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April 2, 2004

Dear Steering Committee Member:

I am pleased to present you with a copy of the draft of the final report of the Review, Planning and Implementation Steering Committee.

You will notice as you read through this draft that references to a compendium of materials previously distributed and reviewed by the Committee at our regularly scheduled meetings are made. These documents will be included as part of the final report, thereby presenting a complete picture of the work that was undertaken by this Committee during its year of review and planning.

I would appreciate your forwarding written comments to me electronically or via fax at your earliest convenience but no later than Wednesday, April 14, 2004. This will give us the opportunity to make any necessary edits to the document and forward the final report to the Governor.

I want to thank each of you in advance for taking the time to read through this draft and forwarding me your comments.

Sincerely yours,

P. Roy Vagelos /cc

P. Roy Vagelos, M.D.
Chair, Review, Planning and
Implementation Steering Committee

New Jersey System of Public Research Universities
System Planning Project

DRAFT FINAL REPORT

MARCH 2004

Review, Planning and Implementation Steering Committee

New Jersey System of Public Research Universities
System Planning Project
Final Report

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I. BACKGROUND

In March 2002, Governor James A. McGreevey appointed the Commission on Health Science, Education and Training (The Commission), and charged it with assessing the current status of the medical and allied health care education in the State of New Jersey and formulating recommendations "to enhance the quality of education, to increase overall competitiveness as institutions of health care learning, and to foster healthy synergy amongst these institutions". The goals of the Commission, as outlined in Executive Order 14 (McGreevey, 2002), were to:

- Identify specific gaps and requirements necessary to enhance the overall quality and competitiveness of health education in the State of New Jersey including, but not limited to, health research, basic science and clinical education, and health care professional training.
- Review the existing nationally recognized medical and allied health care models and work to design a framework to help guide the relationship between the medical and allied health care educational institutions, hospitals, and health care agencies within the State of New Jersey.
- Determine the appropriate governance structure of the state institutions of medical and allied health care education.
- Determine any prospective institutional alliances and/or relationships.

The Commission's study primarily focused on the University of Medicine and Dentistry of New Jersey (UMDNJ), but also encompassed an assessment of Rutgers, The State University of New Jersey (Rutgers) and the New Jersey Institute of Technology (NJIT). Major findings emerging from the study highlighted both structural issues and potential synergies inherent in the existing organizational model of New Jersey's public research universities. As a result of the study, the Commission recommended the creation of a single New Jersey public research university system that builds on the collective strengths of NJIT, Rutgers and UMDNJ and provides an effective platform for excellence in both health and non-health disciplines.

The Commission provided a series of recommendations to the Governor when it submitted The Report of the New Jersey Commission on Health Science, Education and Technology (the Report) in October 2002. The Report's recommendations framed the general principles for establishing the new system of public research universities, including restructuring the existing institutions into three highly autonomous universities located in the north (Newark), central (New Brunswick/Piscataway) and south (Stratford/Camden) regions of the state.

Further, the Commission proposed the creation of a task force to consider the impact of restructuring on the participating institutions and to draft a blueprint for the new public university system. In its Report, the Commission specified a multi-tiered planning structure and reporting process for achieving these recommendations.

On December 10, 2002, based on the recommendations of the Commission on Health Science, Education and Training, Governor McGreevey issued Executive Order 42 establishing a Review, Planning and Implementation Steering Committee (the Steering Committee) to:

- Review the impact of the Commission's recommendations on the three institutions and to create a comprehensive plan for the restructuring.
- Facilitate the collection from the three public research universities of information pertaining to the restructuring.
- Examine and advise the Governor through the Chair of the Steering Committee concerning the prioritization of the implementation of specific strategies to restructure the three public research universities.
- Within 30 days of the first meeting of the Steering Committee, outline a proposed work plan for the preparation of an assessment and implementation plan.
- Recognizing that the actual restructuring would likely be a multi-year effort, deliver an assessment and implementation interim report to the Governor that includes, for the various stages of implementation, the actions required, a timeline for those actions, specific milestones and responsibilities.

Copies of Executive Orders 14 and 42 are contained in the Compendium, Section A.

The Steering Committee initiated the year-long System Planning Project in February 2003. Simultaneously, two other Governor-appointed groups were conducting important planning efforts that complemented the work of the Steering Committee:

- The Commission on Higher Education was developing a comprehensive strategic plan for New Jersey's higher education institutions.
- The newly appointed Commission on Jobs, Growth and Economic Development was charged with developing a blueprint for growing New Jersey's economy and creating jobs (particularly in the area of research and development) and identifying requirements necessary to enhance the collaboration and linkages between universities and industries in New Jersey.

While there was considerable collaboration and consultation among the three planning groups, each group had its own distinct charge. This report focuses only on the charge given the Steering Committee.

The remainder of this report summarizes the approach and methodology employed by the Steering Committee, provides an overview of the research and analysis comprising the System Planning Project, and presents the University and System Plans resulting from the year-long planning effort.

II. APPROACH AND METHODOLOGY

Consistent with the approach prescribed in the Commission report, the Steering Committee began its work by developing an extensive structure of committees, subcommittees and working groups in order to: (a) involve multiple constituencies in the planning project, (b) identify and examine myriad issues inherent in restructuring; and (c) compile extensive information on which to base decisions. Included in the planning structure were:

- Executive Advisory Committee.
- Strategic Planning Subcommittee.
- System-wide Issues Working Groups:
  - Finance and Funding.
  - Hospital Affairs.
  - Human Resources.
  - Information Technology and Libraries.
- University Committees:
  - North.
  - Central.
  - South.
- University Issues Working Groups (relevant to the needs of each University Committee).

A depiction of the project committee structure and an overview of the purpose, approach, timeline, and composition of each committee and working group are provided in the Compendium, Section B. Also included are materials that provide additional detail related to the roles and responsibilities of the Strategic Planning Subcommittee and University Committees.

In addition to developing the planning structure, the Steering Committee created a project work plan that outlined the key activities of the committees and working groups as they related to the objectives described in Executive Order 42. The work plan, which initially comprised the following three phases, was designed to provide a framework for the planning project, while allowing the flexibility needed to address its many complexities.

Phase I: Preparation and Organization (January – March)	The first 90 days of the project were spent primarily on organizing and orienting the various committees and working groups and preparing for the work that lay ahead. Other important activities initially planned for this period were: • Preparation of draft legislation • Development of draft governance, structure and budget scenarios • Consultation and collaboration with existing governing bodies These activities were conducted, but certain decisions were postponed when it was learned that introduction of the legislation would be delayed.
Phase II: Research and Discussion (April – June)	Phase II focused on convening committees and working groups, identifying information needs, and collecting data relative to the many academic and administrative functions within the universities. Again, critical decisions related to governance (and associated costs) and university design and names were postponed when the Steering Committee was informed that legislation related to the new system of public research universities would not be considered until Fall 2003.
Phase III: Analysis and Conclusions (July – October)	Phase III focused on analyzing the data compiled in geographical and functional areas and formulating conclusions relative to the new public research university system. Committees and working groups proactively shared and discussed their major findings and conclusions through a series of reports and white papers. The reports and white papers ultimately formed the basis for the University and System Plans contained in this final report.

While certain decisions were postponed during each of these project phases for a variety of reasons (including the rescheduling of the introduction of legislation, the involvement of key finance staff in planning for budget cuts, and the request by Rutgers to review the original recommendations of the Commission), the delays provided opportunity for further detailed analysis and important discussion to occur.

The work plan, which was created in February and updated in July, is presented in the Compendium, Section C, and a presentation document providing an overview of the System Planning Project is provided in Compendium, Section D.

In October 2003, the Steering Committee added a fourth phase to the work plan.

Phase IV: Restructuring Plans (October - December)	Phase IV consisted of two major work steps: • Identification of transaction, transition and new operating costs directly associated with restructuring (but exclusive of historical funding issues) • Development of University and System Plans to serve as a basis for subsequent planning phases Also during this period, representatives from the Governor's Office and Rutgers were engaged in discussion about relevant governance issues.

Throughout each phase of the System Planning Project, the committees and working groups, supported by the Pappas Consulting Group, conducted a broad range of research and analysis related to the restructuring process. An overview of these efforts is provided below.

III. OVERVIEW OF RESEARCH AND ANALYSIS

The scope of the charge given to the Steering Committee was broad and complex, and it immediately was clear that substantial research in numerous diverse areas would be required in order to assess "the impact of the Commission's recommendations on the three institutions and [begin] to create a comprehensive plan for the restructuring".

Certain data collection requirements (e.g., human resources, technology and financial information) were identified and prioritized early in the project, and responsibility for performing the related work was designated to the appropriate committee or working group. Additional information needs were determined and addressed by the Steering Committee and other groups during the course of the project. In most cases the research and analysis conducted by the various groups was documented and shared with other groups. This section of the report contains an overview of representative reports and presentation documents resulting from the efforts of the many individuals integrally involved in the System Planning Project. They are summarized under the following headings.

- Distribution of Existing Academic Programs.
- System Governance Structure.
- Research Benchmarking.
- Planning and Implementation Phases.
- System-wide Issues Working Group White Papers.
- Urban 13 and Land Grant University Information.
- University Committee Reports.
- Quarterly Reports.
- Restructuring Costs.

Copies of actual documents are contained in the Compendium.

Distribution of Existing Academic Programs

In consultation with each of the existing universities, the Steering Committee identified the major academic programs (and associated number of students) in each geographical region. This information was used as the initial basis for planning the design of the new public research universities. An overview of Current Academic Programs (and Students) by Geographical Region is contained in the Compendium, Section E.

System Governance Structure

Based on its initial review of governance structure models and options, the Steering Committee conducted an exhaustive examination and extensive discussions of governance structures during the course of the System Planning Project. In April, 2003, the Steering Committee reviewed a 68 page analysis titled: "Creating Excellence for New Jersey's Public Research Universities: Governance Structural Options." This report provided: broad background on the distinctions between governance and coordination; a review of recent restructurings in other states; an analysis of "Guidelines for States Considering Reorganization"; five restructuring governance options; recommendations; and a series of comprehensive appendices that included a summary of how every state has structured higher education, a description of various higher education boards in each state, an Education Commission of the States (ECS) paper on governance and coordination, and an ECS analysis of higher education structural models. In addition, the Steering Committee reviewed a detailed description of the "Roles and Responsibilities of the Board of Regents, the Chancellor, and the Presidents".

Ultimately, after review most members agreed that the initial recommendation of a public research university system would optimally build excellence in New Jersey. However, the Steering Committee postponed reaching a decision regarding a governance structure and the roles and responsibilities of various parties so as to allow continued review by the governing boards of the universities. Documents pertaining to governance structure are presented in the Compendium, Section F.

Research Benchmarking

Recognizing that New Jersey would have the opportunity to establish relevant benchmarks and accountability measures as it developed its system of public research universities, it was recommended that the State consider adopting the Lombardi Program on Measuring University Performance (produced by TheCenter at the University of Florida). A preliminary analysis of NJIT, Rutgers, and UMDNJ, based on these measures, is contained in the Compendium, Section G. The analysis, Research Benchmarking: An Analysis of New Jersey, indicates that there is substantial opportunity for increased performance if the correct synergies can be created.

Planning and Implementation Phases

To assist committee and working group members in understanding the expectations associated with this initial stage of the multi-year planning process, an overview of major activities anticipated during the first three years of planning and implementing of the new system of public research universities was developed. The activities were grouped in three major phases:

I (9 months): Conceptualizing the New System of Public Research Universities.
II (1 year): Organizational and Operational Planning and Designing.
III (2 years): Execution and Assessment.

The document, Planning and Implementation Phases, is contained in the Compendium, Section H.

System-wide Issues Working Group White Papers

Each of the System-wide Issues Working Groups was charged with identifying, compiling and analyzing extensive information related to a specific functional area. Major activities conducted by each group are summarized below.

Finance and Funding

- Obtained information about funding models of major public research university systems and evaluated strengths and limitations of different funding models and how they relate to the New Jersey situation.
- Conducted institutional debt analysis.
- Collected background information about the current finance and funding status of the three existing institutions; obtained preliminary financial data from each of the universities; and, based on available information, prepared schedules of recombined financial data.
- Identified five key elements of State support.
- Recommended finance and funding guiding principles for achieving the vision of the new system of public research universities.

Hospital Affairs

- Outlined System-wide academic affiliation principles to guide relationships and expectations between the medical schools of the three restructured universities and their major affiliated teaching hospitals.
- Recommended principles for a framework intended to provide protection, to the degree possible, for the system of public research universities, and especially the University of the North, from potential liabilities that might arise from the operations of University Hospital (Newark).

- Recommended a framework to address how University Behavioral Health Care might best operate and serve the people of New Jersey within the new system.
- Developed a recommended statement to the Newark community on behalf of the new system that articulates University Hospital's commitment to continue its important role of community service and charity care for the greater Newark community.

Human Resources

- Identified information needs and collected and analyzed data from each of the three existing universities.
- Developed and transmitted survey questionnaires to union leaders and managers and summarized responses.
- Described the potential human resources issues that will need to be managed during the transition to the new major research university structure.
- Delineated key actions and major work steps required to address human resources issues effectively.

Information Technology and Libraries

- Collected a range of valuable and detailed information through the efforts of dedicated task teams, and synthesized the results into conclusions and recommendations.
- Made certain assumptions as to the expected business model for the future University System.
- Identified potential model(s) for organization and service delivery for information technology and library services to support the new university structure.
- Developed values and principles to guide future detailed planning efforts.
- Created a two phase transition plan.

While the charge and approach varied among the groups, each culminated its efforts by producing a white paper that described major findings and issues and provided strategic direction for subsequent planning phases. The White Papers are presented in the Compendium, Section I.

Urban 13 and Land Grant University Information

Each of the University Committees faced the challenge of designing a new, restructured university consistent with the historical missions of the existing universities, yet reflective of current and emerging regional needs. For example, the University Committee - Central was concerned with developing a new university that honored the requirements associated with land grant status, and the University Committee - North sought to create a great urban university to meet the complex needs of Newark and the surrounding area.

To accomplish this difficult task, it was useful for committee members to examine models of other similar universities. Consequently, extensive research was conducted to identify and describe the Urban 13 (actually an organization of 21 urban universities) and Land Grant Universities. This information is summarized in the Compendium, Section J.

University Committee Reports

The University Committees, composed of representatives from the community and the existing universities in each region, were charged with primary responsibility for:

- Proposing a vision and developing the strategic design and implementation plan for academic and operational restructuring of the new university
- Identifying issues to be considered by System-wide Issues Working Groups
- Identifying and analyzing preliminary university-level issues
- Recommending a name for the new university and suggesting name(s) for the new university system, in consultation with other University Committees

The University Committees approached their responsibilities with dedication, enthusiasm and creativity. Committees in the northern and central regions accomplished much of their work by establishing networks of subcommittees to assist in collecting and analyzing volumes of information integral to conceiving the design for the new university. In the southern region, extensive conversations occurred among Rutgers-Camden, the School of Osteopathic Medicine, Rowan University, Cooper Hospital, and the Coriell Institute. After months of research, analysis and discussion, the committees each developed a report describing the new university. While the content of the reports varied substantially, each contained a vision and mission for the new university, a description of the proposed academic design, and an overview of the many benefits and outstanding issues associated with restructuring. The University Committee Reports are presented in their entirety in the Compendium, Section K.

Quarterly Reports

Throughout the System Planning Project, the Steering Committee sought to communicate regularly with the Governor on both an informal and formal basis. In addition to periodic verbal updates from the Chair, the Steering Committee also submitted quarterly reports that summarized activities conducted and milestones reached. Reports summarizing work performed during the first three quarters of 2003 are contained in the Compendium, Section L.

Restructuring Costs

The final stage of research and analysis leading to the development of University and System Plans comprised estimating costs associated with restructuring. This undertaking required the concerted effort of numerous individuals representing the existing universities in each region. Planning groups, consisting of the University Committee Co-chairs, Chief Financial Officers and various academic, financial and planning specialists:

- Agreed upon assumptions and obtained input from senior leadership.
- Identified types of costs and developed formulas to estimate certain types of costs.
- Identified categories of costs (including 15 major categories and over 100 subcategories) and developed detailed definitions and taxonomy.
- Researched and identified costs related to each of the sub-categories for each university and the system.
- Developed extensive (spreadsheet) models for each new university and the system, sorted by cost type, year, and major cost category.

Section M of the Compendium contains an Overview of the Restructuring Cost Analysis, Cost Estimate Definitions and Assumptions, and a Summary Analysis of Restructuring Costs for each new university and the system.

The examples described above represent only a portion of the volume of information collected, compiled, analyzed and summarized by the hundreds of individuals participating in dozens of planning groups involved in the System Planning Project. Ultimately, many of the findings, conclusions and recommendations resulting from the research and analysis conducted by these groups during the first nine months of the project were incorporated into the University Plans and System Plans that are contained in the next sections of this report.

IV. UNIVERSITY PLANS and UNIVERSITY SYSTEM PLAN

INTRODUCTION

New Jersey has great ambitions for its public research universities, the New Jersey Institute of Technology (NJIT), Rutgers, the State University of New Jersey (Rutgers), and the University of Medicine and Dentistry of New Jersey (UMDNJ). Recognizing that both the quality of life and economic vibrancy of New Jersey and its communities depend significantly on the excellence of public research universities, Governor McGreevey challenged the existing public research universities to accelerate excellence, expand collaboration, and increase national competitiveness through a major restructuring. Even though the state's economic climate and a lack of consensus from the existing institutions on issues of structure, governance, and funding have led to a delay in presenting any proposals to the legislature, the challenges and conditions that led to the Governor's proposal persist. These challenges and conditions include:

- A low proportion of talented and diverse New Jersey students having access to the public research universities.
- A respectable level of research productivity but not at a level reached by the very best public research universities.
- A substantial risk that the state will continue to lose its competitiveness in key knowledge-based business and industry.
- A number of financial and structural issues that impede overall national competitiveness, and that limit the integration of the health sciences with other academic areas, and that decrease maximum effectiveness and efficiency.

