The Groundwork

Vision 2020:

Creating a Culture of Excellence

Texas A&M University in the 21st Century

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Introduction

VISION 2020

Overview

Our vision of Texas A&M University in 2020 did not spring forth fully formed. It was born of a process that involved more than 250 people from inside and outside the university who worked in 11 theme groups, three white paper panels, and a number of special study groups to identify issues believed crucial to Texas A&M University's future and to make recommendations. The eleven theme groups are: Faculty; Research and Infrastructure; Graduate Studies; Library and Information Technology; Leadership, Governance and Organization; Locale; Other Education; Service to the State; Arts and Sciences; Resources; and Undergraduate Academics. The three white paper panels include: Diversity, Globalization and Information Technology. The colleges, faculty senate, athletic department and Corp of Cadets developed views to the future. In addition, a group of students from the College of Architecture looked at the campus in the future and a group of students from the College of Engineering examined the community's relationship to Houston.

The work of these people represents the backbone of Vision 2020 and provides testimony to the commitment people have to our university. The brainpower of Vision 2020 rests here.

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Arts and Science Theme Group Final Report

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Vision: Arts and Science

The single most important prerequisite to gaining consensus top ten status is the **establishment of a superb Letters, Arts, and Science (LAS) faculty at the center of Texas A&M University**. The reputation of any great university rests upon the excellence of its LAS faculty. In order to be recognized among the most respected educational institutions in the country TAMU must establish LAS as the hub of the University and provide the necessary resources to permit LAS to attain the level of excellence associated with the most respected universities of the world, that universities reflect an atmosphere of intrinsic valuation of scholarship. This must be the number one strategic goal of the university.

A strong LAS faculty will counterbalance the more pragmatic vocational emphasis of the University. LAS teaches the fundamental and transferable life skills required for the many adaptations to career and life changes that will be necessary in the 21st Century. Students who have mastered these skills will be able to think critically and creatively, to analyze and synthesize ideas in order to make decisions and solve problems and to communicate effectively through writing and speaking. They will produce a student body more dedicated to the pursuit of knowledge and scholarship, with the flexibility and adaptability to become community and national leaders and better able to assume places in the most prestigious graduate and professional schools in the country.

Key Idea

In order to be recognized as among the most respected educational institutions in the country TAMU must establish the LAS faculty as the hub of the University and provide the necessary resources to permit LAS to attain the level of excellence associated with the most respected universities in the world that reflect an atmosphere of intrinsic valuation of scholarship. This must be the number one strategic goal of the university.

Goals and Recommended Actions

Key Idea 1

Establish the LAS faculty as the hub of the University and provide the necessary resources to permit LAS to attain the level of excellence associated with the most respected universities of the world that reflect an atmosphere of intrinsic valuation of scholarship.

Goal

Increasingly improve the faculty. We will accomplish this aim if we aggressively **recruit and retain the best teachers and scholars in their fields**. This requires, in turn, a program of endowed professorships, professional development programs, an excellent library, discretionary funds, spousal hires, merit increases, merit scholarships for high achieving students, adequate staff support, adequate departmental operating budgets, and a welcoming, diverse community. Faculty should be added according to the following principles.

Actions

- Determine the range of programs that compose a balanced LAS.
- Build on the strength of the existing program faculties and provide a basis upon which to build in the case of programs lacking such strengths. Strong departments should be made stronger by identifying existing strengths in each department and building upon them. **Weaker departments** (but departments that nevertheless are necessary for a balanced LAS) **should use recruiting strategies that permit the creation of areas of strength upon which the department can continue to build.**

- **Where faculties in some identified areas are not present, recruit the faculty necessary to implement the program.** It is these currently missing components that will add strength and diversity to LAS. They will broaden major course offerings as well as the core curriculum offerings and create a more intellectually diverse student body. The enriched climate of excellence in all fields will benefit the entire campus. This is a unique opportunity for Texas A&M University to develop innovative programs from the ground up and make them leaders in their fields. The programs to be added include: a Fine Arts Program with strengthened Music and Theatre Departments. A dedicated Arts Performance facility should be planned and built. This is the single most important addition Texas A&M needs to make to improve its national standing. The Arts enrich community life, improve faculty morale, and provide attractive programs for students, visitors and former students.
- **Establish doctoral level faculties in all disciplines**.

Goal

Improve interdisciplinary communication and establish interdisciplinary centers in order to demonstrate and investigate the interdependence of traditional disciplinary frameworks. A noteworthy example of such centers is a humanities center, linked with departments and other interdisciplinary Centers in the Arts and Sciences. As demonstrated with the Centers of Excellence in the sciences and the Bush School in the Social Sciences, places where different disciplines can meet and work together are essential for academic innovation and regeneration. No such center or place currently exists for humanities/arts scholarship. Such a center could administer an artist/author-in-residence program and other campus-wide programs. This center can also lead the state in outreach of humanities/arts programs through existing university networks.

Goal

Establish an Honors College. Several Vision 2020 theme groups conclude that an Honors College would help build the academic reputation of Texas A&M University. An Honors College can serve as an academic beacon of great intellectual value for innovative learning and teaching. Academic opportunities available through such a college coupled with competitive academic scholarships will help Texas A&M recruit the nation's best and brightest undergraduates. This college will insist on probing, thoughtful coursework and cutting-edge scholarly research. It should be grounded in broad requirements, but should also require original thinking and self-directed learning.

Goal

Most importantly, **provide an organizational rubric for the combination of faculties of College(s) of Letters, Arts and Sciences**, including those currently outside the present colleges of Liberal Arts, Geosciences, and Science. This reconfiguration of existing units might thus include art history, environmental studies, and similar fields with strong humanities and interdisciplinary themes. To accomplish this, **create a Vice President for Letters, Arts and Science who would have as his (her) concern the total LAS**

complex and as such could (without prejudice) represent all units and facilitate interdisciplinary programs within and between them. This reorganization would provide the symbolic recognition of the central place of LAS in TAMU in its presentation to the academic community, would permit the concentration of resources that would reinforce the perception of the centrality of LAS, and would facilitate the creation of new faculties and innovative reconfiguration of existing faculties.

Locus of Control

All of the above actions are under internal control except the establishment of new programs (doctoral or otherwise) would require Coordinating Board Approval.

Faculty Theme Group
Final Report

Members

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Vision 2020: Arts and Sciences

We believe, in the year 2020, that TAMU will be a residential campus with a relatively large core residential faculty. TAMU will remain a place for scholars to convene, think, create, teach and learn from one another. TAMU will have a much lower student/faculty ratio than at present, allowing a more nurturing and scholarly environment for both undergraduate and graduate students. However, many courses, and entire degree programs, will be delivered to remote sites and individual residences.

The competition for admission to TAMU undergraduate programs will remain strong, and the student body will be more diverse, reflecting the increased diversity of the Texas population.

Graduate education will receive the same emphasis as undergraduate education, and the two will be closely linked.

