competition for financial support from public and private sources, and rapid obsolescence of technology. The university has therefore adopted an effective strategic planning process that helps it to adapt and thrive in this rapidly changing environment. Specifically, this process allows us to seek new opportunities and pursue them to fruition.

In a university setting, gaining consensus around the content of a strategic plan is critically important, in part because of the university's use of a shared governance model for management. With this consideration in mind, we follow a "top down – bottom up" approach to developing NJIT's strategic plan and associated metrics. The bottom up component is designed to elicit input from the university's key stakeholders including representatives from university faculty, researchers, administration, alumni, students, Board of Trustees, Board of Overseers, local and state government agencies, etc. The top down component is equally – if not more – important, as it is designed to ensure that the university selects a small number of strategic priorities on which it can focus to achieve its objectives.

To ensure that the university's Vision addresses real market needs and its Mission is truly achievable, NJIT needs an understanding of its own strengths and weaknesses, market trends, and its competitive position within the marketplace. As such, when the Vision Statement is created, several internal and external assessments are done. The basis for these assessments are data obtained from a variety of sources, including market research, enrollment statistics, financial reports, labor statistics, demographics, academic ratings and rankings, student evaluations, benchmarking studies, personal observations, etc. Examples of opportunities pursued include:

• *Transforming the Urban Landscape* - Over the last several years, NJIT's Newark campus has blossomed into a pleasant and attractive environment for students and staff within the concrete landscape of University Heights. Beautification efforts

combined with signage and banners reinforce university branding to establish a distinct campus presence within the city of Newark. In 2007 NJIT conducted the Campus Gateway Survey. Overall, the survey demonstrated that among students, faculty and staff there is a strong desire for increased retail opportunities, most notably cafes, restaurants and a grocery store. The community as a whole does not use mass transit, and while transportation patterns may change if additional housing options are offered, it appears likely that automobile traffic and parking will play a significant role in any neighborhood evolution. Safety was a top-of-mind issue for students.

- *Taking Athletics to the Next level* - Beginning in September 2009, NJIT became an across-the-board active member of the NCAA Division I, culminating a process initiated by the university in 2003. The new status allows NJIT, its teams, and student-athletes to enjoy the full benefits of Division I membership, including eligibility for Division I postseason championship competition and the potential inclusion of Highlanders among the national Division I leaders in statistics maintained by the NCAA.

- *The Bioscience Boom* - In under a decade, biomedicine has become the single largest concentration at NJIT in education as well as research. The Department of Biomedical Engineering, founded in 2002, is now one of the largest in the university with nearly 400 students enrolled from bachelor's to doctoral level. The Department of Biological Sciences (Federated with Rutgers-Newark) has nearly 200 students in undergraduate and graduate degree programs. In addition, degree programs focusing on specific aspects of the life sciences and health care, developed and launched in 2008-2009, are offered in departments throughout the university. These include: bioinformatics (information systems); bioelectronics (electrical and computer engineering); biostatistics (mathematical sciences); computational biology (mathematical sciences); healthcare systems management and pharmaceutical systems management (mechanical and industrial engineering); pharmaceutical bioprocessing and pharmaceutical engineering (chemical, biological and pharmaceutical engineering); and pharmaceutical chemistry (chemistry and environmental science). Most recently, degree programs in biophysics and biochemistry were added in 2010. The university also has accelerated joint degrees with professional schools for programs in medicine, dentistry, optometry, physical therapy and physician's assistant.

- *Excellence by Design* - in 2009, the School of Art + Design was formed, which, along with the New Jersey School of Architecture now comprises the College of Architecture and Design. The rationale for the change was both the growing need for design professionals in such fields as video game and web design, product packaging and interior design and the increasingly critical impact of design on the economy. This year, the new school began to take its place among benchmark institutions at exhibits and shows, while the School of Architecture expanded its

longstanding reputation for excellence through recognition of the work of students, alumni and faculty.