There exists, then, the potential for a number of crises should the status quo persist. As a result of an intensive year of planning, however, it has become clear that these crises can be averted and that New Jersey could indeed reach its goals. In doing so, New Jersey could be among a handful of states that have truly harnessed the intellectual power of their public research universities to provide their students with an extraordinary education, their residents with a better quality of life, their economy with a vital link to university research, and their communities with focused solutions to persistent problems. While the faculty, staff, and students of the public research universities would all benefit from a truly excellent system of public research universities, the real winners would be the people of New Jersey. They could take great pride in a system of the highest

quality and stature; they would be enthusiastic about sending their children and grandchildren to any of the three new public research universities; they would benefit from the new, high-paying jobs created in the state through a university-driven, reinvigorated knowledge economy; they would have access to excellent teaching hospitals, increases in the availability of health professionals, and pioneering medically-related research; they would live in communities that prosper because of service from the research universities and their related activities; and they would have increased opportunities for cultural enrichment.

Already one of the most diverse and prosperous areas of the country, New Jersey could become an even more highly-educated state and could reap increasing benefits from being so. With an increasing college-aged population, a continuing significant influx of immigrants, a need for more opportunities for adult learners, and the educational and social benefits of having a diverse student base, New Jersey has the chance to provide a system of public research universities characterized by excellence. None of this will be possible, however, without bold actions; without a willingness to put the state first and parochial needs second; without a significant and sustained commitment of resources; without a careful concern for the impact on students and employees; and without courageous leadership from the state policy makers, senior university administrators, and the business community. It will also not be possible without careful planning. Literally hundreds of people have been involved in some way with that planning for the past year, covering a wide range of topics from human resources to finance and funding; from information technology to libraries; and from hospitals to communications. (See the Final Report for full details of the various committee deliberations).

The three university plans and the university system plan provide preliminary answers to some of the key questions raised by Governor McGreevey's proposal to restructure the public research universities in New Jersey. This proposal would create a system of public research universities by reconfiguring the existing NJIT, Rutgers, and UMDNJ into three new public research universities, one in the north, one in the central region, and one in the south. In each location, two or more institutions will be brought together, thereby increasing the critical mass of faculty within a single institution and expanding opportunities for students within the new university. Each of these new universities would also have a medical school(s), thereby enriching both research and instructional opportunities in the health sciences and related disciplines. Each of the universities, led by a President, would be a member of a new system of public research universities led by a Chancellor. The system would be governed by a Board of Regents; local boards and the Board of Regents would jointly govern each of the universities.

Such a major restructuring, on a scale probably not seen in the last quarter century in American higher education, raises multiple questions about both the new institutions and the system. Among the questions about the new universities are:

- What could the Vision be for each of these universities? What might be their distinctive missions?
- What could their goals and objectives be? How could success be measured?
- What academic programs might they each offer?
- What could their student enrollment be over the next decade? Will restructuring improve each university's competitiveness in its academic marketplace?
- What will be the governance structure for each university? How will that relate to the System governance?
- What are the preliminary cost estimates of restructuring each of the universities, especially the one-time costs in the first couple of years? What are the preliminary cost estimates of pursuing excellence and increased national competitiveness of each of the universities over the next decade, especially the operating and capital costs?
- What are the potential benefits to students, faculty, and staff? How will communities, regions, and the state benefit? Will health care be enhanced? To what extent can these benefits be measured?
- What unique issues does each university have to address as planning and implementation proceed for restructuring to be a success?
- What could be achieved by restructuring in each region?

The three university plans that follow respond to these questions. They are preliminary in nature because it is premature to make some of the major decisions. Those decisions (such as the academic programs to be offered, the research priorities to be established, and the enrollment growth to be pursued) belong to the leadership and joint governance that will be put in place early in the next phase of restructuring. And clearly these decisions impact costs and benefits.

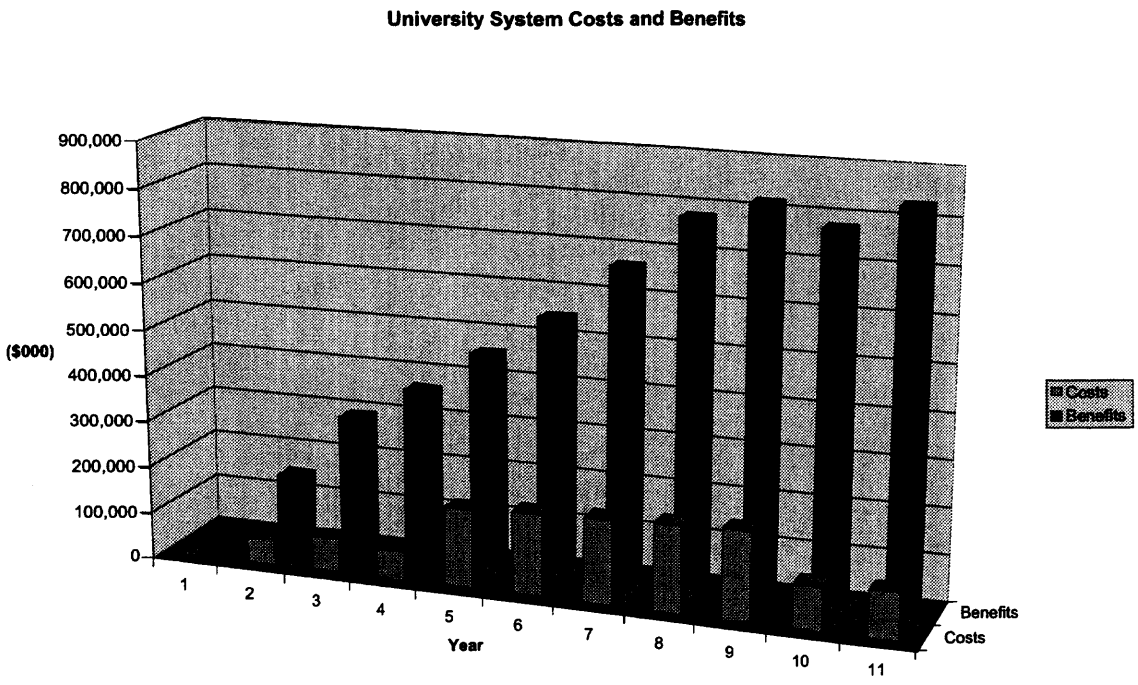
Yet enough is now known to indicate that the proposed restructuring is not only feasible, but also would result in each of the three regions having a stronger public research university than it currently has with the present configurations. The present configuration, with the combination of one statewide medical university and a land grant university with three locations is an anomaly. No other state has such a structure. Recent trends in research, where health sciences partner with many non health science disciplines in research teams, make such a restructuring highly desirable. The three current public research universities have all seen significant increases in their research volume over the past decade. However, these increases have to be put in perspective. The last five years have seen an extraordinary increase in the availability of federal research dollars, especially from the National Institutes of Health. Its budget doubled between 1999 and 2004, representing an increase of over $13.6 billion.

Thus a growth of research expenditures at a particular university does not necessarily mean an increase in the rankings. Indeed, the data reveal that the very best research universities continually outperform their competition. For example, while the combined New Jersey public research universities showed a 26.7% increase in research expenditures between 1991 and 2000, selected groups of peers increased between 33.7% and 60.8%; only NJIT improved its actual ranking during that period, and it began from a position of relatively low research expenditures (See appendix II). And of the top 10 university recipients of NIH funding in 1998, eight were still in the top 10 in 2002; only five universities who were not in the top 100 in 1998 moved into that group by 2002. Moving up into the top rankings has proven to be relatively rare and is unlikely to occur without a major initiative serving as the catalyst. Compounding the future challenge is the projected reduced rate of increase in federal research funding, which is likely to be more in the range of 2-3% annually over the next five years.

It is not just research and the health sciences that will benefit from restructuring. Great universities attract the best faculty and give their students a strong foundation in the liberal arts and opportunities to be involved with faculty research. They also use these strengths to have a truly positive impact on their communities, from assisting K-12 schools, to aiding local government and civic groups, to providing cultural enrichment, and to helping local business and industry.

The university plans that follow build on the work of the three university committees, whose reports reflect considerable excitement about the opportunities that restructuring will bring not only for students, faculty, and staff, but also for the respective communities. Those reports also appropriately provide cautions about issues that will need to be addressed as planning and implementation proceed; these cautions are also reflected in the plans. Taking those blueprints, one can paint three distinctive pictures of three new public research universities each with the opportunity to be nationally ranked.

The qualitative assessments of the restructuring suggest an enhancement of excellence in New Jersey's public research universities and the initial quantitative analysis suggests significant long-term financial benefits (see summary chart below). The costs and benefits in the chart reflect the aggressive timing of restructuring (including construction and renovation) embedded in each of the university plans. The investment of state funds will accelerate the realization of benefits, which clearly outweigh costs and will therefore maximize the favorable impact on the state and its citizens.



In the **North**, the vision is for a great urban university, with particular strengths in science and technology, that builds on established programs through synergies and new opportunities. For example, a focus on responding to bioterrorism has great possibilities for new discoveries concerning infectious diseases and microorganisms with possible breakthroughs (with commercial implications) in antivirals and antibiotics. Such science also has significant policy implications, which interdisciplinary work with public health and the social sciences can address.

In the **Central**, new opportunities exist, also. For example, with the Cancer Institute and considerable strengths in molecular biology and genetics, medical advances can be anticipated, and new educational approaches for medical students and graduate students can be developed.

In the **South**, current strengths in programs in both childhood studies and aging present an opportunity to increase research activity not just in medicine, but also in the arts and sciences. These areas would also provide unique educational experiences for both undergraduate and graduate students. Beyond specific programs, however, the very development of a public research university in the South would be a quantum leap for the region, which currently has to make do with relatively small branches of Rutgers and UMDNJ as its only direct link to public research universities.

The Governor's proposal went beyond restructuring simply to create three new public research universities. It called for these universities to be part of a system of public research universities, the purpose of which was to achieve excellence and insure that the whole is greater than the sum of the parts. The University System Plan that follows therefore not only aggregates the information from the three university plans, but also describes the value added from the synergies of a system. It also identifies some of the remaining issues for the next phase of implementation, including the importance of extensive communications with all internal and external stakeholders.

These three university plans and one system plan begin to answer the most fundamental question:

> *Is restructuring a sound public policy decision for the State of New Jersey and are the inevitable costs outweighed by the many potential benefits?*

Inherent in this question is New Jersey's willingness to be as bold in its actions as it is in its ambitions.

UNIVERSITY PLAN (NORTH)

A. INTRODUCTION

Newark is a large, vibrant, and diverse city. Its Gross Metropolitan Product (GMP) makes it the 18th largest city/region economy in the United States. The seaport is the largest on the East Coast. Newark is home to the state's largest performing arts center, the Liberty Science Center, and Newark Museum. The public schools have the second largest facilities construction and renovation program in the country underway, planning to spend $1.6 billion. Newark has the largest Latino and African-American populations of any municipality in the state and the largest Portuguese community in the United States. However, unlike most major cities, it does not have a major urban public research university.

Fortuitously, all three of New Jersey's current public research universities are co-located in Newark's University Heights neighborhood. This has led to a history of collaboration, which the universities are ready to take to the next level. Restructuring offers the opportunity to build on these collaborations to form a dynamic research university in New Jersey's largest city. The new university would build on growing resources and strengths:

- Enrollment growth
- Research volume growth
- Academic program growth, especially at the graduate level
- Facilities growth

In addition, it will benefit from being the home of an urban teaching hospital and the state's largest business incubator.

The new public research university in Newark will be among only a handful of urban research universities with such a comprehensive academic program, including a medical school. It will have exceptional educational breadth and scope, with programs in architecture, business, computing sciences, criminal justice, dentistry, engineering, health-related professions, law, liberal arts, sciences, medicine, and nursing; it will also have medical and dental clinics and business incubators. With strengths grounded in new interdisciplinary interfaces, the new university will be well positioned for sponsored research driven by growing market demand, especially for medically-related research. Building on the current extensive service to the city and state, it will become a leading urban university, deeply engaged with the city and committed to the education, health, and well-being of urban populations.

With strong leadership and community involvement, the new public research university in Newark will be in the front rank of institutions where students could prepare for a future in which success will depend on an increasingly interdisciplinary and entrepreneurial approach to virtually every professional field. The new university will continue the long-standing commitment to offer the advantages of higher education to as many students as possible, regardless of cultural or economic background. These students will study in a transformed University Heights district and in one of the most diverse and vibrant urban areas on the globe. The intellectual assets of the new university will be leveraged to benefit students, the community, the economy, as well as the state, nation, and the world. The potential for excellence is considerable.

B. UNIVERSITY VISION AND MISSION

University Vision and Mission will need to be developed by each university once the local and system governance and leadership are in place. However, the following have been largely developed from the ideas contained in the University Committee report and are included for illustrative purposes.

Vision

A public research university in the north that is a vibrant urban university with special emphasis on biomedical sciences, technology, and the professions, offering a strong liberal arts program, conducting targeted research, responding to the economic, cultural and social needs of the city and beyond, and delivering quality and accessible health care and education.

Mission

To achieve this Vision, the University will:

- Provide an outstanding education to New Jersey's and the nation's best students in a strongly diverse environment, preparing graduates to be leaders in their professions and their communities and meeting New Jersey's workforce needs.
- Conduct state of the art research which furthers discovery of new knowledge through basic, applied, and clinical research, with particular attention to urban issues.
- Improve the lives of the residents of Newark and beyond by: providing health care services through The University Hospital and the university's medical, dental and behavioral health facilities; fostering economic growth; providing community service; developing innovative ways to address urban issues; and, providing opportunities for New Jersey's diverse population.

This Mission will be met through the distinctive character of the university, a character based upon its location, demographics, and academic strengths. The university will:

- Have a strong urban mission and will be an engaged interactive university closely connected to the external community, taking full advantage of the rich resources that Newark and the metropolitan area have to offer and providing substantial service to the urban population. The university will fully engage with its community and will view the resources and challenges of the community as an opportunity to enrich its teaching and research missions.

- Have a unique strength in professional and graduate education. With an exceptional array of graduate and professional schools – Architecture, Business, Computing Sciences, Criminal Justice, Dentistry, Engineering, Medicine, Health Professions, Law, Nursing, and Public Health – the university will be a major provider of graduate and professional education in New Jersey, including an expanded array of Ph.D. and Masters programs in arts and sciences. It can build on its various current and emerging strengths in areas such as nanotechnology, biotechnology, public health, bioterrorism research, and trauma.

- Have a major emphasis on biomedical sciences and technology. With schools of medicine, dentistry, nursing, health professions, engineering, architecture and computing and with Ph.D. programs in all the basic sciences and collaboration with the Public Health Research Institute (PHRI), the Northern University will distinguish itself through its research and academic programs in biomedical sciences and technology.

- Have highly rated liberal arts programs, building on current strengths, providing extensive opportunities for undergraduate and graduate students to benefit from faculty who are engaged in cutting edge research, and taking full advantage of the artistic, cultural and governmental institutions in Newark's metropolitan region.

- Take full advantage of its racial, ethnic, and religious diversity. Located in a region with extraordinary ethnic, racial and religious diversity that is the home to millions of immigrants from across the world, the university will be one of the most diverse in the nation. The university will build on this diversity in its academic programs, student life, and community outreach.

- Be a global university. Located in the New York/Northern New Jersey metropolitan area, the nation's center of global trade and communications, adjacent to Newark port and airport, a region connected to all corners of the globe by its immigrant and international population, the university will take full advantage of these resources.

- Be the state's center for business incubation. Technology business incubators are not only a place for university-based inventions to grow into commercial firms, but also a place where innovators external to the university can draw on the intellectual and physical assets of the university.

C. GOALS AND OBJECTIVES

Wherever possible goals and objectives should be developed that are measurable. However, they will need to be reviewed regularly in case the external environment changes (for example, a reduced rate of increase in available federal research dollars). The final goals and objectives will be developed by each university, through its President and local board, and the Chancellor and Board of Regents, consistent with both university and system strategic plans. The following are for illustrative purposes.

Goals

Preliminary goals are:

- To create an urban public research university by bringing together New Jersey Institute of Technology (NJIT), Rutgers-Newark, and UMDNJ (Newark) into a single, largely autonomous institution that is one of three members of a public research university system.
- To be a powerful economic driver by its roles as major employer, developer, and technology center.
- To provide leadership in research and practice that addresses the unique challenges of an urban setting.
- To build on the historic commitment to respond to the health care needs of Newark through the University Hospital by attracting additional top-flight faculty, by increasing research (particularly in areas that respond to the health needs of the city), and by insuring the economic vitality of the University Hospital.