TAMU will remain in the eyes of the general public and the Texas Legislature as one of the state's premier research institutions. Multidisciplinary research problems will be more numerous and more important. Rapid technological change and legislative mandates will require a more "agile" faculty and administration. Lead times for responses to new opportunities will be shorter. TAMU's land grant/sea grant/space grant mission will be considerably enhanced with more extensive outreach programs. Formal partnerships with industry, public schools, and other universities will be more prevalent.

Key Ideas

- Favorable Student/Faculty Ratio
- Enabling Environment for Breakthroughs/Visions
- Create Community of Scholars

Goals and Recommended Actions

Key Idea 1

Favorable Student/Faculty Ratio

Goal

Increase current faculty size by 50 percent while maintaining student population at no more than 43,000 students. This puts Texas A&M at parity with other top public universities.

Action

- Begin immediately to create additional faculty positions. Add 25-30 net additional faculty positions per year for the next 20 years. (External Control)

Key Idea 2

Enabling Environment for Breakthroughs/Visions

Goal

Attract the best and keep the best faculty.

Actions

- Change the institutional culture. Develop an environment that focuses on discovery (thinking) rather than training, that promotes risk-taking, and that fosters solving the problems of the future rather than simply solving current problems. Develop programs to bring more distinguished scholars from all areas to campus. Project and market an academic image of the university. (Internal Control)
- Change the administrative culture. Establish a more effective administrative and policy role for faculty groups. That is, increase faculty governance. Establish an environment where faculty roles are more important than administrative roles. Reduce the current administrative burden so that an administrator can have a meaningful involvement in academic activities. Hire administrators who have credibility as academics. (Internal Control)
- Create multidisciplinary Centers of Excellence that focus on "big" problems. One model for such a center is discussed in the Faculty Theme Group Final Report. Eventually, these centers would be self-funded. (External Control)
- Ensure that promotion and tenure standards are high and uniform. Tenure only those individuals with the clear capacity for innovative scholarship and quality instruction. (Internal Control)
- Implement an effective post-tenure review to assure continued quality of the faculty. (Internal Control)
- Create endowments to fund several types of faculty chairs. (External Control)

  Career Development Chairs—to attract the very top tier of new faculty candidates
  - Funded at about $1 million
  - Ordinarily available to faculty coming to TAMU, but may be allocated to existing faculty in exceptional cases
  - Three year renewal with 6 year maximum tenure
  - Add approximately 8 per year for six years and maintain the total at48-50 chairs.

  Superstar Chairs—to attract established "superstar" faculty to TAMU and retain them.
  - Funded at about $2 million
  - Available only to new senior "superstar" faculty members
  - Five year renewal
  - Add approximately 8 per year for a total of 48-50 chairs and maintain at this number
  - Administered at University level

  Exceptional Promise Chairs—to encourage risk taking leading to breakthroughs by young TAMU faculty
  - Funded at about $1 million

- Only available to untenured faculty with exceptional promise
- Available for duration of period before tenure but renewal only after positive 3rd year review
- Add approximately 3-6 per year for a total of 20-25 chairs and maintain at this number

Key Idea 3

Create Community of Scholars

Goal

Involve students (at all levels) and faculty in a rich educational and research experience.

Actions

- Increase the number of graduate students to bring the percentage of graduate and undergraduate students in line with those of the top public universities. (Internal Control)
- Increase level and number of graduate student stipends. Assistantship amount should be consistent with that of the generally recognized top 5 public research universities. Support all PhD students and approximately 75 percent of all masters students. (External Control)
- Require "star" senior faculty to teach a freshman course on a regular basis. If necessary, create a university wide "contemporary topics" course required of all freshman that is team taught by a group of outstanding senior faculty. (Internal Control)
- Create an Independent Activities Period (IAP) during the between semesters inter-session or during the inter-session before the first summer session. The idea is to pair one (or perhaps two) undergraduate students with faculty member(s) to work together on a short term (research) project. The large number of students may make this opportunity voluntary, but a large number of possibilities would be available. As a by-product, linkages between faculty in different areas may develop. (Internal Control)
- Encourage joint appointments of individual faculty members. (Internal Control)
- Increase the diversity of the TAMU faculty to reflect the Texas population. (Internal Control)

Appendix

Final Thoughts: If TAMU is to become one of the top 10 public universities by the year 2020, it is imperative that this university have an outstanding faculty and an environment that promotes academic excellence. It is also imperative that TAMU make the academic quality of the institution known to the world.

Graduate Studies Theme Group Final Report

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Vision: Graduate Studies

The current measures of excellence for universities are focused on the breadth and depth of their graduate and professional programs. These standards include both educational and research components. Similar indicators of excellence will likely continue into the 21st century. Whereas some TAMU advanced degree programs, especially in the professional schools, are approaching the Vision 2020 aspirations, as a whole, Texas A&M graduate programs lag substantially in the

prestige necessary to achieve top-ten ranking. In the process of improving the quality of all TAMU graduate programs, the university must focus its attention on important, core strategic areas.

Texas A&M University will become a consensus top ten public university in the 21st century. It will achieve this goal by enhancing its reputation for producing top-ten graduates at the advanced degree level. A measure of achieving this goal will be the placement of graduates in prominent leadership positions. The 21st century will provide new challenges and opportunities. TAMU will meet these by establishing new innovative degree programs and approaches to graduate education. This approach will establish a solid foundation for TAMU to not only enter the 21st century as a major player, but to rise as a major educational and research leader. We will employ a strategy that will combine traditional modes of graduate education with cutting-edge distance delivery technology to expand TAMUs influence from urban settings to the international arena. We will not lose sight of our responsibility of ensuring access to quality graduate education for the diverse population of Texas in the 21st century.

Achieving top-ten status will require some fundamental paradigm shifts in self-perception and leadership from the Board of Regents through the administration to the faculty and staff. Everyone must buy-in to this aspiration. Accountability and commitment at all levels will be crucial to achieving Vision 2020 goals. At present, major limiting factors are our inability to recruit premier students and faculty. By 2020 we will find ways to provide better financial packages, better work/study conditions, more opportunities for leadership experiences, equal access, and better recruitment strategies for graduate students. Furthermore, we will have a high caliber faculty who lead an enriched graduate education and research enterprise.

Key Ideas

- Increase the quality and number of students seeking advanced degrees.
- Improve the infrastructure for graduate education.
- Take steps to improve the quality of life and opportunity for all graduate students.
- Make a commitment to advance TAMUs information technology strategies and infrastructure to position us to be a world leader in the development and delivery of education in the 21st century.
- Improve the quality of faculty by way of improved recruitment and retirement strategies – especially in certain strategic areas.

Goals and Recommended Actions

Key Idea 1

Increase the quality and number of students seeking advanced degrees.

Goals

- Generate 1000 graduate research assistantships before 2020AD to be assigned to the departments by a plan consistent with VISION 2020 goals. [The cost of this program at full strength is about $20M/yr – approximately the cost of a $500/yr increase in tuition. However, endowment is preferable since it can be more securely maintained.]
- Make specific efforts to improve graduate student recruitment.

Key Idea 2

Improve the infrastructure for graduate education.