- *Designing Sustainable Systems* - A cleaner, safer environment has been high among NJIT's educational and research priorities for decades. In the '80s and '90s, the university partnered with industry in one of the nation's leading research efforts in hazardous waste management and remediation of toxic sites. Today the emphasis has expanded to include sustainability and efforts to protect natural resources and preserve them for the future. The new strategic plan encourages teaching and research programs that apply sustainability principles to building and design, manufacturing, transportation and other fields.

1.2.8. The Contemporary NJIT Community

NJIT was founded in 1881 when the State legislature, acting largely at the urging of the Newark Board of Trade, passed "An Act to Provide for the Establishment of Schools of Industrial Education." For the past 130 years, the school that is now NJIT has retained its initial purpose of teaching students the skills needed to participate in and provide leadership for technological industries and offer government and industry in the State the skilled personnel needed to foster a thriving technology based economy. In 1918, the school received approval to offer college-level courses offering programs leading to B.S. degrees in chemical, electrical and mechanical engineering. Civil engineering was added in 1931, one year after the name was changed to Newark College of Engineering. In 1974, the New Jersey School of Architecture was established; its bachelor's degree program was accredited in 1978. In 1975 the new organization and mission of Newark College of Engineering was officially recognized with the name change to New Jersey Institute of Technology. With the establishment in 1982 of the College of Science and Liberal Arts, NJIT achieved a university structure of three distinct colleges. In 1988, a fourth college, the School of Industrial Management was established. The Albert Dorman Honors College was established in 1994, the College of Computing Sciences was founded in 2001, and the College of Architecture and Design was formed in 2009.

In the Higher Education Restructuring Act of 1994, the State Legislature conferred on NJIT statutory designation as a "public research university." Subsequently, New Jersey recognized NJIT as "essential" and "necessary for the welfare of the state and the people of New Jersey" in legislation signed by Governor Whitman in January 1996. The New Jersey Institute of Technology Act provides an updated statutory basis for the university and asserts NJIT's status and role as one of the state's three public research universities.

Today the NJIT student body is very diverse, including a large number of international students and women. In addition, being located in Newark and part of the New York Metropolitan area we draw and offer educational opportunities to a large number of minority students. This change in the composition of our student body has been made possible by the addition of student housing in the past few years and a transformation of

the campus itself into an appealing and welcoming environment for our students on campus. In the next few years we are looking forward to seeing the whole surrounding University Heights neighborhood redeveloped and enhanced into an attractive destination for students with living options and retail and entertainment amenities. These students are engaged in many different programs of graduate and undergraduate study. Table 1.2 provides the number of Bachelors, Masters, and Doctorate degrees conferred over the past five years:

Table 1.2: Degrees Conferred by NJIT

	Bachelor's	Master's	Doctorate	Total
FY2006	870	913	75	1,858
FY2007	949	858	52	1,859
FY2008	880	983	59	1,922
FY2009	856	944	60	1,860
FY2010	907	959	65	1,931

Our faculty is also a diverse, highly qualified group from prestigious national and international universities with significant records of accomplishment in teaching and research activities. Full-time faculty as of the fall 2009 totaled 412, of whom 57.3% are tenured. Ninety-eight percent of the faculty holds Ph.D./terminal degrees in their fields of expertise. The percentage distribution by faculty rank is shown in Table 1.3:

Faculty Rank	Percentage
Distinguished Professor	6.3%
Professor	29.3%
Associate Professor	22.8%
Assistant Professor	12.4%
Research Professor	6.6%
Senior University Lecturer	8.0%
University Lecturer	12.4%
Professional/Instructional Staff	2.2%

Mission and goal communication to the traditional NJIT community of students, faculty staff, alumni, and employers is accomplished through a variety of mechanisms. Specific examples include:

- *NJIT Branding Initiative* – In 2006 NJIT launched a new brand identity program[i]. This initiative was motivated by an in-depth communications audit conducted in 2004. The new identity system is meant to help us achieve three fundamental goals:
  - Build NJIT into a name that is nationally recognized and respected, reinforcing our position as "New Jersey's Science & Technology University."
  - Help us tell NJIT's story in a strong, distinctive way by using our tagline, "The Edge in Knowledge," as a common theme.
  - Make the university's organizational structure easier to see and understand, raising the visibility of the six colleges and schools that serve as the pillars of NJIT as a university.