Objectives

Specific objectives include:

- To expand the student enrollment from 12,965 (undergraduate), 8,846 (graduate) and 21,811 (total) in 2002 to 18,245 (undergraduate), 12,970 (graduate) and 31,215 (total) in 2015 and to increase the residential percentage from 11% to 25%.
- To increase substantially sponsored research over a decade (2005-15). In particular the objective is to gain in competitive position by attracting a greater proportion of federal funds (especially NIH and NSF grants) through success in the peer review process. While one projection model (See Appendix II), using peer group growth rates, suggests a growth from $113 million to $192 million (1998 constant dollars), it is quite feasible for research volume to more than double.

D. ACADEMIC DESIGN

Certain academic design decisions will need to be made by the President and local board and, where appropriate, by the Chancellor and Board of Regents. It is likely that there will be a consolidation of some of the colleges and schools, while mission and resource considerations will determine any additional colleges and schools.

The colleges and schools of the current institutions in the north are:

NJIT

- Newark College of Engineering
- College of Science and Liberal Arts
- School of Management
- New Jersey School of Architecture
- College of Computing Sciences
- Albert Dorman Honors College

Rutgers-Newark:

- Business School
- College of Nursing
- Graduate School
- Honors College
- School of Criminal Justice
- Faculty of Arts and Sciences
- School of Law

UMDNJ:

- Graduate School of Biomedical Sciences
- New Jersey Medical School
- New Jersey Dental School
- School of Public Health
- School of Nursing
- School of Health Related Professions

The new public research university in the north would likely include the following colleges and schools:

- College of Computing Sciences
- College of Engineering
- College of Liberal Arts and Sciences
- Graduate School
- Honors College(s)
- Dental School
- Medical School
- School of Architecture
- School of Business
- School of Criminal Justice
- School of Health Related Professions
- School of Law
- College/School of Nursing

The north's academic design will benefit from the opportunity to combine certain colleges and schools (e.g., business/management; arts and sciences; nursing), in addition, a significant number of academic departments could be combined, creating critical mass of faculty and majors. For students this should mean a significantly enhanced curriculum with a wider range of cost options, more interdisciplinary programs (including additional majors and minors), and greater availability of student involvement in research.

Some additional academic design decisions will need to be made. With the strong medical emphasis in the north and with the health needs of the city, it would seem likely that an autonomous School of Public Health would be developed. Also, given the emphasis on science and technology, some consideration may need to be given at some point to separate colleges for the liberal arts and for the sciences.

E. MARKET SUMMARY

The undergraduate program will likely continue to draw from the region, with Essex, Hudson, Bergen, and Middlesex Counties providing a significant portion of the undergraduate enrollment. The number of high school graduates is projected to grow through 2009, which should help this aggressive growth plan. However, meeting these targets will require aggressive marketing and an expansion of students drawn from around the state and out of state. Transfer students currently constitute 22.3% of new students, and the co-location of Essex County Community College will continue to be a particularly beneficial source of enrollment. Urban universities usually draw a significant portion of their enrollment from students who have been out of high school for some period; these students are more likely to attend part-time.

The graduate student population is likely to remain as a high proportion of total enrollment (currently 45% of the students are in post-baccalaureate programs). While many of the graduate students are likely to be from the region (and a good number will be part-time), certain programs are likely to increase their state and national draw as their reputations grow.

Enrollment Projections

Actual enrollment decisions will need to be made based on available resources and demand. These projections are for illustrative purposes only, since many other variables beyond resources and demand impact actual enrollments.

Year	Undergraduate	Graduate	Total
Fall 2002	12,965	8,846	21,811
Fall 2003	12,991	8,881	21,872
Fall 2004	13,504	9,110	22,614
Fall 2005	14,045	9,348	23,393
Fall 2006	14,613	9,594	24,207
Fall 2007	15,210	9,850	25,060
Fall 2008	15,838	10,116	25,954
Fall 2009	16,499	10,972	27,471
Fall 2010	17,193	11,839	29,032
Fall 2011	17,425	12,540	29,965
Fall 2012	17,659	12,665	30,324
Fall 2013	17,899	12,790	30,689
Fall 2014	18,141	12,916	31,057
Fall 2015	18,245	12,970	31,215

F. GOVERNANCE

The joint governance structure will include a system of public research universities led by a Chancellor reporting to a Board of Regents. Each of the three public research universities would be led by a President, and each would have a local board. Details are provided in the section on governance in the system plan (see page 49), including details of all the options that were explored.

G. FINANCIAL MODEL

The financial data portrayed are preliminary and are consistent with goals outlined in the University Committee Report. Actual restructuring costs would be determined by both external decisions and internal decisions. The following are intended to: (a) illustrate the potential scale of the largely one-time costs of simply **restructuring** the existing entities into three, reconfigured public research universities (restructuring); and (b) illustrate the potential scale of pursuing **excellence**, including increased operating costs (for example, from adding faculty) and capital costs (for example, building new research and other facilities). The restructuring costs suggested below are those directly related to restructuring. They do not include other budget issues, such as the restoration of recent budget cuts, the under funding of negotiated salary increases, and overall capital needs. These issues are addressed in the Commission on Higher Education's Long Range Plan. Nor do they include other budget items identified by the institutions, such as base funding needs and deferred maintenance.

The resource needs for the new public research university in the north have two dimensions:

- Restructuring Costs
- Pursuing Excellence Costs

The Restructuring costs are approximately $29 million. These will be primarily in years one through four, and are largely one-time costs. The Pursuing Excellence costs are approximately $408 million. These costs will be incurred over an eleven-year period and are both ongoing operating costs and capital expenditures. Therefore, the combined total is $437 million. Total costs in the first four years would be $40.3M. The following table shows estimated restructuring costs over an eleven-year period in constant dollars:

($000)

Year	Restructuring	Pursuing Excellence	Total
2004-05	$1,149	-	1,149
2005-06	8,707	2,554	11,261
2006-07	9,457	4,107	13,564
2007-08	8,707	5,661	14,368
2008-09	333	59,680	60,013
2009-10	333	62,806	63,139
2010-11	333	65,932	66,265
2011-12	-	69,057	69,057
2012-13	-	72,183	72,183
2013-14	-	31,401	31,401
2014-15	-	34,527	34,527
Total	**$29,019**	**$407,908**	**$436,927**

A significant portion of the Pursuing Excellence costs is associated with increasing capacity. Additional details of the restructuring costs are in Appendix I.

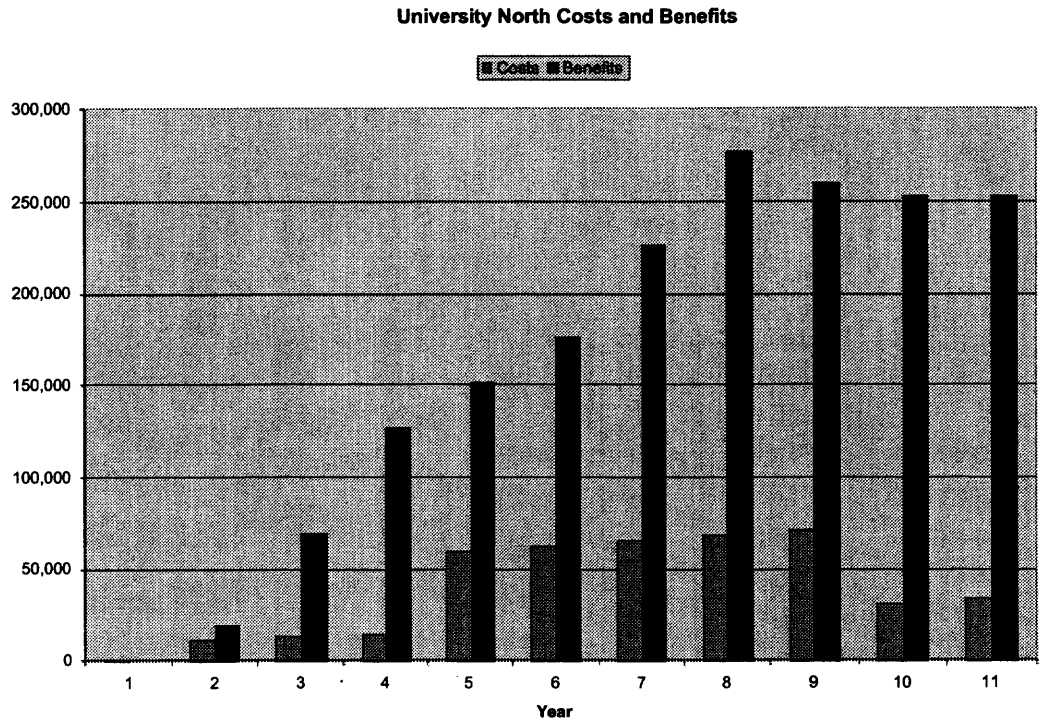
H. BENEFITS

While many of the benefits can be described at this time, the economic benefits can only be estimated; they will need further analysis and refinement as additional decisions are made and further study is completed.

The new public research university in the north will:

- Develop Newark's own comprehensive, nationally-ranked urban research university.
- Serve a greater number of both undergraduate and graduate students, while increasing the opportunities for students with diverse backgrounds.
- Create the potential to more than double, in constant dollars, sponsored and other research funding over a decade and thereby improve its ranking as a public research university.
- Provide leadership for economic development in the Newark region by:
  - Expanding the size and scope of the educational and research complex in the heart of Newark, thereby increasing its economic impact directly through additional employment and indirectly by helping elevate the perception of Newark as a vital location for business and residential development.
  - Developing significant additional student housing and encouraging the growth of beneficial private development (for example, housing, restaurants, coffee shops, bookstores, and retail outlets).
  - Attracting new business and industry, particularly science and technology-oriented firms.
  - Providing additional incubator space and intellectual support for 75 businesses, with 25 of those businesses being "hatched" each year and with those businesses having a five-year survival rate in excess of 85%.
  - Increasing attention to knowledge and workforce development, targeting services to existing businesses and to start-ups.
- Stimulate the economy more broadly. For example, the restructuring costs for the proposed university in the North include $219 million for constructing academic and research buildings and providing furnishings. This capital investment would generate a total of $424 million in spending and 4,588 construction related jobs (earning in excess of $175 million in wages) during the 11-year period. (See Appendix III)
- New research facilities would provide annual output of $253 million and support 2,726 jobs in a broad array of sectors, with workers earning $117 million in wages. (See Appendix III)

- Combining costs from the previous financial section with the financial benefits accruing to the state described above yields the following cost/benefit picture:



The benefits shown in the chart reflect total net costs to the State and benefits computed using economic multipliers based on estimated construction and research facility activity levels. They do not purport to demonstrate the more important qualitative benefits provided by the improved quality of education and enhanced reputation of the New Jersey research institutions that will be evidenced by the increase in research grant awards realized.

- Strengthen and integrate academic programs by fostering interdisciplinary initiatives with a critical mass of intellectual and physical resources to achieve national and international recognition.

- Share professional expertise focused on the challenges of urban and metropolitan regions through:

  - Scholarly research.

  - Publications, forums, applied policy analyses, and program evaluations. Areas of expertise will likely include disciplines such as law, criminal justice, architecture and planning, public administration, business, engineering, public health, and social sciences/policy studies.

  - Direct collaboration with Newark's public schools.

- Further improve health care in Newark through the university's Medical School, Dental School, Nursing School, School of Health Related Professions, and Public Health programs developing innovative collaborations with other professional schools and graduate programs (e.g., engineering, business, law, neuroscience, PHRI) to create interdisciplinary programs that broaden the scope of academic offerings for undergraduate and graduate students and expand "K-16 pipeline" programs that facilitate entry of disadvantaged youth into the health professions. Also, the coordinated resources of the new university's professional schools will enhance delivery of health care by increasing the pace of research discovery and increasing the level of training of health care professionals. The University Hospital and expanded outreach programs to promote the well-being of Newark's residents will benefit from these integrated research and training activities.

- Combine and expand its resources so as to offer numerous cultural events that will enrich the cultural fabric of Newark and the state. Additionally, the new university will be the focal point for expanded collaborations with the cultural institutions in Newark, such as the New Jersey Performing Arts Center, the Newark Library, the Newark Museum, Symphony Hall, and the city's art galleries and theaters.

I. KEY ISSUES

There are issues that are common to all three universities; they are listed in the university system plan. The **unique** issues for the new public research university in the north include:

- Bringing together **three** institutions at one time, each with relatively distinctive academic cultures and multiple collective bargaining units.
- Reconfiguring or adding space to accommodate multiple combining of units (for example, two Nursing programs).
- Achieving economies of scale through restructuring, particularly of administrative units.
- Adding enrollment growth and substantially increasing the population of residential students.
- Impacting the redevelopment of the University Heights district.
- Insuring the responsiveness of the University Hospital to the health care needs of Newark and the long-term financial health of the hospital.
- Identifying an appropriate and acceptable name.

J. CONCLUSION

The process of creating a comprehensive urban university will be complex and time consuming. Establishment of the new university in Newark can create the administrative unity and critical mass of faculty, students and staff to achieve national distinction in the four-fold mission of innovative and interdisciplinary instruction, advanced research, impact on economic development of the City, State, and nation, and community outreach – particularly in the areas of business development, health care and K-12 education. The new university will contribute to, and be enriched by, its location in the State's largest, remarkably diverse, international gateway city.

UNIVERSITY PLAN (CENTRAL)

A. INTRODUCTION

The New Brunswick/Piscataway region is an industrial, business, and educational center on the Raritan River. It serves as the world corporate headquarters for Johnson & Johnson. It is home to the state's largest public research university campus. And it has considerable cultural assets, including Crossroads, the George Street Playhouse, and the State Theater.

This region is home to Rutgers-New Brunswick, the largest of the three Rutgers' operations, and a separate medical school. Rutgers, with its unique history of having once been an historically private institution and now being the state's public land grant university, is somewhat disadvantaged from many of its national competitors, however, because it does not have a medical school within its structure. Recent and exciting developments in research have demonstrated that many academic disciplines now need to be involved in interdisciplinary ways with both basic science and medically-related research. Restructuring to unite Rutgers-New Brunswick and the Robert Wood Johnson Medical School (currently part of University of Medicine and Dentistry of New Jersey) into a single new public research university has enormous potential to create an elite public research university.

This research university will be characterized by superior faculty and students; by a curriculum that is both comprehensive and innovative; by research that attracts expanded external grants and contracts (particularly in biomedical, scientific and engineering research); by superb health care delivery and research; and by a first-rate intellectual climate for undergraduate and graduate students that makes this a university.

Geographic proximity and a history of collaboration between the existing academic entities mean that planning and implementation could proceed rather rapidly. While the aspirations are lofty, they are also fully reachable. Under the proposed plan, the current Rutgers-New Brunswick would be largely focused on developing this dynamic public research university in one location; it would however, have vital links to the new public research universities in the north and south as part of the new system of public research universities. With this focus, with the bringing together of a comprehensive research university and medical school, and with the requisite leadership and vision, this region of New Jersey would be home to a university of international stature.

B. UNIVERSITY VISION AND MISSION

University Vision and Mission will need to be developed by each university once the local and system governance and leadership are in place. However, the following have been largely developed from the ideas contained in the University Committee report and are included for illustrative purposes.

Vision

A public research university in the central region that is a leader among the most distinguished public research universities in the nation through its preparation of students to meet the needs of a changing society, its commitment to create knowledge, its pre-eminent biomedical research and health care, and its service to local, state, national, and global communities and others through its land grant and public service activities.

Mission

To achieve this Vision, the university will:

- Strengthen undergraduate education in the liberal arts and pre-professional programs.
- Enhance graduate education, research, and scholarship that meet national and international standards of excellence.
- Expand professional school programs to prepare students for leadership and service at the local, state, national, and international levels.
- Achieve national distinction in the biomedical and health sciences so as to advance knowledge and improve the training of outstanding professionals in the prevention, detection, treatment of disease, and delivery of health care to patients in the region and throughout the state; translation of research discoveries into clinical practice; and on-going evaluation of these efforts to improve health and the quality of health care.
- Create an intellectual environment that will serve as a magnet for high-technology industries in areas such as life sciences, telecommunications, and advanced materials that can be translated into new jobs and economic development for the State.
- Develop excellent academic programs that enhance faculty collaboration and foster research and training, attract outstanding students, and increase extramural support.
- Encourage interdisciplinary, inter-school research and instructional programs that build on existing strengths and support new initiatives to foster excellence throughout the University.

- Serve the needs of the entire State through research on basic policy issues; foster programs in the arts; improve K-12 and the education of teachers; enhance health service and training; improve training for public officials; and strengthen public agencies.
- Support the University's land-grant mission and the mission of the New Jersey Agricultural Experiment Station through programs for all of New Jersey's citizens in the state's urban, suburban, and rural areas.
- Increase alliances with business, industry and labor in order to support research and development, technology transfer, economic development, and education of the workforce.
- Commit to partnership with public agencies and private enterprises to stimulate the advancement of knowledge and the enhancement of social welfare and economic growth.

C. GOALS AND OBJECTIVES

Wherever possible goals and objectives should be developed that are measurable. However, they will need to be reviewed regularly in case the external environment changes (for example, a reduced rate of increase in available federal research dollars). The final goals and objectives will be developed by each university, through its President and local board, and the Chancellor and Board of Regents, consistent with both University and system strategic plans. The following are for illustrative purposes.

Goals

Preliminary goals are:

- To create a world-class public research university that includes a medical school by combining Rutgers-New Brunswick and UMDNJ's Robert Wood Johnson Medical School (Piscataway) into a single, largely autonomous university that is one of three members of a new public research university system.
- To promote growth and prosperity in the state's high technology and knowledge-based economy by expanding biomedical, scientific, and engineering research and working in partnership particularly with New Jersey's telecommunications and pharmaceutical industries.
- To strengthen all academic programs.
- To develop multiple opportunities for both graduate and undergraduate students to pursue innovative study and research in new (and new combinations of) academic fields.