Goal

- Create more domestic and international opportunities for graduate research, encourage teaching that reaches across disciplinary lines, improve library resources, and improve computing capabilities.

Key Idea 3

Take steps to improve the quality of life and opportunity for all graduate students.

Goal

- Implement recommendations of a recent ad hoc report on graduate studies. Assure equal treatment of all students.

Key Idea 4

Make a commitment to advance TAMUs information technology strategies and infrastructure to position us to be a world leader in the development and delivery of education in the 21st century.

Goal

- Resource allocation and management strategies must be implemented to ensure TAMUs role as a leader in this area.

Key Idea 5

Improve the quality of faculty by way of improved recruitment and retirement strategies – especially in certain strategic areas.

Goals:

- Create 100 endowed distinguished faculty chairs in strategic areas to improve the educational opportunity for A&M for grad students.
- Take more seriously the process of recruitment: More quality control and accountability by heads, deans.
- Examine new early retirement strategies.

Locus of Control

Visions/Recommendations Under Internal Control

- Improve internal quality control and accountability in recruiting faculty and graduate students. This can be done by conducting workshops in recruiting for department heads, visits by deans to search committees, even for junior positions. In both areas the major lack is the will to do it.
- Improve the living/working conditions for students is an internal job. Among these is the uneven distribution of health benefits. We must also assure that all students have the best possible environment for conducting their graduate studies. This means seeing to it that all within a discipline have equal pay and working conditions regardless of country of origin, gender, race, etc.
- Improve institutional financial arrangements such as those affecting the flow of indirect costs to departments generating those funds for use at the local level. Incentives need to be installed which will encourage faculty to seek outside grants, support postdocs and other amenities which enhance graduate education.
- Implement better recruiting and retention strategies for graduate students.
- Implement enrollment management criteria which will create an atmosphere supportive of a quality educational experiences for all students.
- The challenges and opportunities of the 21st century will require students to have both traditional discipline-based education and the ability to obtain skills provided by interdisciplinary and integrated programs.

Visions/Recommendations Under External Control

- State and private funds, possibly matching, for endowed chairs.
- State and private funds for graduate research assistantships.
- Tuition/fee alterations to enhance quality.

Leadership, Governance, & Organization Final Report

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Vision: Leadership, Governance and Organization

We envision Texas A&M University as an internationally renowned institution of higher learning and research as recognized by multiple and diverse constituencies. Excellent leadership will exist at both the University and System levels along with a governance system and organization structure that facilitate achievement of high quality at all functions of the institution.

We envision bold and visionary leadership in all areas of activity and at all levels of the University. This leadership will acquire and effectively use substantial resources, both financial and human capital, to achieve the strategic goals identified herein and for the overall Vision 2020 project. Texas A&M University will have a flexible governance system and organization structure that encourage input from all levels and facilitate creative activities throughout the university community. The University will be recognized for its excellence by all important external constituencies.

Leaders in both the System Chancellor's office and at the top levels of the University will work cooperatively to maximize the goal achievement of both organizations. Leaders will be selected based on their performance, experience and also on exhibiting the important characteristics and skills delineated herein. Furthermore, these characteristics will be used as guides for the continuous development (using both external and internal sources) of potential and current leaders. The structure will provide flexibility in the organization and facilitate ongoing change. Decision authority will be decentralized to the lowest levels possible, at least to the colleges, to allow implementation of independent strategies necessary to compete in their respective markets. However, appropriate levels of accountability will accompany this decentralization.

Texas A&M University will also operate a "university" funded totally from non-state sources, primarily tuition and fees, offered through multiple and diverse educational modes (e.g., technology-based media) to nontraditional, off-campus students throughout Texas, the United States and internationally.

Texas A&M University will have major strategic alliances with the University of Texas at Austin and other institutions in the United States and abroad. The alliances will enhance our opportunity to obtain major external funding for critical research programs as well as development and delivery of outstanding instructional programs to both traditional and nontraditional students. Texas A&M University will be known as a leader in the provision of innovative instructional programs throughout the world. Texas A&M will be recognized and supported as a preeminent and an internationally renowned university.

Key Ideas

Below we present five "big ideas" recommended for implementation to help achieve the aforementioned vision for Texas A&M University in 2020. The order of presentation is based on logic and flow and does **not** imply a ranking based on importance.

- Texas A&M is recognized as a preeminent and internationally renowned university in the state of Texas and elsewhere.

  This recognition requires a commitment by the State to support some universities to conduct internationally recognized, high quality research that, in turn, produces internally recognized instructional and service programs. Thus, Texas A&M University's mission, role and constituencies would be fundamentally different from most other universities in the State of Texas. Effective marketing of Texas A&M University faculty accomplishments and

expertise concurrently with development of premier status provides support (financial and otherwise) for TAMU as an internationally renowned university. Such recognition pays dividends to TAMU and to the State of Texas (e.g., economic benefits through the attraction of high technology businesses and other important industries to the State). Important constituencies include elected officials, potential students, major businesses, and the academic community in Texas, the United States and throughout the World.

- Develop and implement new strategic alliances with other universities, both inside and outside of Texas.

  Alliances with other universities will extend the reach of TAMU and enhance its capabilities by integrating complementary skills and resources from other universities. The greatest potential for value creating alliances is through large extramurally funded research projects. However, partnerships based on curricular projects (e.g., virtual courses in the "new" university) and cooperation to achieve mutually important goals (especially with the University of Texas and TAMU System Universities) may be valuable.

- Leaders at all levels and in all areas of university operation are willing to take risks (bold), are visionary (long-term and future oriented), are proactive (action oriented), are flexible (adaptable, nimble) are willing to delegate authority (empower others), have a global orientation (world view) and recognize and promote excellence in all activities.

  Such leadership will be supported by a University culture that emphasizes high quality in all areas of endeavor and that encourages and facilitates creativity. It will also be supported by the necessary resources and a reward system that attracts, develops and retains faculty and staff who ensure the highest quality teaching, scholarship and service. These leaders armed with an appropriate reward system and university culture will build and maintain effective relationships with critical external and internal constituencies.

- Have an effective structure and relationship between The Texas A&M University System and Texas A&M University.

  There is need to define the relationship between and realms of authority for the System Offices and the key administrative offices in the University (e.g., President's Office) to clearly delineate the duties and responsibilities of each. The restructuring scenario would have the Directors of the Texas Agricultural Experiment Station (TAES), Texas Agriculture Extension Service (TAEX), Texas Engineering Experiment Station (TEES), Texas Engineering Extension Service (TEEX) and Texas Transportation Institute (TTI) report to the President of Texas A&M University or to a new position for the President of TAMU as Executive Vice Chancellor of the TAMU System. The new structure should facilitate effective coordination of major research programs across the University promoting common goals and unity of mission along with greater efficiency in their implementation.

- Operate a special, self-funding "university" within Texas A&M University.

The new "university" offers high-quality, cost effective and competitive degree and nondegree programs through multiple and diverse educational modes (including virtual courses) to students located throughout Texas, the United States and the world. The programs are offered primarily through technology-based educational modes and the flexible curriculum is designed by TAMU faculty to be responsive to the needs of the above-mentioned population.