- *Restructured Alumni Organization* – In an effort to increase significantly the engagement of alumni in the NJIT Strategic Plan and to assist the community in neighborhood redevelopment efforts, NJIT formed a new alumni association and governance structure in the spring of 2008. This was based on the guidance of an expert consultant engaged to recommend steps to improve alumni relations at NJIT. The Alumni Association of NJIT is a forum where alumni can share ideas – in fostering NJIT pride, building Highlander traditions, helping alumni develop opportunities for the university's students, and acknowledging the "good works" of NJIT graduates throughout society. The Association is comprised of alumni, representing NJIT alumni organizations that include the Young Alumni Club; numerous regional Alumni Clubs including those of Monmouth and Ocean Counties, Morris County, Somerset and Hunterdon Counties, Florida Gulf Coast, South Florida, metro Washington DC, metro New York City, Southern California, and China; the Honors College Alumni Association; Educational Opportunity Program; Highlander Athletics Fund; Corporate Clubs; and the alumni leadership of many classes.

- *President's Presentation and Annual Reports* – Through a series of presentations the NJIT strategic plan is continually presented and updated with the entire NJIT traditional community. These are further made available for easy dissemination through archived documents in the NJIT website. Annual reports highlighting the mission and the associated progress in the strategic plan are reported on in the annual reports which is also distributed to the NJIT community.

- *Alumni Magazine - NJIT Magazine* is published regularly by New Jersey Institute of Technology, Office of Strategic Communications (2011). Its mission is to foster ties with alumni, university friends and corporate partners and to report on relevant issues, particularly those in education, science, research and technology. The magazine highlights a variety of ongoing initiatives in the context of the NJIT mission and goals.

The most successful efforts for mission penetration are found in President Altenkirch's transparent mission and goal communication and in NJIT's branding initiative. The

President maintains an open and accessible website that archives his presentations and news reports, and the recently refreshed NJIT website provides immediate, graphic news that undergird our foundational mission and goals. However, clearly defined mission and goal communication does not often percolate from the President down through the faculty. Our Faculty Governance provides for Faculty Council (with about 20 meetings/year), NJIT Faculty Meetings (4-6/year), Faculty Information Sessions/year organized by Faculty Council for Faculty & Administrators (2-4/year), and monthly Department meetings. Discussion of the new NJIT shared governance discussions hold the potential to foster enhanced mission and goal communication. (For more about the shared governance model under consideration, see Working Group Reports for Standards 4 and 10.) (To strengthen communication among the NJIT colleges and schools, see our second recommendation in this report.)

1.3 CRITICAL ANALYSIS AND CONCLUSIONS

Clearly, NJIT is a mission-driven university, and evidence of that clarity of purpose was explicit in the 2007 review by Katherine Mayberry and Herman Berliner conducted for the Middle States Commission on Higher Education. Their review is worth quoting in detail:

> "Decision-making at NJIT is clearly driven by continuous assessment of institutional effectiveness at multiple levels, including comprehensive coverage of student learning outcomes. The thorough assessment mechanism that evaluates programs on all components of the Strategic Plan is but one instance of the thorough-going culture of evidence that characterizes the institution. More generally, NJIT lives the principle that policy and strategy should be continually reviewed and improved through ongoing assessment" (p. 7).