Objectives

Specific objectives include:

- To expand enrollment preserving the proportion of New Jersey high school graduates served in the undergraduate program as New Jersey's population increases, resulting in an increase of enrollment from 27,365 (undergraduate), 8,872 (graduate) and 36,237 (total) in 2002 to 29,760 (undergraduate), 9,237 (graduate) and 38,997 (total) by 2015.
- To increase substantially sponsored research over a decade (2005-15). In particular the objective is to gain in competitive position by attracting a greater proportion of federal funds (especially NIH and NSF grants) through success in the peer review process. While one projection model (See Appendix II), using peer group growth rates, suggests a growth from $330 million to $455 million (1998 constant dollars), it is quite feasible for research volume to increase by over a half.
- To rank in the top 15 public institutions in the nation for total research funding and in the top 25 for federal research funding.

D. ACADEMIC DESIGN

Certain academic design decisions will need to be made by the President and local board and, where appropriate, by the Chancellor and Board of Regents. It is likely that current colleges and schools will remain, while mission and resource considerations will determine any additional colleges and schools.

The schools and colleges of the current institutions in the central region are:

- Cook College and the New Jersey Agricultural Extension Service
- E.J. Bloustein School of Planning and Public Policy
- Ernest Mario School of Pharmacy
- Faculty of Arts and Sciences
- Graduate School of Applied and Professional Psychology
- Graduate School of Education
- Mason Gross School of the Arts
- Robert Wood Johnson Medical School
- School of Communication, Information, and Library Studies
- School of Engineering
- School of Management and Labor Relations
- School of Public Health
- School of Social Work
- Undergraduate Colleges (Cook, Douglass, Livingston, Rutgers College)

The new public research university would have the same schools and colleges, including a single graduate faculty responsible for Ph.D. programs. Decisions would need to be made concerning the addition of a business school (perhaps at the undergraduate level and perhaps with some focus on interdisciplinary areas such as Health Care Administration and Pharmaceutical Business Practice) and a nursing school. Most Association of American Universities (AAU) institutions have schools or colleges of business and nursing. The existing instructional programs in these fields would need to continue until such decisions are made and implemented. In addition, decisions will need to be made concerning the continuation and integration of University Behavioral HealthCare (UBHC) services in New Brunswick.

Opportunities will be pursued for closer collaboration and refocusing of the disciplines in the biomedical and life sciences to foster excellent undergraduate and graduate teaching programs, research and community service. Incentives will encourage an interdisciplinary curriculum with breadth and depth, greater interaction of the teaching and research faculties, and will utilize faculty consultation in the review processes. Also, mechanisms (such as advisory bodies and deans and directors councils of appropriate fields) will be formed for promoting inter-disciplinary collaboration, sharing of resources, and building cross-disciplinary faculty synergies.

The strong clinical mission of the Robert Wood Johnson Medical School will be maintained by the current clinical programs, including the Cancer Institute of New Jersey, the Cardiovascular Institute of New Jersey, the Eric B. Chandler Community Health Center, Robert Wood Johnson Medical Group, Employee Health, and Affiliated Hospitals. The restructuring initiative provides an opportunity to enhance this mission and create synergies in all health care delivery on the campus.

E. MARKET SUMMARY

The undergraduate program will likely continue to draw statewide (and beyond), with Middlesex, Bergen, Monmouth, and Hudson being the leading counties in supplying students. Projected enrollment will likely be met because it simply retains the same proportion of high school graduates as the classes through 2009 increase in size. Transfer students currently provide 23% of the undergraduate enrollment; there could be a reduction in transfers from Camden and Newark as the new public research universities in those regions expand their offerings.

The graduate and professional schools will draw students regionally, nationally, and internationally.

Enrollment Projections

Actual enrollment decisions will need to be made based on available resources and demand. These projections are for illustrative purposes only, since many other variables beyond resources and demand impact actual enrollments.

Year	Undergraduate	Graduate	Total
Fall 2002	27,365	8,872	36,237
Fall 2003	27,725	8,922	36,647
Fall 2004	28,132	8,972	37,104
Fall 2005	28,539	9,022	37,561
Fall 2006	28,946	9,072	38,018
Fall 2007	29,353	9,122	38,475
Fall 2008	29,760	9,172	38,932
Fall 2009	29,760	9,222	38,982
Fall 2010	29,760	9,237	38,997
Fall 2011	29,760	9,237	38,997
Fall 2012	29,760	9,237	38,997
Fall 2013	29,760	9,237	38,997
Fall 2014	29,760	9,237	38,997
Fall 2015	29,760	9,237	38,997

The new public research university, like its new sister institutions in the North and South, is likely to be more attractive to those bright New Jersey students who apply to Rutgers but matriculate at other institutions outside the state. The ability of Rutgers University at New Brunswick to compete for the best undergraduates with Cornell, University of Pennsylvania, New York University, University of Maryland, Columbia, Pennsylvania State, and other distinguished northeastern universities, especially those with medical schools, should improve.

For graduate study, the competitor pool is national and international. The restructured university in New Brunswick will be more competitive with some of the best public and private institutions.

F. GOVERNANCE

The joint governance structure will include a system of public research universities led by a Chancellor reporting to a Board of Regents. Each of the three public research universities would be led by a President, and each would have a local board. Details are provided in the section on governance in the system plan (see page 49), including details of all the options that were explored.

G. FINANCIAL MODEL

The financial data portrayed are preliminary and are consistent with goals outlined in the University Committee Report. Actual restructuring costs would be determined by both external decisions and internal decisions. The following are intended to: (a) illustrate the potential scale of the largely one-time costs of simply **restructuring** the existing entities into three, reconfigured public research universities (restructuring); and (b) illustrate the potential scale of pursuing **excellence**, including increased operating costs (for example,

from adding faculty) and capital costs (for example, building new research and other facilities). The restructuring costs suggested below are those directly related to restructuring. They do not include other budget issues, such as the restoration of recent budget cuts, the under funding of negotiated salary increases, and overall capital needs. These issues are addressed in the Commission on Higher Education's Long Range Plan. Nor do they include other budget items identified by the institutions, such as base funding needs and deferred maintenance.

The resource needs for the new public research university in the central region have two dimensions:

- Restructuring Costs
- Pursuing Excellence Costs

The Restructuring costs are approximately $34 million. These will be primarily in years one through four, and are largely one-time costs. The Pursuing Excellence costs are approximately $138 million. These costs will be incurred over an eleven-year period and are both ongoing operating costs and capital expenditures. Therefore, the combined total is $172 million. Total costs in the first four years would be $37.1M. The following table shows estimated restructuring costs over an eleven-year period in constant dollars:

($000)

Year	Restructuring	Pursuing Excellence	Total
2004-05	$121	-	121
2005-06	10,785	602	11,387
2006-07	11,785	1,204	12,989
2007-08	10,783	1,807	12,590
2008-09	333	22,729	23,062
2009-10	333	23,331	23,664
2010-11	333	23,933	24,266
2011-12	-	24,536	24,536
2012-13	-	25,138	25,138
2013-14	-	6,920	6,920
2014-15	-	7,522	7,522
Total	**$34,473**	**$137,722**	**$172,195**

A significant portion of the Pursuing Excellence costs is associated with increasing capacity. Additional details of the restructuring costs are in Appendix I.

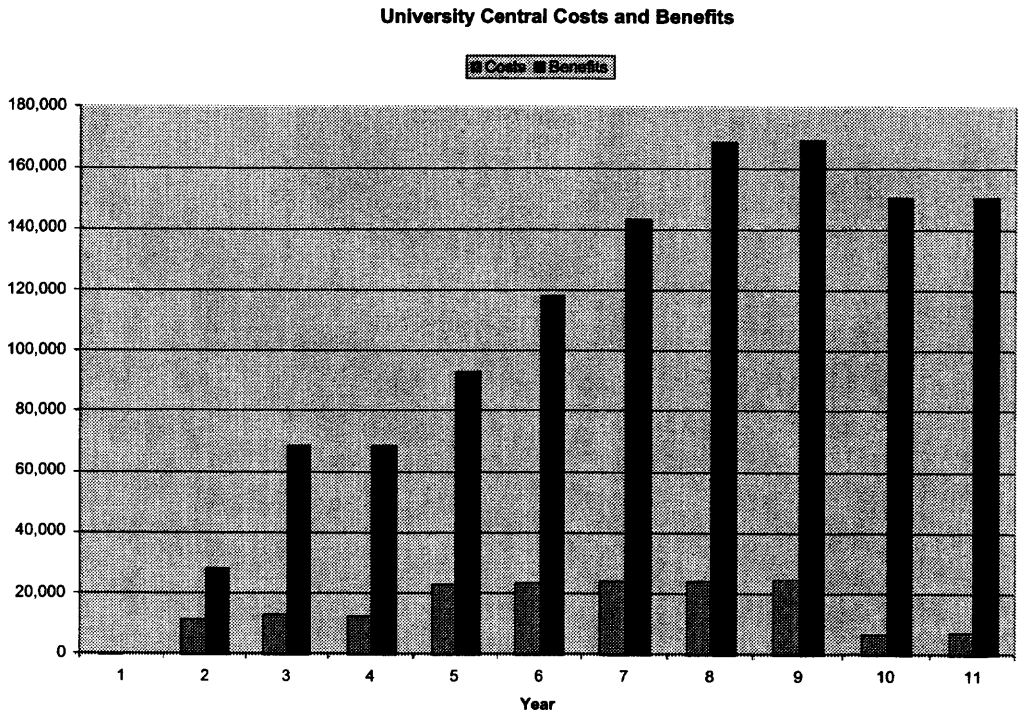
H. BENEFITS

While many of the benefits can be described at this time, the economic benefits can only be estimated; they will need further analysis and refinement as additional decisions are made and further study is completed.

The new public research university in the central region will:

- Develop an AAU research university that includes a medical school and can become competitive with the very best public research universities in the nation.
- Maintain proportional access to its undergraduate programs to excellent and diverse students, even as the state's high school graduating classes increase in size.
- Create the potential to increase sponsored and other research funding by more than a third, in constant dollars, over the decade.
- Provide significant economic benefit to the state through:
  - The expansion of University-based biomedical, scientific, and engineering research, working in partnership with the world's leading telecommunications and pharmaceutical industries that are based in New Jersey.
  - Employment of additional faculty and staff as the enrollment expands and the research volume increases. Much of the increased employment from research will be externally funded.
  - Research and technology transfer that allow existing New Jersey knowledge-based companies to expand and that attracts new knowledge-based companies to relocate or to start up in New Jersey.
- Stimulate the economy more broadly. For example, the restructuring costs for the proposed university in the Central part of the state include $76 million for constructing academic and research buildings and providing furnishings. This capital investment would generate a total of $148 million in spending and 1,601 construction related jobs (earning in excess of $61 million in wages) during the 11-year period. (See Appendix III)
- New research facilities would provide annual output of $151 million and support 1,625 jobs in a broad array of sectors, with workers earning $70 million in wages. (See Appendix III)

- Combining costs from the previous financial section with the financial benefits accruing to the state described above yields the following cost/benefit picture:



The benefits shown in the chart reflect total net costs to the State and benefits computed using economic multipliers based on estimated construction and research facility activity levels. They do not purport to demonstrate the more important qualitative benefits provided by the improved quality of education and enhanced reputation of the New Jersey research institutions that will be evidenced by the increase in research grant awards realized.

- Enhance faculty (and student) collaborations in teaching, research, and other academic interactions across all disciplines supported by a unified administrative structure and the sharing of seamless support services for faculty and students. These collaborations will result in more creative teaching, more innovative research, and a more highly developed intellectual climate.

- Establish a coordinated clinical enterprise to ensure cutting-edge health care for the residents of New Jersey and to enable technological breakthroughs that will make New Brunswick an international destination for world-class care.

- Provide seamless, responsive, and uniform services for students in all programs, including joint and collaborative degree programs (which will increase significantly in numbers) and interdisciplinary research and training grants.

I. KEY ISSUES

There are issues that are common to all three universities; they are listed in the university system plan. The **unique** issues for the new public research university in the central region include:

- Ensuring that the medical school and its clinical enterprise, as well as life science programs of the university, are integrated into an effective academic organization of the highest quality.
- Increasing enrollment in proportion to the increase in New Jersey's college-ready high school graduates, while maintaining and building excellence in undergraduate, graduate, and professional programs.
- Determining how best to provide excellent business and nursing education to students in Central New Jersey.
- Determining how to continue and to integrate University Behavioral HealthCare (UBHC) in Central New Jersey (currently a statewide program).
- Reconfiguring existing governance bodies consistent with the final overall system governance structure.

J. CONCLUSION

The challenges and issues are significant yet manageable if the resource needs can be met. Bringing together the two current institutions in the New Brunswick/Piscataway area provides the opportunity to achieve together educational and research goals unreachable if they remain separated. The formation of a comprehensive public research university that includes the full range of medical and life science disciplines in a single, focused, and effectively administered institution will result in enormous intellectual, social, and economic benefit and national prominence. This new public research university can be restructured rather rapidly and has the potential to advance its national competitiveness on an aggressive timetable.

UNIVERSITY PLAN (SOUTH)

A. INTRODUCTION

The Camden region has been the focus of a major revitalization effort, including the Camden Revitalization Act. This 2002 Act allocated $175 million, including over $47 million for the development of more than half a million square feet of higher education and medical center space in the city. The initiative has spurred significant private investment in offices, restaurants, and retail. This region is also home to the Coriell Institute for Medical Research, an internationally known not-for-profit basic biomedical research institution focusing on cell research and cell banking services.

A public research university based in southern New Jersey is a vision worth realizing and is a long overdue recognition of the needs of the region at a time when revitalization is a focus. This vision appropriately challenges the status quo in ways that will encourage new economic growth; that will infuse the communities with more highly educated and trained graduates from across the state and nation; and that will build a nationwide reputation for the Delaware Valley, through its educational assets, as a choice designation for business and industry and as a region with a high quality of life.

Such an opportunity comes around only once every few generations. Across the nation, every noteworthy region that is vibrant and growing is home to a research university. That is not by coincidence. Such a university in southern New Jersey will be an anchoring institution for the economic, academic, social, and cultural growth of the region, with particularly meaningful activity at its Camden and Stratford centers.

The new public research university will combine the current strengths of Rutgers-Camden, the School of Osteopathic Medicine, and the program of Robert Wood Johnson School of Medicine (in cooperation with Cooper Hospital). However, the historical underfunding and underdevelopment of the educational entities in southern New Jersey also means that major investments will be necessary to provide the foundation for a quality, public research university. These include the addition of select Ph.D. programs, the overall expansion of enrollment, the creation of a full M.D. program, and the building of new facilities.

These investments, however, would have rich returns. The revitalization of the region, already underway, would receive an enormous and immediate boost with the creation of this new public research university. Some of its areas of emphasis, such as biomedical, aging and child studies, would also immediately expand its impact on the quality of life in the region, as would the expanded opportunities for health care services.

The creation and development of such a public research university has no parallel in the history of American higher education. It has the opportunity to have an impact and value-added quality unmatched anywhere in the country. It can be the national case study in recreating a region around the creation of a public research university.

B. UNIVERSITY VISION AND MISSION

University Vision and Mission will need to be developed by each university once the local and system governance and leadership are in place. However, the following have been largely developed from the ideas contained in the University Committee report and are included for illustrative purposes.

Vision

A public research university in the south that revitalizes its region with superior academic programs, knowledge-based public policy problem solving, focused research and technological innovations, and quality medical education, research, and health care delivery.

Mission

To achieve this Vision, the university will:

- Provide a rich and comprehensive source of excellent higher education, with particular emphasis on academic programs at all levels that address the needs of the region.
- Engage the community in using knowledge-based responses to major public policy and practice issues facing the region.
- Create the research and technological innovations that fundamentally advance knowledge and promote the well being of the region.
- Ensure top quality medical education of both osteopathic and allopathic physicians, who will gain the special skills to continue to address the broad range of health care needs in the region, particularly the underserved and minority populations.

C. GOALS AND OBJECTIVES

Wherever possible goals and objectives should be developed that are measurable. However, they will need to be reviewed regularly in case the external environment changes (for example, a reduced rate of increase in available federal research dollars). The final goals and objectives will be developed by each university, through its President and local board, and the Chancellor and Board of Regents, consistent with both university and system strategic plans. The following are for illustrative purposes.

Goals

Preliminary goals are:

- To create a unique public research university by bringing together Rutgers-Camden, UMDNJ's Robert Wood Johnson Medical School (Camden), and UMDNJ's School of Osteopathic Medicine (Stratford) into a single, largely autonomous university that is one of three members of a new public research university system.
- To develop and offer between five and ten Ph.D. programs over the decade, with special emphasis on those that will serve the needs of the region.
- To improve the health care of the region and beyond by developing a full allopathic medical school and by expanding the medical schools' research capacity in targeted areas, while maintaining strength in the School of Osteopathic Medicine.

Objectives

Specific objectives include:

- To expand significantly the student enrollment from 3,824 (undergraduate), 2,408 (graduate) and 6,232 (total) in 2002 to 7,800 (undergraduate), 4,960 (graduate) and 12,760 (total) in 2015 and to increase the residential percentage from 10% to 25%.
- To increase substantially sponsored research over a decade from $35 million to a projected $100 million (in constant dollars). In particular the objective is to gain in competitive position by attracting a greater proportion of federal funds (especially NIH and NSF grants) through success in the peer review process. It is quite feasible for research volume to more than triple over the decade.
- To provide leadership in the economic revitalization of the region by increasing the proportion of the population with a bachelor's degree or higher, by linking academic programs to workforce needs, by targeting research to attract knowledge-based business and industry, and by building in excess of $200 million of capital construction over a decade.