Goals and Recommended Actions

Key Idea 1

Texas A&M is recognized as a preeminent and internationally renowned university in the state of Texas and elsewhere.

Goal

Build a global reputation for excellence in research and educational programs.

Actions

- Develop a partnership with the University of Texas at Austin and other major universities in the State (if deemed necessary and appropriate) to gain recognition and support as premier universities for the State of Texas.
- Identify and gain the support of critical constituencies in the State to obtain the funding and to build the infrastructure for the premier universities.
- Continuously develop and implement an effective marketing plan to communicate the "Texas A&M story" to key constituencies.
- In all ways possible, lead and emulate the best public universities.

Locus of Control

Recognition of Texas A&M as a preeminent and internationally renowned university will require the approval and support of external constituencies. While excellence in research and teaching must be executed internally, the support for these activities must come largely from external sources.

Key Idea 2

Develop and implement new strategic alliances with other universities, both inside and outside of Texas.

Goal

Develop alliances with other major universities inside and outside the State of Texas to facilitate outstanding research and instruction.

Actions

- Identify major areas for potential cooperation in research, instruction and other issues confronting higher education in Texas (e.g., flagship university status) with the University of Texas at Austin. Establish effective alliances in areas of mutual interest.
- Using areas of research strengths on campus, identify universities in Texas, the U.S. and other countries that have complementary research skills and resources. Form research consortia with them to obtain major external funding (from government agencies, private foundations and businesses) to conduct cutting edge research leading to path-breaking findings that make major contributions to knowledge.
- Encourage the development of faculty-developed inter-university research projects (consortia) through the provision of seed money for collaborative projects, funds for travel to other institutions and effective utilization of faculty development leave.
- Form alliances with other universities that have unique curricula and/or have introduced use of new path-breaking instructional processes/media in the delivery of programs. Alliances with other universities at the forefront of high quality and innovative delivery modes could be useful for the "new university within the university."

Goal

Build relationships with other Universities in the Texas A&M University System to take advantage of the special strengths of each institution. The partnering should enhance and promote graduate education and service to the state. Partnering also should promote increased minority masters and Ph.D. students/graduates.

Action

- Be proactive in establishing alliances with other universities within the TAMU system in research and instructional programs. The intent should be to find opportunities where complementary resources exist between TAMU and its sister universities within the system. These linkages, particularly with system universities having larger minority student populations, could promote increased minority graduate students attending TAMU.

Locus of Control

The development of strategic alliances obviously requires the approval of the partner institutions. TAMU can be proactive in proposing alliances with appropriate institutions.

Key Idea 3

Leaders at all levels and in all areas of university operation are willing to take risks (bold), are visionary (long-term and future oriented), are proactive (action oriented), are flexible (adaptable, nimble), are willing to delegate authority (empower others), have a global orientation (world view) and recognize and promote excellence in all activities.

Goals

- Build an organization and culture that attract and foster the continuous development of bold and visionary leadership.
- Develop a culture and reward structure that recognize and promote excellence, make quality a top priority, and build the leadership that holds these values as fundamental tenets.
- Structure the University so that decisions are made by the appropriate and most knowledgeable party regardless of level. Encourage the use of continuous improvement management processes and ensure involvement by and input from faculty, students, staff, and alumni in developing and implementing change.
- Create an environment and leadership that encourage and facilitate 'creativity' along with managing for 'productivity.'
- Create the leadership, governance system and organization structure that allows flexibility to adapt effectively and rapidly to changes in the University's external environment.
- Encourage and facilitate substantive faculty participation in the decision-making and planning processes at all levels. The more faculty participate in such processes, the better prepared they will be for future leadership roles.
- Encourage diversity in students, faculty and staff.
- Attract, develop and retain the highest quality faculty and staff.

Actions

- Emphasize the leader characteristics listed above in the selection of all leaders (in all areas and at all levels) in the University.
- Design and implement a program to identify early leadership potential and to develop the leadership skills and competencies of the individuals identified.
- Provide continuous development of leadership skills for all individuals in leadership positions. Part of this development should involve participation in a well-respected leadership development program (e.g., at Northwestern, University of Michigan, etc.).
- Structure the University so that decisions are made by the appropriate and most knowledgeable party regardless of level. Decentralization should produce more effective decisions and help leaders at lower levels build effective leadership skills.
- Obtain the resources, create a reward system and provide the leadership to attract, develop and retain faculty and staff who ensure the highest quality of teaching, scholarship, and service. Assign a high priority to target the hiring of outstanding faculty from other institutions.

- Build a culture in the University through example and a reward system that emphasizes high quality in all activities and that encourages and facilitates creativity.
- Decentralize major strategic decisions to the College level, while maintaining the requirement for accountability. This action will free the top leadership in the University to focus on the major opportunities and problems facing the University and to take a longer term strategic view. It also will help develop more leadership skills in the colleges and thus better diffuse leadership throughout the University.

Locus of Control

Identifying and developing leaders and leadership competencies are under the control of the university and can begin in the short term.

Key Idea 4

Have an effective structure and relationship between The Texas A&M University System and Texas A&M University.

Goal

Ensure the highest level of cooperation and coordination between the University and the System.

Action

- Clearly define and differentiate the duties and responsibilities of the TAMU System Offices and the top Administrative Offices of Texas A&M University. In so doing, the missions of each unit should be clearly specified and differentiated. Finally, statements regarding the relationship between the TAMUS Chancellor's office and TAMU President and Administrative units should be developed by the Board of Regents.

Goals

- Promote interdisciplinary efforts in research, service and curricular programs in response to stakeholder needs.
- Build a global reputation for excellence in research and educational programs (internationally renowned).

Actions

- To build the University's research program into one of international renown and to promote and facilitate interdisciplinary research programs, the President of TAMU must have the authority (and accountability) to provide oversight and coordination of all university research units. For these reasons and others, the Directors of the Texas Agricultural Experiment Station (TAES), Texas Agriculture Extension Service (TAEX), Texas Engineering Experiment Station (TEES), Texas Engineering Extension Service (TEEX)

and Texas Transportation Institute (TTI) should report to the President of Texas A&M University. This can be accomplished by bringing the agencies under the University's umbrella or by allowing them to maintain their system level status and elevating the President of TAMU to the dual role of President and Executive Deputy Chancellor. In the latter scenario, the agency directors would maintain their System level status and would report through the President to the TAMUS Chancellor.

Locus of Control

Changing the structure and defining the relationship between the TAMUS Offices and top administrative offices of Texas A&M is largely under the control of the University. However, cooperation will be required from the TAMUS Chancellor and Board of Regents.

Key Idea 5

Operate a special, self-funding "University" within Texas A&M University.

Goals

- In addition to a primary campus-based student body, provide educational programs and services to nontraditional students in service to the State of Texas and in response to competition from private and out-of-state public institutions.
- Build a global reputation for excellence in research and educational programs (internationally renowned).