In the reports of the seven Working Groups, it is clear that NJIT had benefitted from its association with the MSCHE association. Evidence of the strength of that association is found in NJIT response to the three recommendations of Mayberry and Berliner. As Working Group 3 notes in its review of Standard 6 (Section 6.2.6), the *Faculty Handbook* has now been brought into compliance with the 2007 Middle States review; this alignment, conducted in fulfillment of the first recommendation made by Mayberry and Berliner, is a significant complement to advancing the mission and goals of the university. To more fully achieve integration of academic unit planning with overall strategic goals at the institutional level, NJIT will continue to pursue a common framework on all levels so that planning can be articulated and deepened across the community. The new shared governance proposal may be a way to move forward.

As Working Group 2 notes in its review of Standard 2 (Section 2.2.2.4), the Office of Research and Development has increased its staffing capability to strengthen the NJIT mission, just as Mayberry and Berliner noted in their second recommendation. During the last 5 years research and development has grown to record heights. Overall

expenditures topped $80M for the first time, externally sponsored expenditures topped $50M for the first time, and federally supported research expenditures topped $40M. Expansion of this integral part of NJIT has thus been accomplished, and the gains are readily apparent.

As Working Group 2 also notes in its review of Standard 3 (Section 3.2.3), library acquisitions, following recommendation three of Mayberry and Berliner, have kept pace with the NJIT mission. The Library budget has increased from 1.9% to 2.1% of the total general operating budget and reflects salary increases of 56.7% and non-personnel increases of 27.1%. Under increasing conditions of scarcity following the 2008 national economic crisis, NJJT has kept pace with the digital databases critical to the research and instructional responsibilities of New Jersey's science and technology university.

1.4—COLLABORATION WITH OTHER WORKING GROUPS

In scheduled meetings hosted by the Rapid Assessment and Steering Committee, our Working Group collaborated with other groups. Collaboration was also strengthened through meetings with the self study consultant (Robert Clark). Asynchronous communication was fostered through the open source content management system (Moodle); in that platform, the Working Groups collaboratively reviewed each stage of the planning and reporting process, from question design to outlines of the Working Group Reports, to edited review, to final copy.

1.5 RECOMMENDATIONS FOR IMPROVEMENT

1.5.1 Recommendations Table: Standard 1: Mission and Goals

RECOMMENDATION 1	Achieve more cohesive integration of academic unit planning with overall strategic goals at the institutional level
• VISION: The desired future for the recommendation	A common framework on all levels so that planning can be articulated and deepened across the community.
• STRATEGY: The methodology recommended to achieve the vision	Remove silos created by colleges' reporting mission, vision, strategies, and goals to accrediting bodies only. Take next step to match and focus on institutional mission, vision, strategies, and goals.
• TACTIC: The specific action recommended to implement the strategy	Each college maintains responsibility for tracking its integration of academic unit planning with overall strategic goals at the institutional level with a transparent and public posting on a website. External and internal assessments shared across colleges
• ASSESSMENT: The metric recommended to measure achievement	Scorecards with Sparklines (dashboard records) that present graphic displays of trends and variations

of the vision	associated with a measurement (established by Institutional Research and Planning) in key strategic areas,.
RECOMMENDATION 2	**Increase mission penetration with participation by all shareholders**
• VISION: The desired future for the recommendation	Demonstrate that we have a mission that benefits constituents and is clear, generally understood, and actionable by the entire campus, specifically faculty.
• STRATEGY: The methodology recommended to achieve the vision	Continue to develop leadership for achieving strategic goals. Foster participation in the model of shared governance, to be discussed on June 2, 2011 at the Board of Trustees meeting,
• TACTIC: The specific action recommended to implement the strategy	Create a transparent and open area of the NJIT website to which reports, decisions, and documents are posted. Support an effort in the public-facing NJIT website that reports news related to the NJIT mission.
• ASSESSMENT: The metric recommended to measure achievement of the vision	Records of faculty participation in meetings included in web reports of meetings. Announcement of key committee work by the University Web Services group on website news.

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