D. ACADEMIC DESIGN

Certain academic design decisions will need to be made by the President and local boards and, where appropriate, by the Chancellor and Board of Regents. It is likely that current colleges and schools will remain, while mission and resource considerations will determine any additional colleges and schools.

The schools and colleges of the current institutions in the south are:

- Arts and Sciences (Rutgers-Camden)
- Business (Rutgers-Camden)
- Law (Rutgers-Camden)
- Medicine (UMDNJ: (a) School of Osteopathic Medicine in Stratford (b) Robert Wood Johnson's 3rd and 4th year allopathic medical education in collaboration with Cooper Hospital).

The new public research university would have the same basic schools and colleges. However, there would be two medical schools, one osteopathic in Stratford and one allopathic in Camden. These two medical schools would jointly teach much of the first two years of the basic sciences so as to achieve efficiencies, drawing from the model in place at Michigan State University.

A number of Ph.D. programs would be phased in such as:

- Computational Biology
- Computational Sciences
- Public Policy/Public Affairs
- Childhood Studies

Others might include: Criminal Justice, Ecology, Nursing, Political Science, Psychology, and Public History. Some of the Ph.D. programs might be offered through more than one college or school.

Some Masters programs would be expanded (for example, criminal justice), others would be developed (for example, a Masters in Psychology that would draw from both Arts and Sciences and Medicine). Other Masters programs that might fit the mission include: International Business, Accounting, Finance, and Management Information Systems.

Decisions would need to be made, both at the Masters and Undergraduate level, on whether current statewide programs would be developed as stand-alone programs in the south (these include social work, public health, physical therapy) or within the public research university system.

Undergraduate majors would grow in size, and there could be some selective additions (especially those that could take advantage of the new academic synergies). These might include joint BA-BS/MD and BA-BS/DO programs to complement the new BA/JD program, public affairs, international business, human resource management, management information systems/graphic arts, and management information systems/computer science.

The combination of schools and colleges with their expanded and new programs would form a good base for a new public research university. While engineering is not essential, it is highly desirable. The plan calls for collaboration with Rowan University's engineering school rather than the development of a separate engineering school.

It is anticipated that **research** activity and productivity would increase in all the schools and colleges. Some areas of research emphasis would be:

- Aging
- Biomedicine
- Childhood Studies
- Computational Biology
- Computational Sciences

In addition, collaborative research opportunities would be sought with the Coriell Institute, a highly respected, long-established biotechnology research entity.

E. MARKET SUMMARY

The undergraduate program will likely continue to draw predominantly from the region, with Camden, Burlington, and Gloucester counties providing a significant portion of the undergraduate enrollment. High school graduates are projected to grow through 2009, so the aggressive growth projections seem feasible through that period. Beyond then, much will depend on the reputation and marketing of the new university if it is to meet its growth targets. Transfer students currently provide 36% of the undergraduate enrollment. If the community and other colleges in the region see an increase in enrollment (which they are all projecting, subject to sufficient resources being available), transfers to the new public research university will increase in absolute numbers but not in overall percentage of undergraduate enrollment.

The graduate and professional schools will draw students both regionally and nationally.

Enrollment Projections

Actual enrollment decisions will need to be made based on available resources and demand. These projections are for illustrative purposes only, since many other variables beyond resources and demand impact actual enrollments.

Year	Undergraduate	Graduate	Total
Fall 2002*	3,824	2,408	6,232
Fall 2003	4,252	2,326	6,578
Fall 2004	4,646	2,523	7,169
Fall 2005	4,840	2,720	7,560
Fall 2006	5,134	2,917	8,051
Fall 2007	5,430	3,126	8,556
Fall 2008	5,728	3,333	9,061
Fall 2009	6,023	3,541	9,564
Fall 2010	6,319	3,764	10,083
Fall 2011	6,614	3,992	10,606
Fall 2012	6,909	4,235	11,144
Fall 2013	7,206	4,478	11,684
Fall 2014	7,502	4,726	12,228
Fall 2015	7,800	4,960	12,760

* Combines current enrollment of Rutgers-Camden and UMDNJ in the South.

The other colleges in the region (Atlantic Community College, Burlington County College, Camden County College, Gloucester County College, Rowan University, Salem Community College, and Stockton State College) will largely complement, and not compete for students with the new public research university. The community colleges are a source of transfer students; Rowan and Stockton, while having some similar programs (mainly undergraduate) have their own distinctive strengths and will likely collaborate with the new institution. Other current "competitor" universities (for example, Temple University, Drexel University, St. Joseph's University, LaSalle University) will now have to compete with a research university with an expanded undergraduate program, select Ph.D. programs, two medical schools, and a number of new buildings.

F. GOVERNANCE

The joint governance structure will include a system of public research universities led by a Chancellor reporting to a Board of Regents. Each of the three public research universities would be led by a President, and each would have a local board. Details are provided in the section on governance in the system plan (see page 49), including details of all the options that were explored.

G. FINANCIAL MODEL

The financial data portrayed are preliminary and are consistent with goals outlined in the University Committee Report. Actual restructuring costs would be determined by both external decisions and internal decisions. The following are intended to: (a) illustrate the potential scale of the largely one-time costs of simply **restructuring** the existing entities into three, reconfigured public research universities (restructuring); and (b) illustrate the potential scale of pursuing **excellence**, including increased operating costs (for example, from adding faculty) and capital costs (for example, building new research and other facilities). The restructuring costs suggested below are those directly related to restructuring. They do not include other budget issues, such as the restoration of recent budget cuts, the under funding of negotiated salary increases, and overall capital needs. These issues are addressed in the Commission on Higher Education's Long Range Plan. Nor do they include other budget items identified by the institutions, such as base funding needs and deferred maintenance.

The resource needs for the new public research university in the south have two dimensions:

- Restructuring Costs
- Pursuing Excellence Costs

The Restructuring costs are approximately $20 million. These will be primarily in years one through four, and are largely one-time costs. The Pursuing Excellence costs are approximately $369 million. These costs will be incurred over an eleven-year period and are both ongoing operating costs and capital expenditures. Therefore, the combined total is $389 million. Total costs in the first four years would be $32.5M. The following table shows estimated restructuring costs over an eleven-year period in constant dollars:

($000)

Year	Restructuring	Pursuing Excellence	Total
2004-05	$600	-	600
2005-06	6,442	2,041	8,483
2006-07	6,817	4,081	10,898
2007-08	6,442	6,122	12,564
2008-09	33	56,628	56,661
2009-10	33	58,669	58,702
2010-11	33	60,709	60,742
2011-12	-	62,750	62,750
2012-13	-	64,790	64,790
2013-14	-	25,511	25,511
2014-15	-	27,551	27,551
Total	**$20,400**	**$368,852**	**$389,252**

A significant portion of the Pursuing Excellence costs is associated with increasing capacity. Additional details of the restructuring costs are in Appendix I. The costs in the South are impacted by the need to grow student capacity significantly and quickly and by the need to build a research infrastructure necessary to support a largely autonomous public research university.

H. BENEFITS

While many of the benefits can be described at this time, the economic benefits can only be estimated; they will need further analysis and refinement as additional decisions are made and further study is completed.

The new public research university in the south will:

- Develop a research university aimed at primarily serving the needs of its region.
- Increase the number and proportion of the population in the region with a bachelor's degree or higher and increase the number and proportion of students who live in the Camden and Stratford areas.

- Create the potential to increase sponsored research and other research funding from $35 million to $100 million by 2015.

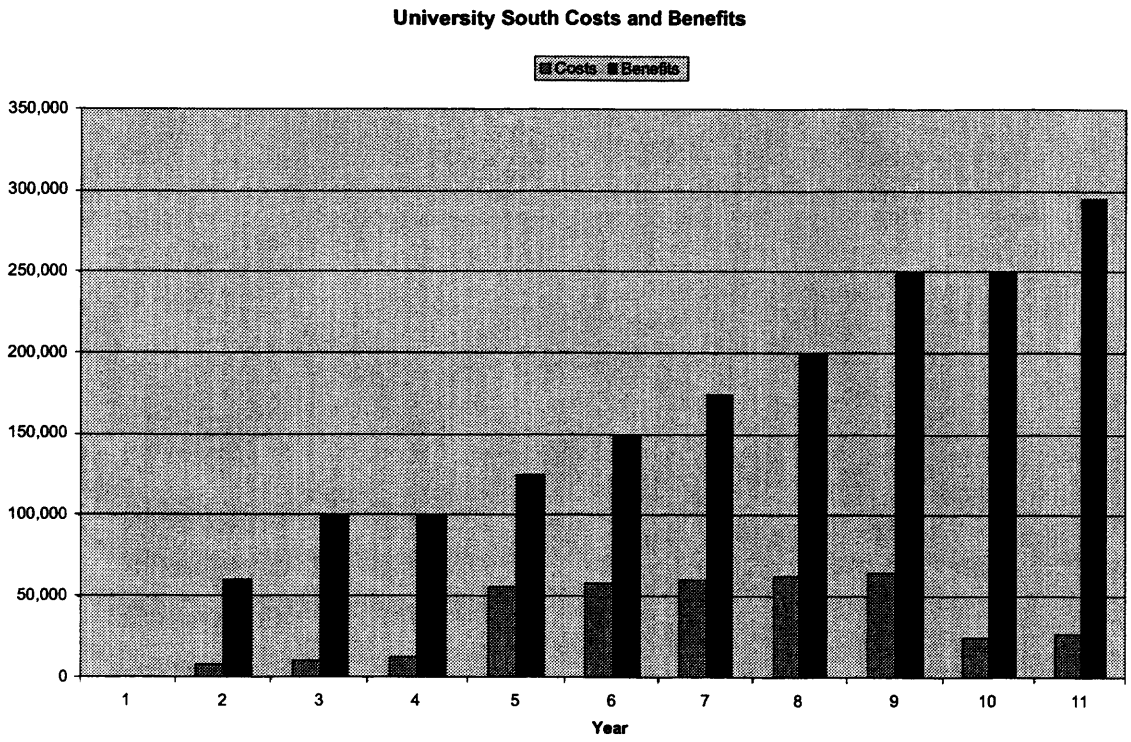
- Serve as the economic development catalyst for the region because:

  - Its targeted research will attract new business and industry to the region.
  - Its link to the workforce needs of the region will lead, in collaboration with other colleges and universities in the region, to a sufficient supply of an educated workforce.
  - Its increased enrollment and expanded employment of faculty and staff will in and of itself increase substantially the economic impact of the institution as student and salary dollars are expended at area businesses.
  - Its expansion of the University District in Camden along a corridor to Cooper Hospital will create considerable private development opportunities (such as housing, restaurants, coffee shops, retail outlets, book stores, convenience stores, and so on.)

- Stimulate the economy more broadly. For example, the restructuring costs for the proposed university in the South part of the state include $208 million for constructing academic and research buildings and providing furnishings. This capital investment would generate a total of $402 million in spending and 4,350 construction related jobs (earning in excess of $166 million in wages) during the 11-year period. (See Appendix III)

- New research facilities would provide annual output of $295 million and support 3,179 jobs in a broad array of sectors, with workers earning $137 million in wages. (See Appendix III)

- Combining costs from the previous financial section with the financial benefits accruing to the state described above yields the following cost/benefit picture:



The benefits shown in the chart reflect total net costs to the State and benefits computed using economic multipliers based on estimated construction and research facility activity levels. They do not purport to demonstrate the more important qualitative benefits provided by the improved quality of education and enhanced reputation of the New Jersey research institutions that will be evidenced by the increase in research grant awards realized.

- Become a focal point for public policy advice and development, for addressing the greater educational needs (for example with service to the K-12 schools), and for working on social issues.
- Provide quality health care with allopathic an osteopathic services; train the next generation of health care providers, particularly encouraging graduates to stay in the region to practice; and produce targeted medical and medically-related research.
- Act, in partnership with others, as the center for expanding cultural opportunities for the region.

I. KEY ISSUES

There are issues that are common to all three universities; they are listed in the university system plan.

The **unique** issues for the new public research university in the south include:

- Growing enrollment substantially and adding substantial numbers of new faculty.
- Bringing together different academic cultures (particularly in medicine) and multiple collective bargaining units.
- Building an appropriate administrative infrastructure.
- Managing multiple capital projects.
- Determining the appropriate configuration and location of a new science building(s).
- Introducing Ph.D. programs.
- Adding a full 4-year allopathic medical school, including accreditation and transition issues.
- Creating an environment of mutual trust and respect between allopathic and osteopathic faculty, students, and administrators so that collaboration can flourish.
- Identifying an appropriate and acceptable name.

J. CONCLUSION

The challenges are considerable, many of the issues complex, and the resource needs sustained over time are substantial. There are also no real peers or models for such an institution because there are no other urban public research universities that have two medical schools (one allopathic and one osteopathic) in different locations and because there are no existing public research universities at the combined size of the institutions in south New Jersey. Yet the possibilities are extraordinary, a once-in-a-lifetime opportunity to restructure the existing institutions so that South Jersey has its own research university responding to the unique needs of the region.

UNIVERSITY SYSTEM PLAN

A. INTRODUCTION

To maximize the benefits for New Jersey and to insure that the whole is greater than the sum of the parts, the three powerful yet distinctive new public research universities would be members of a system led by a chancellor and a small leadership team. The system would provide particular leadership in statewide strategic planning, advocacy for the needs of its universities, encouraging collaboration among the universities, and in providing accountability for effectiveness and efficiency.

The system design for New Jersey will depend on strong Presidential and local board leadership working in concert with a strong Chancellor and distinguished Board of Regents. The system itself would be neither operational nor bureaucratic in nature; it will exist to insure the excellence of its institutions and their awareness and responsiveness to state needs. At the same time, it will insure that the state fully appreciates and supports its public research universities, recognizing their essentiality to a prosperous future for the state.

B. UNIVERSITY SYSTEM VISION AND MISSION

The University System Vision and Mission were adopted by the Steering Committee and will serve as the official statements until such time as the Chancellor and Board of Regents review and revise them.

Vision

To improve the lives of New Jerseyans through the power of a system of public research universities that provides quality education, innovative research, and service.

Mission

The system of public research universities in New Jersey aims to respond to the unique opportunities and challenges of its state. New Jersey celebrates its diverse and fast growing population (including a significant number of immigrants), its science and technology based economy, its highly productive workforce, its wealth of human and natural resources, and its access to cultural richness. The public research universities seek to provide leadership for the state by: preparing students to respond effectively to the complex needs of the twenty-first century; developing future leaders and alumni with a deep sense of civic engagement; advancing scholarship and research across all fields of academic inquiry to better the human condition; and generating knowledge-based economic development within the state. While primarily responding to the opportunities

and challenges afforded by the state, the public research universities in New Jersey intend to be national and international leaders. The public research university system will assure excellence in all three public research universities through its leadership, its strategic allocation of resources, and its advocacy for quality.

The mission will be carried out through:

- Providing superior education to, and access for, talented and diverse undergraduate, graduate, and professional students.
- Embracing each university's foundation in the liberal arts and sciences and its role in the professions, encouraging innovation in pedagogy in all areas of instruction.
- Creating rigorous research and disseminating knowledge; bringing new ideas to the public through technology transfer and other means.
- Building partnerships that aim to address human aspirations; uplifting public service; strengthening education from pre-kindergarten to graduate school; and increasing social mobility.
- Attracting and retaining a distinguished faculty who excel in teaching, research, and outreach; and a superior staff committed to excellence in service.
- Establishing an environment that fosters collaboration in teaching, research, and service across all fields of academic study and among the three public research universities. This collaboration will succeed in attracting maximum funding for education, research, and training.
- Advancing the health of New Jerseyans and others through excellence in academic medicine and related disciplines by teaching, research, and direct delivery of health care.
- Training future generations of knowledge workers and professionals; and assisting the state in preparing its overall workforce and in increasing its competitive advantages.
- Seeking partners in the private sector, in government, and in the non-profit sector to create new enterprises, increase job opportunities, and expand cultural assets for the State of New Jersey.

C. GOALS AND OBJECTIVES

Wherever possible, goals and objectives should be developed that are measurable. However, they will need to be reviewed regularly in case the external environment changes (for example, a reduced rate of increase in available federal research dollars). The final goals and objectives will be developed by the Chancellor and Board of Regents, consistent with system strategic plans. The following are for illustrative purposes:

Goals

Preliminary goals are:

- To create a system of public research universities where the whole is greater than the sum of the parts.
- To assure excellence in all three public research universities.
- To be the catalyst for knowledge-based and other economic growth in the state through research that is relevant to business and industry and through graduates who stay in the state to work and to contribute.
- To strengthen health care in the state through teaching, research, and service.
- To serve as the primary advocate for the public research universities.
- To be the primary link to all other sectors of education (state colleges and universities; community colleges; independent colleges and universities; and K-12) and to work collaboratively with the Commission on Higher Education and the Presidents' Council.
- To develop a system strategic plan, working closely with the Presidents of the public research universities, that is ongoing and responds to the multiple needs of the state.
- To encourage collaboration among and within the three public research universities and manage an appropriate level of competition.
- To facilitate seamless administrative services for faculty and students, particularly among the universities.
- To establish, in partnership with the state, a system of accountability for both financial and academic performance. This would include the identification of peer groups for each of the three public research universities and the selection of appropriate ranking systems (such as Lombardi).