Actions

- Design a structure and staff the top leadership positions of the new university.
- Choose graduate programs to offer in starting the new "university". We recommend starting with graduate programs (spread our reputation broadly). The initial graduate programs chosen should be selected based on ability to deliver quality and a broad-based demand. After initial successes, other programs (e.g., undergraduate, professional) can be added based on careful and thorough analyses.
- Recruit the faculty largely from within TAMU and design the curriculum and its delivery system. Establish mechanisms to provide the appropriate support, compensation and intellectual property protection for faculty participating in this new "university."
- Devise a means of clearly differentiating TAMU degrees earned in this program from those earned in the TAMU residential programs that does not devalue the degrees from the new "university."
- Develop and implement a marketing plan to reach nontraditional students throughout Texas, the United States and selected countries globally.

Locus of Control

- The development of a new "university" within the university is largely under the internal control of the university. The university can use continuing education as a guide. However, to offer graduate programs at a distance using technology based modes may require approval by the Coordinating Board.
- Carefully evaluate competition (nationally and internationally) for the student populations targeted.

Library and Information Technology Final Report

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Vision: Library and Information Technology

At the core of an academic campus is its library. Few aspirations can be achieved in Vision 2020 without a substantial increase in the quality of the Texas A&M library as well as the information technologies that provide intellectual resources to students and faculty. While the Texas A&M University libraries have some great strengths, there are deficiencies when compared to the best university libraries in America.

Our *vision* is of a research library that supports the strengths of Texas A&M University, one that promotes critical inquiry and provides access to the general intellectual resources required for excellence in study and research for faculty and students at all levels. A great research library equips scholars with the best insight, students with the best access, and general campus users with widely distributed intellectual resources without regard to their format or location in the world.

Our *goal* is to build a library supportive of the outreach missions of a great land grant university.

Key Ideas

- Great universities have great libraries.

  Upon examining the rankings of America's great universities, one is struck by the common ground. Comparing the reputational rankings of America's 25 greatest universities against ARL's (American Library Association) rankings of its membership (the 110 largest research libraries in North America), the one-to-one relationship between reputational ranking and library quality is there for all to see.

  For universities to attract great students and great faculty, great libraries and the other pre-condition of modern higher education--great information technologies--are an absolute prerequisite. *Membership in the exclusive fraternity of research universities requires the very best in both libraries and information technologies.*

- Texas A&M must develop great libraries and information technologies.

  Texas A&M has steadily improved the quality of its libraries and information resources. The university has not yet, however, achieved library rankings befitting the quality of its academic programs or the long-term aspirations of the university. Over the past twenty-five years, the rapid growth of Texas A&M has outstripped its ability to invest in essential infrastructure. As a result, investment in libraries and information technologies has lagged considerably behind the public and private universities generally considered as the world's elite. Currently, the libraries of Texas A&M University are ranked 41st among North America's research libraries. For the university to advance its standing, the ranking of its libraries must improve.

  At the same time, we must recognize that the metrics determining library rankings are undergoing significant transformation in this time of revolution in the information technologies. We must attune our aspirations to those evolving metrics. For Texas A&M University to be rightfully recognized as one of the premier institutions the world, *it must be able to ensure that its students and faculty are without peer in their ability to access information in the twenty first century*.

- Great libraries are built slowly, one book at a time.

  While at first glance the metrics would suggest that the task of achieving parity with the best libraries will be very difficult, the theme group affirms that excellence in the area of libraries and information technologies is within the grasp of Texas A&M.

  At the beginning of this decade, a faculty blue ribbon panel studied the ability of our Texas A&M libraries to support the aspirations of its faculty and students and rightfully found capability to be wanting. Many of the recommendations of the panel have been incorporated into the plan of action that has propelled the library forward [see Appendix 3: Executive

Summary, Final Report to the Texas A&M Faculty Senate, October 1990]. At the same time, the administration has recognized the dilemma identified by the committee: adding the necessary staffing, purchasing the volumes and buying the journal subscriptions necessary to propel the library to the top of the rankings on all metrics would cost millions of dollars per annum. Attacking the library shortcomings on such a broad front could effectively absorb all discretionary funds, forestalling worthy efforts on a broad range of other deserving fronts. *Significant sustained investment over time is the key to library development.*

- The world is in the midst of a communications revolution.

  The World Wide Web and the Internet have fundamentally changed the way people exchange information; the web and the Internet have altered the way scholars communicate. Amazingly, the World Wide Web is only four years old. Everywhere, resources available in electronic format are expanding at a very rapid pace and certainly will be the emphasis for academic libraries in the future. Although they greatly expand access and offer valuable features not possible in print formats, electronic resources do not now and will not in the foreseeable future result in significant cost savings. A&M libraries have made an excellent start with bringing electronic resources to the desk tops of faculty and students and currently ranks in the top 15 ARL libraries in this regard. [See Appendix 4: ARL 96/97 Supplementary Survey: Preliminary Data]. If this momentum is maintained, A&M will remain a leader in providing access to the growing world of digital information. The theme group feels that the metrics measuring excellence in a research library context has not yet fully incorporated the information technologies into their calculations.

  Information technology infrastructure is similar to the "one book at a time" scenario typical of great libraries. For example, the building of a competent and stable computing staff, the fiber optic and twisted pair cable plant, the incremental improvement to the campus backbone network, and the major strategic administrative systems (e.g., student, human resources, accounting, and research administration) *all require sustained long term investment*.

Goals and Recommended Actions

Goal

Texas A&M should attain a ranking within the top 25 libraries on the *ARL Membership Index 2019-2020*. Within the next decade, a ranking within the top 32 should be obtained. It should set further the goal of attaining recognition as one of the top 10 public university libraries on the ARL Index by 2019-2020.

Actions

- Add permanently an additional $1.5 million to the continuing investment for library materials. Specifically, the Library Use Fee should be raised from $4 to $5. An additional $500,000 should be made available from AUF, from indirect cost recovery, or other sources.

It is projected that with sustained growth at the level of the five most highly funded public research libraries in ARL, Texas A&M libraries can accrue a collection sufficient to gain standing in the top quarter of the ARL index. Progress should be regularly monitored to ensure the level of investment is sufficient to maintain momentum. By 2020, Texas A&M Libraries should be ranked as one of the top ten public university libraries by ARL.

A base materials budget of $9.5 million (the base budget in FY 99 is approximately $8 million), indexed for inflation, will position the Texas A&M University libraries appropriately in the in the ARL libraries relative to the size and stature of the university. The theme group believes this to be a realistic and sustainable near-term goal for the university.

- Sustain current effort; cover inflationary costs of scientific, technical and medical communications (journals). Ensure, as a matter of planning policy, that the libraries will receive annually the funds required to cover the anticipated inflationary increases to the current subscription base. Maintaining the current subscription base requires an additional increment of $400,000 per year in current dollars, roughly equivalent to 5 percent of the combined collection budgets of TAMU libraries. This is beyond the addition to base funding identified above.

- External fund-raising by and for the libraries should be a continuing focus for the university. Collection endowments are a mutually beneficial way to promote the missions of the colleges and the libraries alike. A one million-dollar annual revenue flow from endowments should be in place by 2020.

<u>Goal</u>

Texas A&M should be among the leaders in redefining the processes by which scholars communicate and research activity is reviewed, archived and disseminated. The administration, library leadership and the faculty should initiate conversations as to how best to engage these issues on the local and national level.

Since the invention of movable type, the predominant form of communication among scholars and researchers has been the journal. For centuries those journals were in the hands of scholarly societies and university presses, and the model worked effectively. However, after the devastation in Europe caused by World War II, many of these scholarly publications were taken over by commercial firms. These heretofore “non-economic” entities quickly evolved into highly prized properties in the post-war explosion of science and knowledge in all forms. While the readership to any particular journal may be small, its contents are essential to researchers in that field. As academic libraries are the primary providers of subscriptions to campus researchers, and as continuation is essential for research, libraries have been forced to sustain subscriptions at steadily rising prices. Since the 1960s, the prices of scientific, technical, and medical

(STM) journals have risen on average almost twelve percent annually. Ten thousand dollar journal titles are not uncommon; Texas A&M supports a four million dollar annual subscription commitment which will increase by more than $400,000 next year. The challenge to pre-eminent universities is to sustain this commitment over the short run while working collaboratively as a community of scholars to foster new cost-effective means of communication. The theme group believes that partnerships with scholarly societies, such as the newly announced partnership between ARL and American Chemical Society (ACS) aiming to bring out journals at 1/3 the cost of their commercial competitors is one answer. The group likewise believes that electronic clearinghouses, as described in *To Publish and Perish* and containing the peer-reviewed works of scholars and researchers, accessible to the entire higher education community are also part of the solution. [See Appendix 5 for Pew Higher Education Round Table, *Policy Perspectives* Vol. 7, No. 4, "To Publish and Perish]. Only when alternative means are achieved will there be any diminution in the spiraling costs of scholarly journals.

Action

- The faculty of Texas A&M University, technically conversant and highly placed in scholarly editorial circles, should take a leading role in developing alternative modes of scholarly communication.

Goal

Library faculty and Information Technology administration should take a leadership role in facilitating the emergence of electronic communications, building locally the necessary physical and technical infrastructure that abets the gradual move away from a wholly print environment.

Actions

- State-of-the-art desktops in the dormitory and office; fully wired classrooms and laboratories and robust telecommunications must become the hallmark of Texas A&M University. The movement toward electronic text will fundamentally alter both the way libraries are designed and the way they deliver information to scholars. In the long run, the space given over to storage of books and journals will cease to expand as rapidly, for a considerable portion of knowledge will be published initially in electronic form and will remain solely in that form for its lifetime. Library emphasis will be on storage of the electronic images, and keeping the archival electronic data alive over the centuries as formats and equipment steadily evolve. Scholars will no longer be required to visit libraries for all of their information needs, but the role of the librarian as knowledge broker and navigator will become even more important as the location and formats of information become increasingly fragmented. Scholarly workspaces in libraries will likely evolve from the quiet, well-lighted sanctuaries of scholarly inquiry to sophisticated electronic work spaces supporting computer inquiry. In that regard, the library as provider of semi-perishable information, with all that implies for ease of

access and rapid delivery to the desktop of the remote user, will become increasingly important. Finally, the role of the library as repository of the accomplishments of humankind will likely never diminish. The scholarly thirst for knowledge in its original container (manuscript, audiotape, or first edition) will likewise remain, but advancements in digitization will allow scholars from around the world to access the unique treasures of the great libraries by viewing advanced electronic images from their remote sites. These developments will contribute further to the dissemination of knowledge and to the advancement of understanding.

Goal

Texas A&M should become a recognized leader in information technologies.

Actions

- Texas A&M must invest an additional $500,000 dollars a year to maintain and upgrade the campus backbone and individual desktop connections.
- An additional $1,000,000 a year is also required to fund development of emerging technologies, such as web-based development and distance education requirements, as they become operational.
- Peering over the horizon to forecast new applications is one of the most difficult tasks confronting the manager of information technologies. Along with increasing demand for services, Texas A&M is encountering many changes in the types of services that our customers require. New technologies include imaging, data warehousing, distance learning, directory servers for automatic machine configuration, enterprise-class E-mail servers, and World Wide Web intranets. Computing is increasingly network centered and relies on client-server designs. These new types of services are growing quickly, but CIS funding is still derived from a decades-old rate structure based on the model of a single large mainframe. Web services, for example, are not designed to charge the end-user who accesses a page on the server, yet the server capacity has to grow to meet demands, and someone has to pay for the growth. Central support of web course development systems are essential in supporting current students as well as future distance education students that may be enrolled in graduate programs. A minimum additional increment of one-half million dollars a year for staff, hardware, and software is required to support emerging technologies.
- To keep up with spiraling requirements and to make up for increases in operational costs due to inflation, an additional $250,000 in base budget is required to sustain supercomputer evolution.

Goal

By 2020, Texas A&M must ensure that its students and faculty are without peer in their ability to access information without regard to its format or location in the world.

Actions

- Establish a Texas A&M University Digital Library as a premier facility to scan, digitize, access and store image data for the university community. Have the digital library operational by mid-1999. The Digital Library could assist in consolidating efforts for digitizing research materials, including text, photographs, audio-video clips, and images of artifacts. The Digital Library should make available and maintain cost-effective access to state-of-the-art digitization equipment, a large storage facility, and technical expertise to assist with visualization and data warehousing tasks.
- A significant portion of the materials budgets should be put into electronic text. The current level of investment --one of the top ten ARL libraries in terms of expenditures for electronic resources-- should be maintained. While trends are impossible to predict with accuracy, the theme group believes that the current 85/15 ratio of print-to-electronic materials expenditures could reasonably become 50/50 by the year 2020.
- Texas A&M should have a wholly wired campus in the very near future and a wired Bryan-College Station community should be a mid-term goal.
- Computing Information Services and the Libraries should establish effective resource sharing consortia and share information broadly; they should negotiate joint site licenses to electronic materials where possible and utilize the information technologies to accelerate exchanges between partnering libraries.

Locus of Control

Almost without exception, the above recommendations are within the control of Texas A&M University. The developments in scholarly communications require that higher education generally review the processes of peer review, publication, intellectual property rights as well as promotion and tenure practices. On balance, a strategy of strategic investments sustained over time will build and sustain the great libraries and information resources an aspiring research university requires.

Other Issues Requiring Further Investigation

The theme group feels that two additional significant and related issues will dominate libraries over the next two decades: (1) the reconciliation of copyright and intellectual property issues to an electronic environment in which the rights of the creator and the rights of the user are in balance, and (2) the implementation by libraries of cooperative and collaborative initiative that build toward the concept of one shared "world research library". Each of these issues is discussed briefly below.