Objectives

Specific objectives include:

- To expand student access to public research universities by increasing enrollment from 44,154 (undergraduate), 20,126 (graduate) and 64,280 (total) in 2002 to 55,805 (undergraduate), 27,167 (graduate) and 82,972 (total) by 2015, contingent on resource availability.
- To increase substantially sponsored research over a decade (2005-15). While one projection model, using peer group growth rates, suggests a growth of $351 million over eleven years to $648 million per year (1998 constant dollars), it is quite feasible for research volume to double. The increased level of research will assist the state in moving into the top 15 for public university research dollars (that is when the research funding for all public research universities in a state are combined).

D. ACADEMIC DESIGN

The University System, through its strategic plan, will insure that the combined academic programs of the three public research universities will be responsive to student instructional needs and state research needs. It will also encourage consistent quality across all three universities and distinctiveness within each mission. The preliminary academic designs in the university plans reflect responsiveness to student needs, state research needs, quality, and distinctiveness.

The academic programs within the system will reflect:

- A strong commitment to the liberal arts and sciences at all three universities as the foundation for any great university.
- The availability of graduate and professional programs at all three universities. Not all professional programs will be available at each location. Those that are available at two or more of the universities will each be distinctive in focus and/or approach.
- The presence of superior medical and health-related education at each university. While all three universities will have medical school(s), each will have distinctive areas of emphasis and specialty. Not all health related programs will be available at each location. Those that are available at two or more of the universities will each be distinctive in focus and/or approach.
- A dedication to innovative teaching approaches, including providing undergraduate students access to research opportunities. In addition, the institutions within the system will maximize the availability of joint degree programs (including interdisciplinary courses and degrees, and internships in business, government, and non-profit organizations).

- A research intensive environment. The research focus will have varying degrees of comprehensiveness at each campus; however, all three will have a commitment to research in the life sciences and other areas that respond to the economic development needs of the state.

Each university within the system will organize its academic programs as appropriate, although the university committee reports propose similar academic administrative structures, with a Provost as chief academic officer (who reports to the President), and schools and colleges headed by Deans reporting to the Provost.

E. MARKET SUMMARY

The University System will assist the institutions as they market their distinctive strengths to prospective students, faculty, and staff. Total enrollment in the system could grow significantly, depending on the availability of resources, demand, and success in marketing. The cumulative enrollment of the system is projected to be 82,972:

Actual enrollment decisions will need to be made based on available resources and demand. These projections are for illustrative purposes only, since many other variables beyond resources and demand impact actual enrollments.

Year	Undergraduate	Graduate	Total
Fall 2002	44,154	20,126	64,280
Fall 2003	44,968	20,129	65,097
Fall 2004	46,282	20,605	66,887
Fall 2005	47,424	21,090	68,514
Fall 2006	48,693	21,583	70,276
Fall 2007	49,993	22,098	72,091
Fall 2008	51,326	22,621	73,947
Fall 2009	52,282	23,735	76,017
Fall 2010	53,272	24,840	78,112
Fall 2011	53,799	25,769	79,568
Fall 2012	54,328	26,137	80,465
Fall 2013	54,865	26,505	81,370
Fall 2014	55,403	26,879	82,282
Fall 2015	55,805	27,167	82,972

F. GOVERNANCE

A comprehensive review of governance models was completed for this project. In April 2003, the Steering Committee received a 68 page analysis titled: "Creating Excellence for New Jersey's Public Research Universities: Governance Structural Options." This report provided: extensive background on the distinctions between governance and coordination; a review of recent restructurings in other states; an analysis of "Guidelines for States Considering Reorganization"; five restructuring governance options; recommendations; and a series of comprehensive appendices that included a summary of how every state has structured higher education, a description of various higher education boards in each state, an Education Commission of the States (ECS) paper on governance and coordination, and an ECS analysis of higher education structural models. In addition, at the same meeting, the Steering Committee received a detailed description (12 pages) of the "Roles and Responsibilities of the Board of Regents, the Chancellor, and the Presidents".

The five options presented were:

- A public research university sector system with a Board of Regents, Chancellor, and Presidents. (This was the structure recommended by the New Jersey Commission on Health Science, Education, and Training).
- The same as above except with a coordination rather than a governance structure.
- A consolidated governance structure with all public universities and colleges under a single Board and Chancellor.
- Three public research universities, each with its own governing board.
- Rutgers serving as the public research university for the entire state.

The recommendation presented was for a public research university system with a Board of Regents, Chancellor, and Presidents.

Action on the options, however, was postponed, primarily at the urging of the Rutgers President, the Chair of the Rutgers Board of Governors, and the Chair of the Rutgers Board of Trustees. The Steering Committee requested further analysis of the recommended option, plus the option of three public research universities, each with its own governing board, or some combination of the two.

A detailed analysis was completed for the Steering Committee meeting in July. However, it was not presented to the Steering Committee on the request of Rutgers' leadership. This request was based on ongoing discussions with the two boards on the issue of governance. The unique circumstance in New Jersey is that the Act of 1956, which created Rutgers as a public university, gave these Boards essentially approval authority over future governance changes for Rutgers. **At the July meeting, though, there was further discussion on governance that resulted in a stated consensus favoring a System, a Chancellor, and a Board of Regents**.

Discussions between Rutgers' leadership and the Governor's Office, which had begun in April, led to the development of the concept of joint governance between the Chancellor/Board of Regents and the Presidents/local Boards. This concept was presented in some detail (11 pages) by the Pappas Group to the Steering Committee in September in a document titled "Creating Excellence for New Jersey's Public Research Universities Through Shared Governance". No action was taken.

The discussions between Rutgers' leadership and the Governor's Office continued, without resolution, through December; therefore, no recommendation could be brought to either the October or December Steering Committee meetings. Thus the September document, coupled with the July consensus on a Chancellor and Board of Regents, represents the last description of a possible governance structure that reflects the unique circumstances (particularly the Act of 1956) in New Jersey.

That document recommends advancing "the original concept of a Board of Regents, a Chancellor, and three Presidents heading entrepreneurial, largely autonomous public research universities.....In recognition that the Chancellor's Office will be strategic, rather than operational, it also is recommended that local boards assume certain governance functions...."

The proposed division of roles and responsibilities was displayed in the chart on the following page.

While the structure and division of roles and responsibilities has not been agreed upon, they are clearly workable, perhaps with some further modifications. The possibilities for a governance structure have all been presented, exhaustively. All that is left is for a reasoned decision to be made.

SUMMARY DESCRIPTION OF ROLES AND RESPONSIBILITIES: BOARD OF REGENTS, CHANCELLOR, BOARD OF TRUSTEES, PRESIDENTS

Board of Regents	Chancellor	Board of Trustees	Presidents
Appoint Chancellor.			
Elect Presidents.	Appoint Presidents.	Recommend finalists for President.	
Establish System Strategic Plan.	Recommend System Strategic Plan.	Approve University Strategic Plan.	Recommend University Strategic Plan.
Propose to Governor and Legislature a single system budget (operating, capital). Allocate budget to each university.	Recommend single budget request (operating, capital). Recommend allocation to each university.	Approve budget request (operating, capital) to Chancellor.	Recommend budget (operating, capital) request.
Approve distinctive mission.	Recommend distinctive missions.	Approve mission recommendation to Chancellor.	Recommend mission to Board of Trustees.
Approve policies.	Recommend and implement policies.		
	Official spokesperson/advocate for system.		
	Facilitate collaboration; manage competition.		
	Oversee Chancellor's office.		
		Allocate undesignated resources.	Recommend allocation of undesignated resources.
		Approve academic program actions.	Recommend academic program actions.
		Insure strong fiscal stewardship.	Oversee fiscal management of the university.

SUMMARY DESCRIPTION OF ROLES AND RESPONSIBILITIES: BOARD OF REGENTS, CHANCELLOR, BOARD OF TRUSTEES, PRESIDENTS

Board of Regents	Chancellor	Board of Trustees	Presidents
		Approve facilities master plan.	Recommend facilities master plan. Oversee facilities.
		Approve major personnel policies.	Recommend major personnel policies, actions.
		Approve issuance of bonds and loans.	Recommend issuance of bonds and loans.
		Approve tuition and fees.	Recommend tuition and fees.
		Approve admission standards.	Recommend, after faculty consultation, admission standards.
		Award degrees.	Recommend, after faculty consultation, awarding of degrees.
		Award tenure.	Recommend, after faculty consultation, awarding of tenure.
			Assume primary responsibility for quality.
			Provide leadership to faculty and staff.
			Oversee student support systems.
			Seek optimal and diverse resources.
			Contribute to economic development.
			Maintain effective communication with various stakeholders.
			Insure diversity in students, faculty, and staff.

G. FINANCIAL MODEL

The financial data portrayed are preliminary and are consistent with goals outlined in the University Committee Reports. Actual restructuring costs would be determined by both external decisions and internal decisions. The following are intended to: (a) illustrate the potential scale of the largely one-time costs of simply **restructuring** the existing entities into three, reconfigured public research universities (restructuring); and (b) illustrate the potential scale of pursuing **excellence**, including increased operating costs (for example, from adding faculty) and capital costs (for example, building new research and other facilities). The restructuring costs suggested below are those directly related to restructuring. They do not include other budget issues, such as the restoration of recent budget cuts, the under funding of negotiated salary increases, and overall capital needs. These issues are addressed in the Commission on Higher Education's Long Range Plan. Nor do they include other budget items identified by the institutions, such as base funding needs and deferred maintenance.

In addition to the restructuring and pursuing excellence costs associated with each of the three universities, there also are certain overarching costs that will be shared by the universities. The Chancellor's Office and Board of Regents are among these shared costs, and are estimated to be approximately $4.5 million per year once fully established. Other shared costs include Library Services, Information Technology and legal costs. The total shared restructuring costs are approximately $87 million; the total shared pursuit of excellence costs are approximately $218 million over an eleven-year period.

The total restructuring costs of the three universities, including shared costs, are approximately $171 million. These will be largely year one, two, three, and four costs and are principally one-time costs. The pursuit of excellence costs for the three universities are approximately $1.133 billion over an eleven-year period and are both ongoing operating costs and capital expenditures. The combined total is $1.304 billion. The total costs over the first four years are $197 million, of which $169 million is for actual restructuring. The cost of the Chancellor's Office and Board of Regents over 11 years (Table A, line 6 on page 65) is $18.9 million or 1.5 percent of the $1.3 billion combined costs (restructuring and pursuing excellence).

($000)

Year	Restructuring	Pursuing Excellence	Total
2004-05	$5,483	-	$5,483
2005-06	49,570	5,197	54,767
2006-07	63,945	9,392	73,337
2007-08	50,268	13,590	63,858
2008-09	699	170,266	170,965
2009-10	699	176,035	176,734
2010-11	699	181,803	182,502
2011-12	-	187,572	187,572
2012-13	-	193,340	193,340
2013-14	-	94,961	94,961
2014-15	-	100,729	100,729
Total	**$171,363**	**$1,132,885**	**$1,304,248**

Details of the financial summary are in Appendix I. The total costs over the first four years are $197 million, of which $169 million is for actual restructuring.

H. BENEFITS

While many of the benefits can be described at this time, the economic benefits can only be estimated; they will need further analysis and refinement as additional decisions are made and further study is completed.

The public research university system will:

- Establish for the state a system of public research universities that has a unified vision and mission characterized by excellence, yet which also encourages distinctiveness among the three largely autonomous public research universities.
- Increase the number of students who can benefit by attending a public research university in the state of New Jersey. These students will have access to: new, interdisciplinary majors; increased opportunities, both as graduate and undergraduate students, to be involved in research; seamless transfer and administrative services within the system; a superior faculty; and a university with an enhanced reputation in the national marketplace. The public research university system in New Jersey should be able to retain a higher proportion of its best students within the state and should be able to attract a richly diverse student body.

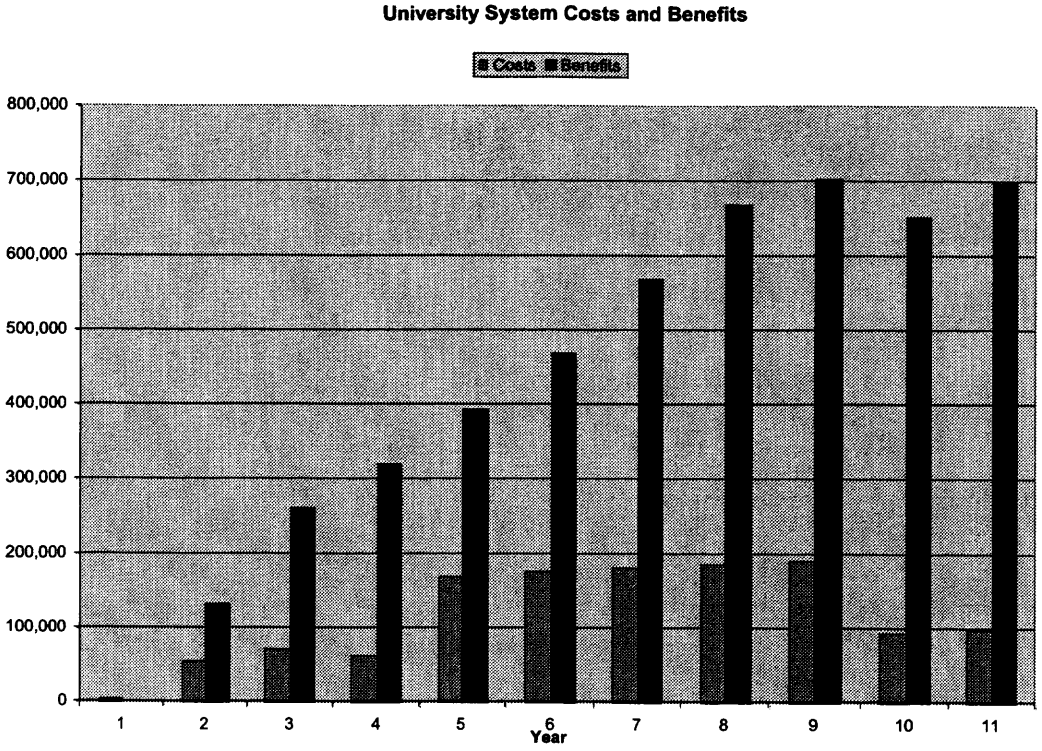
- Provide each of the three geographic regions with a single, strong public research university. This will enable these universities to market themselves as a single entity within a region and will provide each region a simpler way to market its public research university assets to existing and prospective students, faculty, and companies.

- Expand the research funding potential by bringing together a critical mass of research faculty, including across disciplines; by removing the confusion of joint proposals from multiple institutions in a single location; by simplifying and streamlining the grants administration; by targeting faculty hires; by increasing incentives; and by developing centers of excellence. An "Economic Development Analysis: New Jersey Public Research Universities with Potential Peer Institutions" (see Appendix II) concludes that the potential research increase (measured in 1998 constant dollars) over the 2005-15 decade could be in excess of $351 million (as measured in 1998 constant dollars).

- Stimulate the economy more broadly. For example, the restructuring costs for the proposed New Jersey System of Public Research Universities include $609 million for constructing academic and research buildings and providing furnishings. This capital investment would generate a total of $1.175 billion in spending and 12,371 construction related jobs (earning in excess of $466 million in wages) throughout the state during the 11-year period. (See Appendix III)

- New research facilities would provide annual output of $699 million and support 7,529 jobs in a broad array of sectors, with workers earning $324 million in wages. (See Appendix III)

- Combining costs from the previous financial section with the financial benefits accruing to the state described above yields the following cost/benefit picture:



The benefits shown in the chart reflect total net costs to the State and benefits computed using economic multipliers based on estimated construction and research facility activity levels. They do not purport to demonstrate the more important qualitative benefits provided by the improved quality of education and enhanced reputation of the New Jersey research institutions that will be evidenced by the increase in research grant awards realized.

- Create the potential for significant job growth in key and targeted industry sectors. The "Impact of More Competitive Technology Industries" (See Appendix IV) concludes, for example, that if recent trends continue, New Jersey will only create 577 new pharmaceutical jobs by 2012. Massachusetts has had a greater average annual growth rate than New Jersey in this industry. If New Jersey could perform like Massachusetts, it could create 80,205 pharmaceutical jobs by 2012, an increase of 79,628 over the 577 that would be produced at New Jersey's historical growth rate. Using the national average salary in this industry ($40,407, taken from the 2002 national earnings data from the Bureau of Labor Statistics), these jobs would earn wages in excess of $3.2 billion in New Jersey. While there are many variables that contribute to these numbers, targeted state research would certainly be one of them.

- Serve as a catalyst for the state's general economic development. The Chancellor's Office will likely have a senior person to be a catalyst for public research university based economic and workforce development. That person would work closely with the appropriate university personnel to lead and to respond to the state's needs in economic and workforce development and would offer a "one-stop" entry for business and industry into the intellectual assets of the public research universities.
- Facilitate the most efficient and effective administrative and academic support functions within and among the three public research universities, seeking innovative ways to share financial, human, and intellectual resources.
- Strengthen academic medicine in New Jersey by the inclusion of improved medical education in each region as part of a comprehensive research university, thereby increasing the number of health professionals trained, expanding medical and related research, and attracting high quality faculty.
- Enable coordinated responses to: the public policy needs of the state; the other universities and colleges in the state; the K12 system; and the public and the media.