Copyright and Intellectual Property Issues

To date, intellectual and creative thought has existed largely in a print world in which the balance between the rights of the creator of intellectual property and those of the users to that property were carefully balanced. The genius of American copyright law has been to ensure a just and

equitable compensation to the creator while allowing full access by others "in order to promote the useful arts and sciences". Our laws have permitted creators--and their designated representatives--the right to profit from the expression of their ideas. However, others have been allowed to make use of those ideas, to build upon them in an orderly advancement of knowledge and understanding. In the print world, and under current copyright law, libraries and scholars enjoyed special rights of "first sale" (allowing books to be loaned, or even given away), classroom rights, and "fair use." In an electronic world, the rights of the user and the rights of the creator collide, and the careful balance that has worked so well is threatened. In an electronic environment, unscrupulous users can quickly expropriate the entire corpus of a creator's work, replicating the original perfectly time after time, effectively destroying the market for the product. Likewise, the unscrupulous representative of the creator can now meter every use of a product. By licensing terms which deny lending of the information or other "fair use" access, the owners of intellectual property threaten access to information by those without an ability to pay and threaten to disrupt the historic role of libraries in a democracy. The restoration of balance between the rights of user and copyright holder will be a dominant intellectual theme of the early twenty first century. By understanding their roles as both producers and consumers of intellectual property, Texas A&M faculty can play a key role in the debate. **A campus inquiry should be held into the impact of copyright practices in the publishing industry and their impact upon scholarly communication and library acquisitions.**

The World Research Library

According to some analysts, the amount of information available is now doubling every eighteen months. At the same time, libraries are confronted with the phenomena of double-digit inflation in key sectors of scientific, technical and medical communications. For many universities, the buying power of their libraries is shrinking as the universe of human knowledge relentlessly expands. The theme group has identified measures by which Texas A&M Libraries and its information technologies units shall attain pre-eminence. Yet, it is important to recognize that self-sufficiency as an information provider is unsustainable for any research university. In today's electronic environment it is also undesirable. It is imperative that research libraries foster the broadest possible resource sharing arrangements with other institutions pursuing similar missions, and that Computing Information Services provide the most robust communications infrastructure possible in order to speed information exchange between the Texas A&M Libraries and its partners around the world. Texas A&M is an active partner in the Association of Research Libraries as well the Big Twelve Plus consortium of research libraries in the heartland, and of TexShare. Cooperative collection development programs, joint licensing initiatives and more effective information exchange programs must be developed. In a cooperative environment, it can also be anticipated that budgeting and funding patterns will change over time. Whereas current metrics now measure the resources individual universities now commit to their libraries, other factors must soon be considered. In a world where licensing may become as common as ownership, it can be expected that centrally funded initiatives at the state, regional or national level will become more common. How individual libraries participate in the funding of such enterprises, or how their impact upon institutional excellence is measured, will be of central concern to libraries over the next two decades.

Equally importantly, there are issues, which will dominate the world of information technologies, with the reality of explosive network growth perhaps being the most dominant.

Explosive Network Growth

There has been explosive growth in network use. The campus network has about 25,000 devices connected. There will probably be another large increase in connections as embedded devices (e.g., thermostats, vending machines, security systems, door access locks) start to be equipped with network interfaces in the next few years.

Students, faculty, and staff are using the Internet as an integral part of their work. More class material and information is being made available on the network. In addition, network users are moving larger files and beginning to use audio and video applications. The campus backbone is continually evolving in speed to meet these demands. Texas A&M currently spends $600,000 a year in upgrading the campus backbone. The University is a participant in NSF's vBNS high-speed networking project that links 57 research universities, and is a member of the *Internet2* consortium, which hopes to bring high bandwidth applications like video conferencing to the desktop. Even though the cost of bandwidth is decreasing, universities are consuming it at a much faster rate than the prices are dropping. It is critical to all library and IT efforts, however, to ensure a robust Internet backbone and to provide sufficient bandwidth to the desktop.

The four major public research universities in the state (Texas A&M, UT-Austin, Texas Tech, and UH) have been working together with the Texas General Services Commission to foster the development of a high-speed state backbone network. This backbone is in the planning stages now with initial start up costs estimated at $25 million. We can envision the day when this backbone or its successor provides low cost, high-speed connections that support multimedia applications including video conferencing, distance learning, and telemedicine.

In the future, it will be even more important than it is today to support students, faculty, and staff at their residence off-campus. CIS supports high performance modems for dial up access today. The cable TV system also supports cable modems today that operate at high speeds, and the local phone company will be offering high-speed service in the future. The University is one of the founders of the new Bryan-College Station Network Access Point (NAP) that allows traffic from local Internet Service Providers to be routed directly to campus without having to go to the Internet backbone and then back to campus. We need to continue to foster high-speed access in the community.

Finally, no review of the future of information technologies would be complete without strategic consideration of digital implications for broadcast journalism.

Distance Education

Distance Education will be a major component of TAMU by 2020. A strong digital library is key to having the knowledge base to serve those students unable to take courses on the campus. A strong delivery system is of utmost importance if those resources are to be delivered in a cost effective and efficient way to the distant learners. We must strengthen the delivery system in 3

major ways: (1) Increased bandwidth for Internet types of delivery. Strong support must be provided to the development of Internet2 and its successors. Expanded bandwidth will become available, and new technologies will be developed to distribute both text and video material; (2) Strengthen face to face video conferencing, expanding this to more and more locations, where students can come for quality face to face meetings with their instructors. Even with the advent of asynchronous courses residing on the WWW, premier institutions like TAMU must insure students will have adequate time with instructors on a face to face basis, utilizing reliable equipment that delivers full motion capability when required, and (3) FCC Required Transition to Digital Television. The age of broadcast television will be revolutionized during the next 20 years. We are at only the beginning now. Approximately $3 million will be required to convert the existing EBS (KAMU) analog system to digital as required by the FCC. The new technology will enable efficient last mile connectivity to multiple users on new television sets that will function more like computers. Students will receive class schedules, their class syllabus, video clips about particular concepts, and live homework sessions via this technology, which will be delivered over the air and via cable television. As a top 20 institution, TAMU will lead the way in developing materials for this new "File Server of the Air".

Strategic Administrative Systems

Strategic administrative systems must be replaced over the next several years. At the institutional or system level, $40 to $70 million must be identified for these upgrades or replacements.

Many of the University's strategic administrative systems (student information and management, human resources, and accounting) are 10 years or older. While Texas A&M has modified or is modifying these systems to be year 2000 compliant, they are starting to show their age. For example, students want a web-based registration system that allows them to look for alternative sections of a class that fit their schedule while at the same time finding out information about the course instructor. Distance education requirements make such a system crucial. Because of the need to translate financial aid yearly requires a update software from one programming language to another, Texas A&M is slower than its competition in awarding financial aid each year. As another example, the existing budget and payroll system, while doing a good job of issuing pay checks on time, does not support most features that good human resource systems supply in industry today. The cost of replacing all of the administrative systems had been estimated to be between 40 and 70 million dollars spread out over several years of implementation.

Personnel Retention: Information Technologies.