I. KEY ISSUES

- Securing the financial resources (one-time, operating, capital, enrollment growth, quality enhancements, targeted research funding) necessary to achieve the excellence outlined in the Vision and Mission. While the state will be the primary source, funding from other sources (federal, corporate, foundation, private) must also increase significantly.
- Adopting a joint governance system that enables strong leadership at both the system and university level; that empowers the Chancellor and the Presidents to lead; that secures suitable insulation from inappropriate political interference; that provides exemplary accountability for both financial and academic performance; that attracts talented people to want to serve on the various boards; that increases the effectiveness of advocacy; and that enables the goals to be met and the benefits to be realized.
- Aligning the final joint governance system with existing higher education entities in New Jersey, such as the Commission on Higher Education and the Presidents' Council.
- Designing legislation that makes the necessary governance additions and changes and that provides sufficient clarity and flexibility for the new system of public research universities.
- Addressing alumni concerns.
- Identifying a name for the system and each of its public research universities.

- Seeking accreditation advice and/or review. Accreditation issues include those at both the university level (the regional accrediting agency will have to accredit the three new public research universities) and the programmatic level within each of the universities (for example, medicine in the South, business in Central, and nursing in the North).
- Strengthening communications to both internal and external audiences during the next phase of implementation so that there is a single, consistent source of information.
- Making implementation decisions and timetables for Information Technology and Library resources, as identified in the Information Technology and Library Services White Paper, and subsequent discussions.
- Making implementation decisions and timetables for Human Resource issues, as identified in the Study of Human Resources Issues White Paper and subsequent discussions.
- Taking the next steps, as identified in the Funding and Finance Guiding Principles White Paper, for providing a "financial firewall" for University Hospital. Establishing a separate line item in the budget for University Hospital could also be explored with state officials.
- Revising academic and administrative policies; undergraduate and graduate education policies and practices; student life/student affairs policies and practices; faculty and staff policies and practices; and community relations policies and practices to reflect the restructured universities. Most of these policies will be needed at each university (see the University Committee of the North report for a detailed listing of examples). Others will also be needed at the University System level.
- Establishing a transition team to continue the next phase of implementation of restructuring, most likely through an Executive Order from the Governor.

J. CONCLUSION

The proposed restructuring has been found to be both feasible and desirable, if extremely bold public policy for New Jersey. Two external consultant groups have reached this conclusion. Internally, three university committees designed feasible and exciting plans for restructuring. A preliminary examination of costs and benefits by the Pappas Consulting Group, with input from the existing universities, suggests that the benefits to students, faculty, and communities and the growth of intellectual capital for the state are considerable. While the long-term investment necessary to accomplish the goals and to achieve the Vision and Mission is also considerable, the return on investment both in financial and non-financial benefits more than justifies the state's support and the significant effort that will have to be expended to accomplish the restructuring. Restructuring will significantly enhance excellence and national competitiveness comprehensively in the three new public research universities that will serve their communities, regions, state, and nation in ways previously unimaginable.

APPENDIX I

POTENTIAL COSTS RELATED TO RESTRUCTURING AND PURSUING EXCELLENCE

TABLE A

Restructuring and Pursuing Excellence Cost Estimates by Type and Category - All Entities

($000)

Type of Cost		Restructuring		Pursuing Excellence		Total
Combined Total		**$171,363**		**1,132,885**		**1,304,248**
Categories of Costs		**Operating**	**Capital**	**Operating**	**Capital**	**Combined**
1.	Corporate Structure - System and Entity Costs	$29,220	-	-	-	29,220
2.	Alumni, Foundations and Fund Raising	450	-	6,100	-	6,550
3.	Organizational Restructuring	9,700	-	500	-	10,200
4.	University Presidents' Offices	13,091	-	-	-	13,091
5.	Library (shared service)	3,200	-	-	-	3,200
6.	Chancellor's Office and Board of Regents	18,900	-	-	-	18,900
7.	Health Service Programs	1,600	-	-	-	1,600
8.	Student Services Programs	1,600	-	-	-	1,600
9.	Student Life Programs	300	-	-	-	300
10.	Information System Integration	27,200	28,500	138,900	79,000	273,600
11.	Public Relations, Image and Marketing	11,000	-	-	-	11,000
12.	Human Resources - Legal and Policies	19,775	750	2,800	-	23,325
13.	Safety and Security	-	-	-	3,000	3,000
14.	Relocation – Other	1,900	1,400	-	-	3,300
15.	Cost of New Programs (faculty, staff, space, etc.)	2,777	-	559,810	504,170	1,066,757
16.	Revenue/Income Impact	-	-	(153,866)	(7,529)	(161,395)
Category Subtotals		**$140,713**	**30,650**	**554,244**	**578,641**	**1,304,248**

TABLE B

Restructuring and Pursuing Excellence Cost Estimates by University
($000)

Types of Costs	Total System	North	Central	South	Shared Costs
Restructuring	$171,363	29,019	34,473	20,400	87,471
Pursuing Excellence	1,132,885	407,908	137,722	368,852	218,403
Total	**$1,304,248**	**436,927**	**172,195**	**389,252**	**305,874**

TABLE C

Restructuring and Pursuing Excellence Cost Estimates by Region and Year
($000)

Year	Total	North	Central	South	Shared Costs
2004-05	$5,483	1,149	121	600	3,613
2005-06	54,767	11,261	11,387	8,483	23,636
2006-07	73,337	13,564	12,989	10,898	35,886
2007-08	63,858	14,368	12,590	12,564	24,336
2008-09	170,965	60,013	23,062	56,661	31,229
2009-10	176,734	63,139	23,664	58,702	31,229
2010-11	182,502	66,265	24,266	60,742	31,229
2011-12	187,572	69,057	24,536	62,750	31,229
2012-13	193,340	72,183	25,138	64,790	31,229
2013-14	94,961	31,401	6,920	25,511	31,129
2014-15	100,729	34,527	7,522	27,551	31,129
Total	**$1,304,248**	**436,927**	**172,195**	**389,252**	**305,874**

APPENDIX II

POTENTIAL RESEARCH GROWTH ANALYSIS

Potential Research Growth Analysis

One of the purposes of the proposed realignment of New Jersey's major research universities is to increase research expenditures. The proposed three new public research universities, within a system, will create new synergistic opportunities in interdisciplinary research. To better understand the potential for increasing research, a comparison has been undertaken of other public research universities with characteristics and missions similar to the proposed regionally based public research universities. This comparison illustrates what the combined research efforts of the three research universities might be if research increases in the future at the rate it has increased historically for several potential peer institutions.

Research Expenditures by Regional Location

The first part of the analysis, shown in Table A, reconfigures, by regional location, research expenditures for the existing three New Jersey public research universities. The analysis has been performed by Robert Altenkirch, President of the New Jersey Institute of Technology, using data for fiscal year 2000. The data would need to be updated, and accurate data for the South university collected, in order to reach conclusions on potential research growth by location..

Table A
New Jersey Public Research Universities
Research Expenditures
Reconfigured to Proposed Regional Structure

	2000 *** Total Research x $1000	2000 *** National Rank	2000 *** Control Rank	2000 *** Total Expenditures x $1000	2000 *** % Reasearch
Current Organizational Structure					
Rutgers	225,268	43	30	1,016,943	22%
UMDNJ	140,951	72	49	574,226	25%
NJIT	47,895	145	107	167,877	29%
Total	414,114			1,759,046	
Current Organizational Structure Divided Between New Brunswick/Newark					
Rutgers-Newark	4,118			74,199	6%
UMD-Newark	53,815	131	93	287,113	19%
Rutgers-New Brunswick	221,150	46	32	942,744	23%
UMD-New Brunswick	87,136	107	76	287,113	30%
NJIT	47,895	145	107	167,877	29%
Total	414,114			1,759,046	
Configured by Regional Location					
Central	308,285	27	17	1,229,857	25%
North	105,829	91	63	529,189	20%
Total	414,114			1,759,046	

Source: Analysis compiled by Robert Altenkirch, President, New Jersey Institute of Technology. Note that research expenditures have been assigned to only Newark and New Brunswick locations, with no assignment of research expenditures to the proposed South university.
Note: 'National Rank' refers to the ranking among all (both public and private) major research universities. 'Control Rank' refers to the ranking among public major research universities.

The proposed public research institutions, using fiscal year 2000 expenditures, have research expenditures of $308.3 million at the Central university, which would rank 17 among public research universities. The North university has research expenditures of $105.8 million, which would rank 63 among public research universities.

Potential Peer Institutions

The second part of the analysis identifies potential peer institutions for the proposed North and Central universities. These are universities that have highly regarded research programs and have missions and organizational configurations similar to the North and Central universities being proposed for New Jersey. Because the South's reconfigured research university is currently smaller in enrollment than any public research university, no peers can be proposed at this time. Any research expenditures currently incurred in the South institutions are included, for this analysis, in the amounts for the Central and North universities. Future studies will clarify research levels for the South university and appropriate peer institutions.

The proposed peer public research universities for the North and Central universities are shown in Table B.

Table B
Potential Peer Institutions for
New Jersey Public Research Regional Universities

Potential Peer Institutions for New Jersey Public Research Regional Universities	2000 *** Total Research x $1000	2000 *** National Rank	2000 *** Control Rank
University of New Jersey – North	**105,829**	**91**	**63**
University of Alabama - Birmingham	233,461	38	25
University of Cincinnati - Cincinnati	172,085	58	40
University of Illinois - Chicago	195,839	47	31
University of New Jersey – Central	**308,285**	**27**	**17**
University of Arizona	345,090	21	14
University of California - Davis	364,789	17	12
Ohio State University - Columbus	361,399	19	13

Source: National Center for Education Statistics as accumulated by TheCenter (http://thecenter.ufl.edu/)

The peer institutions for the proposed Northern New Jersey public research institution are urban universities that have medical, law, and business schools.

The peer institutions for the proposed Central New Jersey public research institution are land grant universities with medical schools.

Historic Trends in Research Expenditures

The next part of the analysis examines 10-year trend data, using 1998 constant dollars, for the proposed peer institutions and the New Jersey public research universities as they currently exist. The purpose of the analysis is to compare trend lines of the peer institutions with the New Jersey public research universities. The 10-year trend analysis is shown in Table C.

Table C
Ten-year Comparison of Total Research Expenditures
With Potential Peer Institutions

Constant 1998 Dollars

Total Research: Change 1991- 2000			Total Research in Constant 1998 Dollars							
Research Group	Control	Institutions Reporting Any Federal Research in 1990-2000 (in Alphabetical Order)	2000 *** Total Research x $1000	1991 *** Total Research x $1000	Net Change in Constant Dollars	Percent Change in Constant Dollars	Net Change in National Rank	Net Change in Control Rank	2000 *** National Rank	2000 *** Control Rank
$5 - $20M	Public	New Jersey Institute of Technology	44,921	20,302	24,619	121.3%	29	18	145	107
$1 - $5M	Public	Rutgers the State University of NJ - Camden	4,225	3,733	492	13.2%	-30	-25	307	219
Over $20M	Public	Rutgers the State University of NJ - New Brunswick	188,039	166,097	21,941	13.2%	-9	-7	45	30
$5 - $20M	Public	Rutgers the State University of NJ - Newark	19,015	16,796	2,219	13.2%	-17	-13	203	147
Over $20M	Public	University of Medicine & Dentistry of New Jersey	132,198	99,627	32,571	32.7%	-2	-2	72	49
		Composite Trend	388,398	306,555	81,842	26.7%				
Potential Peer Institutions - New Jersey Public Research University (North)										
Over $20M	Public	University of Alabama - Birmingham	218,963	139,743	79,221	56.7%	7	5	38	25
Over $20M	Public	University of Cincinnati - Cincinnati	161,399	99,393	62,005	62.4%	14	8	58	40
Over $20M	Public	University of Illinois - Chicago	183,677	111,629	72,048	64.5%	17	11	47	31
		Average Peer Growth	564,039	350,765	213,274	60.8%				
Potential Peer Institutions - New Jersey Public Research University (Central)										
Over $20M	Public	University of Arizona	323,660	263,567	60,093	22.8%	-3	-1	21	14
Over $20M	Public	University of California - Davis	342,136	247,459	94,677	38.3%	3	3	17	12
Over $20M	Public	Ohio State University - Columbus	338,956	240,374	98,582	41.0%	3	3	19	13
		Average Peer Growth	1,004,752	751,400	253,352	33.7%				

Source: National Center for Education Statistics as accumulated by TheCenter (http://thecenter.ufl.edu/)
Note: TheCenter has consistently allocated Rutgers research expenditures to its existing three locations based upon estimates received from the university. The allocations developed by President Altenkirch and shown in Table A differ significantly from the allocation methodology used in the past.

The 10-year trends for the peer institutions show that the peer institutions have had growth rates for research expenditures that are significantly higher than the composite growth rate of the New Jersey public research universities. The trends show that research expenditures for the combined New Jersey public research universities have grown 26.7% in constant dollars from 1991 to 2000, a real annual growth rate of 2.67%. For the same time period, the potential peer institutions for the proposed North and Central institutions have experienced research expenditure increases of 60.8% (5.42% real annual growth) and 33.7% (3.28% real annual growth), respectively.

Many reasons may exist for why the research trends differ for the New Jersey public research universities compared to the potential peers. One reason may be that the peer institutions are enjoying greater synergistic benefits from having medical education and research programs within one institution.

Increased Growth in Research Due to the Proposed Regional Structure

It is possible to estimate the potential for growth in research expenditures resulting from the restructuring effort. Using trends from 1991-2000, growth of research expenditures can be estimated through 2015 and the proposed impact of the configuration for the New Jersey public research universities can be measured. The results are shown in Table D.

Table D shows that the potential growth in research expenditures due to the reconfiguration would add an additional $351 million of research for the period 2005-2015 in constant 1998 dollars. However, New Jersey's goal is to increase its rankings for research expenditures. To do so, it will have to grow its research funding at a rate above its peers. The state may well have to make a major investment in the research enterprise to achieve this goal.

Table D
Estimated Research Growth Due to Proposes Regional Structure
(2005-2015)
Constant 1998 Dollars

	Annual Growth Rate	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Proposed Regional Configuration												
North (25.6% of total)	5.42%	113,432	119,580	126,061	132,894	140,096	147,690	155,694	164,133	173,029	182,407	192,294
Central (74.4% of total)	3.28%	329,661	340,474	351,642	363,175	375,088	387,391	400,097	413,220	426,774	440,772	455,229
Combined Total		443,093	460,054	477,703	496,069	515,184	535,080	555,791	577,353	599,803	623,179	647,523
Current Configuration	2.67%	443,093	454,923	467,070	479,541	492,344	505,490	518,987	532,844	547,070	561,677	576,674
Annual Difference		0	5,130	10,633	16,528	22,840	29,590	36,805	44,510	52,732	61,502	70,849
Cumulative Difference		0	5,130	15,763	32,291	55,131	84,721	121,526	166,035	218,767	280,269	351,118

Sources: Regional university research expenditures from Table 1. Growth rates based on 10-year trend (1991-2000), using growth rates for the Peer Institutions for the proposed North and Central Universities. Growth rate for the Current configuration is the composite growth rate for the 3 New Jersey universities for the 1991-2000, 10-year period.

APPENDIX III

POTENTIAL ECONOMIC IMPACT OF RESTRUCTURING: CONSTRUCTION AND RELATED RESEARCH SPENDING

TABLE A
Capital Investment and Economic Multipliers
($000)

Area of Investment	North			Central			South			Shared Services			Summary		
	Total	Academic	Research	Total	Academic	Research	Total	Academic	Research	Total	Academic	Research	Academic	Research	Total
IT systems and facilities	$500	500	0	1,000	1,000	0	0	0	0	106,000	106,000	0	107,500	0	107,500
HR Infrastructure	0	0	0	0	0	0	750	750	0	0	0	0	750	0	750
Facilities conversion	450	450	0	450	450		500	500	0	0	0	0	1,400	0	1,400
Safety building	3,000	3,000	0	0	0	0	0	0	0	0	0	0	3,000	0	3,000
Research space	51,424	0	51,424	75,000	0	75,000	101,000	0	101,000	0	0	0	0	227,424	227,424
Academic and research space	148,838	74,419	74,419	0	0	0	91,500	45,750	45,750	0	0	0	120,169	120,169	240,338
Student services	11,115	11,115	0	0	0	0	0	0	0	0	0	0	11,115	0	11,115
Student Life	0	0	0	0	0	0	14,000	14,000	0	0	0	0	14,000	0	14,000
Parking	3,764	3,764	0	0	0	0	0	0	0	0	0	0	3,764	0	3,764
Total	$219,091	93,248	125,843	76,450	1,450	75,000	207,750	61,000	146,750	106,000	106,000	0	261,698	347,593	609,291

Summary allocating academic and research construction costs to buildings and furnishings

Building	$109,546	46,624	62,921	38,225	725	37,500	103,875	30,500	73,375	0	0	0	130,849	173,796	304,646
Furnishings	109,546	46,624	62,921	38,225	725	37,500	103,875	30,500	73,375	106,000	106,000	0	130,849	173,796	304,646
Total	$219,091	93,248	125,843	76,450	1,450	75,000	207,750	61,000	146,750	106,000	106,000	0	261,698	347,593	609,291

Output, employment, and wage multipliers using the Economic Impact Model (R/ECON I-O) of Rutgers Economic Advisory Service

Multiplier Impacts for $50 Million Office Construction	Building Construction	Furnishings
Output	1.978	1.894
Employment	2.283	2.417
Wages	1.610	2.181

Multiplier Impacts for $100 Million Research & Development Facility	Factor
Output	2.011
Employment	2.562
Wages	1.719

Output, employment, and wages derived for the New Jersey System of Public Research Universities using University Plan capital investments and multiplier factors from above table

Multiplier	North			Central			South			Shared Services			Total
	North Total	Building Construction	Furnishings	Central Total	Building Construction	Furnishings	South Total	Building Construction	Furnishings	Building Total	Building Construction	Furnishings	
Output	$424,160	216,681	207,479	148,007	75,609	72,398	402,204	205,465	196,739	200,764	0	200,764	1,175,136
Employment	4,588	2,695	1,893	1,601	940	661	4,350	2,555	1,795	1,832	0	1,832	12,371
Wages	$175,260	109,443	65,817	61,155	38,189	22,966	166,188	103,778	62,410	63,686	0	63,686	466,289

Output, employment, and wages derived for the New Jersey System of Public Research Universities based on new research facilities in the University Plans and multiplier factors from above table

	North	Central	South	Shared Services	Total
Output	$253,070	150,825	295,114	0	699,009
Employment	2,726	1,625	3,179	0	7,529
Wages	$117,158	69,824	136,622	0	323,604

TABLE B
Construction and Research Facility Output Benefits by Year
($000)

Year	Total	Construction Output	Research Facilities	Shared Services
Benefits for North:				
1	0	0	0	0
2	63,020	53,020	10,000	0
3	103,020	53,020	50,000	0
4	103,020	53,020	50,000	0
5	128,020	53,020	75,000	0
6	153,020	53,020	100,000	0
7	203,020	53,020	150,000	0
8	253,020	53,020	200,000	0
9	303,020	53,020	250,000	0
10	253,070	0	253,070	0
11	253,070	0	253,070	0
Total	$1,815,300	424,160	1,391,140	0
Benefits for Central:				
1	0	0	0	0
2	28,501	18,501	10,000	0
3	68,501	18,501	50,000	0
4	68,501	18,501	50,000	0
5	93,501	18,501	75,000	0
6	118,501	18,501	100,000	0
7	143,501	18,501	125,000	0
8	168,501	18,501	150,000	0
9	169,326	18,501	150,825	0
10	150,825	0	150,825	0
11	150,825	0	150,825	0
Total	$1,160,482	148,007	1,012,475	0
Benefits for South:				
1	0	0	0	0
2	60,276	50,276	10,000	0
3	100,276	50,276	50,000	0
4	100,276	50,276	50,000	0
5	125,276	50,276	75,000	0
6	150,276	50,276	100,000	0
7	175,276	50,276	125,000	0
8	200,276	50,276	150,000	0
9	250,276	50,276	200,000	0
10	250,000	0	250,000	0
11	295,114	0	295,114	0
Total	$1,707,318	402,204	1,305,114	0

TABLE B
Construction and Research Facility Output Benefits by Year
($000)

Year	Total	Construction Output	Research Facilities	Shared Services
Benefits for System:				
1	0	0	0	0
2	176,892	121,796	30,000	25,096
3	296,892	121,796	150,000	25,096
4	296,892	121,796	150,000	25,096
5	371,892	121,796	225,000	25,096
6	446,892	121,796	300,000	25,096
7	546,892	121,796	400,000	25,096
8	646,892	121,796	500,000	25,096
9	747,717	121,796	600,825	25,096
10	653,895	0	653,895	0
11	699,009	0	699,009	0
Total	$4,883,864	974,371	3,708,729	200,764

Table C
General Industries Report for Impacts on New Jersey for $100 million R&D Facility
(in 1999$)

	Economic Component			
	Output ($000)	**Employment (Jobs)**	**Income ($000)**	**Gross State Product ($000)**
I. Distribution of Effects/Multiplier				
1. Direct Effects	100,000.0	846	54,149.6	54,149.6
2. Indirect and Induced Effects	101,056.0	1,321	38,949.1	52,116.0
3. Total Effects	201,056.0	2,166	93,098.6	106,265.6
4. Multipliers (3/1)	2.011	2.562	1.719	1.962
II. Total Effects (Direct and Indirect/Induced)*				
Private				
1. Agriculture	1,186.2	13	126.1	258.2
2. Agriculture, Service., Forestry & Fish	165.8	4	76.8	118.0
3. Mining	37.5	0	17.0	26.1
4. Construction	3,001.1	37	1,374.0	1,240.5
5. Manufacturing	17,201.6	76	3,670.2	4,723.2
6. Transport. & Public Utilities	11,471.9	58	3,042.0	5,085.2
7. Wholesale	4,617.5	32	1,877.7	2,171.2
8. Retail Trade	15,064.8	486	9,172.3	9,881.0
9. Finance, Ins., & Real Estate	22,364.5	316	8,500.5	14,798.4
10. Services	124,877.4	1,136	64,920.2	67,466.7
Private Subtotal	199,988.3	2,159	92,776.8	105,768.6
Public				
11. Government	1,067.8	7	321.8	497.0
Total Effects (Private and Public)	201,056.0	2,166	93,098.6	106,265.6

III. Composition Of Gross State Product	
1. Wages--Net of Taxes	78,910.9
2. Taxes	34,493.8
3. Profits, dividends, rents, and other	-7,139.1
4. Total Gross State Product (1+2+3)	106,265.6

*Direct Effects --the proportion of direct port-related spending on goods and services produced in the specified region.
Indirect Effects--the value of goods and services needed to support the provision of those direct economic effects.
Induced Effects--the value of goods and services needed by households that provide the direct and indirect labor.

The chart above, based on information supplied by the Office of Research and Planning of the New Jersey Commerce & Economic Growth Commission, indicates that $100 million invested in an ongoing research facility would create 2,166 jobs. This estimate was created using the Economic Impact Model (R/ECON I-O) of Rutgers Economic Advisory Service. The following listing suggests the jobs, by category, that would be created by the $100 million investment.

TABLE D

General Industries Report for Impacts on New Jersey for $100 million R&D Facility

TOTAL NUMBER OF JOBS	**2,166**
Executive, administrative, and managerial occupations	**336**
Managerial and administrative occupations	227
Management support occupations	109
Professional specialty occupations	**377**
Engineers	72
Architects and surveyors	4
Life scientists	42
Computer, mathematical, and operations research occupations	88
Physical scientists	39
Religious workers	5
Social scientists	19
Social and recreation workers	3
Lawyers and judicial workers	6
Teachers, librarians, and counselors	22
Health diagnosing occupations	2
Health assessment and treating occupations	13
Writers, artists, and entertainers	24
All other professional workers	39
Technicians and related support occupations	**160**
Health technicians and technologists	30
Engineering and science technicians and technologists	103
Technicians, except health and engineering and science	27
Marketing and sales occupations	**298**
Cashiers	77
Counter and rental clerks	11
Insurance sales agents	3
Marketing and sales worker supervisors	39
Models, demonstrators, and product promoters	3
Parts salespersons	3
Real estate agents and brokers	2
Retail salespersons	93
Sales engineers	1
Securities, commodities, and financial services sales agents	8
Travel agents	0
All other sales and related workers	58

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Administrative support occupations, including clerical	**482**
Adjusters, investigators, and collectors	18
Communications equipment operators	4
Computer operators	7
Information clerks	80
Mail clerks and messengers	4
Postal clerks and mail carriers	10
Material recording, scheduling, dispatching, and distributing occupations	64
Records processing occupations	68
Secretaries, stenographers, and typists	74
Other clerical and administrative support workers	153
Service occupations	**184**
Cleaning and building service occupations, except private household	**29**
Food preparation and service occupations	**118**
Health service occupations	**10**
Ambulance drivers and attendants, except EMTs	0
Dental assistants	2
Medical assistants	0
Nursing and psychiatric aides	6
Occupational therapy assistants and aides	0
Pharmacy aides	1
Physical therapy assistants and aides	0
All other health service workers	1
Personal service occupations	**8**
Amusement and recreation attendants	1
Baggage porters and bellhops	0
Child care workers	3
Barbers, cosmetologists, and related workers	1
Flight attendants	0
Personal care and home health aides	2
Ushers, lobby attendants, and ticket takers	1
Private household workers	**4**
Child care workers, private household	1
Cleaners and servants, private household	2
Cooks, private household	0
Housekeepers and butlers	0
Protective service occupations	**14**
Fire fighting occupations	0
Law enforcement occupations	1
Other protective service workers	13
All other protective service workers	**1**

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Agriculture, forestry, fishing, and related occupations	**29**
Farm operators and managers	2
Farm workers	8
Fishers and fishing vessel operators	0
Forestry, conservation, and logging occupations	0
Landscaping, groundskeeping, nursery, greenhouse, and lawn service occupations	9
Supervisors, farming, forestry, and agricultural related occupations	1
Veterinary assistants and nonfarm animal caretakers	4
All other agricultural, forestry, fishing, and related workers	5
Precision production, craft, and repair occupations	**127**
Blue-collar worker supervisors	**12**
Construction trades	**21**
Carpenters	10
Ceiling tile installers and acoustical carpenters	0
Construction equipment operators	1
Electricians	2
Boilermakers	0
Bricklayers, blockmasons, and stonemasons	1
Carpet, floor, and tile installers and finishers	0
Cement masons, concrete finishers, and terrazzo workers	1
Drywall installers and finishers	0
Elevator installers and repairers	0
Glaziers	0
Hazardous materials removal workers	0
Highway maintenance workers	0
Insulation workers	0
Painters and paperhangers	2
Pipelayers and pipelaying fitters	0
Plasterers and stucco masons	0
Plumbers, pipefitters, and steamfitters	2
Roofers	0
Sheet metal workers and duct installers	0
Structural and reinforcing metal workers	1
All other construction trades workers	1
Extractive and related workers, including blasters	**2**
Mechanics, installers, and repairers	**50**
Machinery mechanics, installers, and repairers	**16**
Vehicle and mobile equipment mechanics and repairers	**13**
Other mechanics, installers, and repairers	**13**

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Production occupations, precision	**42**
Assemblers, precision	1
Food workers, precision	3
Inspectors, testers, and graders, precision	23
Metal workers, precision	6
Printing workers, precision	1
Textile, apparel, and furnishings workers, precision	4
Woodworkers, precision	1
Other precision workers	3
Plant and system occupations	**1**
Chemical plant and system operators	0
Electric power generating plant operators, distributors, and dispatchers	0
Gas and petroleum plant and system occupations	0
Stationary engineers	0
Water and liquid waste treatment plant and system operators	0
Operators, fabricators, and laborers	**131**
Numerical control machine tool operators and tenders, metal and plastic	0
Combination machine tool setters, set-up operators, operators, and tenders, metal and plastic	0
Machine setters, set-up operators, operators, and tenders	27
Machine tool cut and form setters, operators, and tenders, metal and plastic	2
Metal fabricating machine setters, operators, and related workers	0
Other machine setters, set-up operators, operators, and tenders	13
Metal and plastic processing machine setters, operators, and related workers	1
Printing, binding, and related workers	3
Textile and related setters, operators, and related workers	7
Woodworking machine setters, operators, and other related workers	0
Hand workers, including assemblers and fabricators	18
Cannery workers	0
Coil winders, tapers, and finishers	0
Electrical and electronic assemblers	1
Machine assemblers	0
Welders and cutters	2
All other assemblers, fabricators, and hand workers	13
Cutters and trimmers, hand	0
Grinders and polishers, hand	0
Meat, poultry, and fish cutters and trimmers, hand	1
Painting, coating, and decorating workers, hand	0
Pressers, hand	0
Sewers, hand	0
Solderers and brazers	0
Transportation and material moving machine and vehicle operators	39
Motor vehicle operators	32
Material moving equipment operators	5
All other material moving equipment operators	2

Rail transportation workers	0
Water transportation and related workers	0

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Helpers, laborers, and material movers, hand	**47**
Cleaners of vehicles and equipment	2
Freight, stock, and material movers, hand	7
Hand packers and packagers	9
All other helpers, laborers, and material movers, hand	16
Helpers, construction trades	4
Machine feeders and offbearers	1
Parking lot attendants	1
Refuse and recyclable material collectors	0
Service station attendants	6

APPENDIX IV

POTENTIAL IMPACT OF KNOWLEDGE INDUSTRY JOB GROWTH

Potential Impact of More Competitive Knowledge Industries

The proposed New Jersey System of Public Research Universities will improve the quality of education for New Jersey students. The improved quality of education will significantly increase the number of graduates ready to move into New Jersey's various high technology industries as knowledgeable, productive, skilled workers and entrepreneurs. In addition, increased research conducted by the universities will result in new patents, licenses, inventions, and start-up companies, providing the state's high technology industries with a superior base of knowledge. As knowledge is the key source of productivity growth in high technology industry, the New Jersey System of Public Research Universities will contribute to higher productivity and faster job growth in New Jersey's high technology industry.

One way to assess this impact on productivity is to view two growth scenarios for New Jersey over the next ten years. In one scenario, a key technology industry (such as pharmaceuticals) grows over this period at the same rate it did over the past ten years in New Jersey. In effect, this is a "straight-line" or "business-as-usual" scenario.

The second scenario envisions New Jersey's pharmaceuticals industry growing at the same rate as it did in three competing states over the past ten years: California, Massachusetts, and Pennsylvania. These are "high growth" scenarios. The difference in jobs between the two scenarios essentially represents the job gain the state could expect if it could move its pharmaceuticals industry to a high-growth trajectory.

The tables below summarize these scenarios. The first table summarizes the size of each state's pharmaceuticals industry in 2002 and its employment growth rate in pharmaceuticals between 1992 and 2002. The second table projects New Jersey's pharmaceuticals employment forward to 2012, based on the growth rates of each of the four states.

Size of Pharmaceutical Industry in 2002 and Historical Growth Rate

	Employment, 2002 (000s)	Average Annual Growth Rate, 1992-2002
New Jersey	48.440	0.1%
California	43.512	5.6%
Pennsylvania	28.422	2.3%
Massachusetts	10.593	10.3%

Number of Jobs Created in New Jersey by 2012 Based on Other States' Historical Growth Rates

	New Jobs Created	Difference from New Jersey's Growth Rate
New Jersey's 1992-2002 rate	577	-
California's 1992-2002 rate	34,879	34,302
Pennsylvania's 1992-2002 rate	12,412	11,835
Massachusetts' 1992-2002 rate	80,205	79,628

This scenario analysis suggests that New Jersey would add only 577 jobs in pharmaceuticals from 2002-2012, if it continues at its historical growth rate. However, it could add 80,000 new jobs in the pharmaceutical industry if it were to grow at Massachusetts' historical growth rate, and it even would add over 12,000 jobs if it were to grow at Pennsylvania's modest growth rate. Using 2002 national earnings data from the Bureau of Labor Statistics, the 80,000 additional new jobs in New Jersey (assuming Massachusetts growth rate) produced by the pharmaceutical industry alone would add $3.2 billion to New Jersey's economy, not including the ripple effects the wages would have within the state. The more modest rate of Pennsylvania would add over $501 million to the state's wage base.

This type of impact is more suggestive than rooted in detailed analysis, but it does provide a sense of the stakes involved. New Jersey has tremendous advantages in pharmaceuticals, but has fallen behind other states that have made a more concerted effort in strengthening research and other critical elements of the high technology business environment.

The potential impact of the proposed New Jersey System of Public Research Universities would have similar ripple effects on other industries in New Jersey, such as telecommunications and software and IT services. Suggestions of such impact can be seen on the Table on the following page.

Industry Growth Analysis

Pharmaceuticals		
	Employment, 2002 (000s)	**Average Annual Growth Rate, 1992-2002**
New Jersey	48.440	0.1%
California	43.512	5.6%
Pennsylvania	28.422	2.3%
Massachusetts	10.593	10.3%
Number of Jobs Created in New Jersey by 2012 Based on Other States' Historical Growth Rates		
	New Jobs Created	**Difference from New Jersey's Growth Rate**
New Jersey's 1992-2002 rate	577	-
California's 1992-2002 rate	34,879	34,302
Pennsylvania's 1992-2002 rate	12,412	11,835
Massachusetts' 1992-2002 rate	80,205	79,628

Telecommunications Equipment		
	Employment, 2002 (000s)	**Average Annual Growth Rate, 1992-2002**
New Jersey	4.711	-10.1%
California	42.012	2.8%
Pennsylvania	28.422	1.4%
Massachusetts	10.593	-0.5%
Number of Jobs Created in New Jersey by 2012 Based on Other States' Historical Growth Rates		
	New Jobs Created	**Difference from New Jersey's Growth Rate**
New Jersey's 1992-2002 rate	(3,092)	-
California's 1992-2002 rate	1,510	4,602
Pennsylvania's 1992-2002 rate	713	3,805
Massachusetts' 1992-2002 rate	(208)	2,884

Software and IT Services		
	Employment, 2002 (000s)	**Average Annual Growth Rate, 1992-2002**
New Jersey	92.752	6.2%
California	347.464	10.5%
Pennsylvania	57.952	5.2%
Massachusetts	88.588	6.5%
Number of Jobs Created in New Jersey by 2012 Based on Other States' Historical Growth Rates		
	New Jobs Created	**Difference from New Jersey's Growth Rate**
New Jersey's 1992-2002 rate	3,886	-
California's 1992-2002 rate	8,075	4,189
Pennsylvania's 1992-2002 rate	3,110	(776)
Massachusetts' 1992-2002 rate	4,132	246