The demand for skilled workers in the computing and telecommunications industries for outstrips supply, and it appears that there will be a shortage of personnel in these fields for the foreseeable future. Not surprisingly, the shortages have created severe problems in the not-for-profit sector, where compensation packages are typically far inferior to those of the corporate world. Texas A&M has not been immune to the problem of staff retention. Over the nine years prior to FY96, the annual personnel turnover rate in CIS was between 5% - 10%. In FY96, however, CIS lost 15% of its professional staff, primarily due to the combined effects of poor compensation and an active external marketplace. In FY97 and FY98, the loss rate was

approximately 12 percent. Preliminary evidence suggests this considerably exceeds industry standards. It is unlikely that CIS can sustain this kind of personnel turnover and still provide quality IT support to the campus. Careful thought must be given to developing compensation packages sufficient to attract and retain qualified employees in computing and telecommunications.

Summary

In 1990, the Faculty Senate Ad Hoc Libraries Committee issued a two volume report on the condition of the Texas A&M Libraries. The report identified a "crisis of funding," and observed that "the lessons of the past decade have made it clear that library funding cannot be successful if undertaken in a piecemeal, stop-start fashion. There therefore exists a compelling need for financial support that is not only timely and substantial, but sustained." Much has been accomplished. The libraries have advanced 22 places in the ARL Rankings between 1990 and 1997, from 63rd to 41st. In terms of investment, its libraries now rank 31st. The attainment of standing as one of the ten best public university research libraries is now within our grasp.

Summary of Investments		
	One-Time	**Continuing**
Library Materials Base Budget		$1,500,000
Index Current Journals for Inflation		400,000
Build Library Collection Endowment by 2020	20,000,000	
Upgrade and Maintain Campus Network and Desktop		500,000
Invest in Emerging Technologies, including Distance		1,000,000
Sustain Supercomputer Development		250,000
Totals	**$20,000,000**	**$3,600,000**

The above recommendations by the Theme Group on Libraries and Information Technologies map a path that is realistic, sustainable and achievable. Additional resources are required, through an increase in the Library Use Fee, through the assignment of indirect cost recovery, through AUF and other revenues, and through external fund-raising. In current dollars and in comparison to other public research universities, a base materials budget of 9.5 million dollars is required, a modest increase over today's base budget of approximately 8 million dollars. That purchasing power must be sustained by university fiscal policies that recognize the inexorable inflationary pressures of almost twelve- percent per annum in scientific, technical and medical information. In current dollars, those inflationary pressures require an annual increase in that base budget of approximately five percent per annum. **The great research universities have built their libraries on a policy of sustained commitment**.

The computing infrastructure needs are no less great. Texas A&M should invest an additional $500 thousand a year in staff and hardware costs to upgrade the campus backbone and individual desktop connections. Short of new money, we may have to resort to a network connection charge, much like the telephone model, on the order of $5 to $10/connection/month in order to fund backbone upgrades and higher bandwidth Internet access.

Locale Theme Group Final Report

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Daniel F. MacGilvray	Professor, College of Architecture (Deceased)
Lynn McIhaney	Mayor, City of College Station
Skip Noe	City Manager, City of College Station
Robert K. Popp	Professor, Department of Geology
Lindy Sanders	Student
Jim Scales	Superintendent, College Station Independent School District
Lonnie Stabler	Mayor, City of Bryan
Louis G. Tassinary	Associate Professor, Department of Urban & Regional Planning
Robert Worley	President & CEO, Economic Development Corporation

Vision: Locale

Our relationship with the community is critical to advancing the University. The schools, industries, businesses, and cultural/entertainment activity all play a pivotal role in building a quality place to work and learn. This is a mutually reinforcing phenomenon. From the beginning of the theme group's discussion, there was recognition that the scope of our work was not limited to the immediate locale - Bryan/College Station. The locale for Texas A&M University is, in fact, any community in which it operates a facility or program. Texas A&M aspires to be the best "education citizen" in those communities.

The University aspires to identify areas of mutual interest and focus efforts on even greater university-community cooperation in critical areas by:

- Ensuring relationships that enable the University and the communities to recognize and value the interdependence that exists for the benefit of both.
- Increasing the quality and quantity of educational opportunities in Brazos Valley and in the major urban areas of the state.
- Collaborating in attracting new businesses, expanding existing businesses, and providing employment opportunities.
- Collaborating on certain capital and other projects required to achieve strategic, academic and community goals.
- Increasing cultural and entertainment opportunities and access to the campus.

Key Ideas

- Increase the efficiency of transportation links between College Station and the major metropolitan areas of the State.

- Enhance the University's presence in the urban areas of the state with particular emphasis in the greater Houston area.

- Increase tourism to the University and local community

Goals And Recommended Actions

Goals

- Work with the local community leaders to implement a plan to transfer operating responsibility for Easterwood Airport to one of the local municipalities or a regional airport authority. This would replace the University leadership on air transportation issues with a more appropriate entity. The University would also need to determine the most appropriate use for the land on which the current airport sits.
- Evaluate the Research Park to determine the probability of its future success. This might be accomplished by engaging the services of an economic development expert.
- Establish an enhanced presence in the urban areas of the state with primary emphasis in greater Houston. A primary objective should be the development of a research or technology park between Houston and College Station.
- Aggressively expand its continuing education offerings on evening and weekends to municipalities, businesses, and citizens. This might be largely accomplished by distance education efforts.
- More effectively leverage the research and scholarly interest of the faculty for economic development and community leadership/service opportunities. The Council of Deans and representatives of the Council of Principal Investigators should have input into the economic development and community development initiatives.

- Implement a plan that would result in the development of a first class hotel and conference center on campus. This facility should accommodate the regional meetings of faculty and staff professional societies and associations. In addition, it should incorporate a first class Faculty Club.
- Build a stronger, more robust relationship with Blinn College for the benefit of all citizens of the Brazos Valley.

The Other Education Theme Group Final Report

Members

Joe Townsend '67	Associate Dean, Agriculture & Life Sciences, *On-Campus Co-Chair*
Jess Curlee '67	President, Supima Association of America, *Off-Campus Co-Chair*
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Michael Cone '60	Chairman, Tri-C Resources, Inc.
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Pat Larke	Professor, Curriculum & Instruction
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Jan Winniford '91	Associate Vice President for Student Affairs

Vision: Other Education

Student Enrichment (the Other Education) includes all developmental and educational experiences afforded by the University. Potentially, student enrichment embraces all Aggies, and it established Texas A&M University's distinct character in student life. It enhances personal qualities and life skills such as: communication, problem solving, the ability to work with others and in teams, work ethic, citizenship, personal vlaues and integrity, leadership, followership and participation, importance of lifelong learning, and appreciation of the importance for community involvement and service.

One of the strengths of Texas A&M is student enrichment, which facilitates students' learning both in and out of the classroom by providing high quality services and developmental opportunities while fostering an inclusive campus community in support of the University's educational mission. Students must graduate as individuals of character, competence, integrity, tolerance, and vision; committed to lives of service and leadership; capable of making ethical decisions; and prepared to function successfully within a diverse, multi-cultural world. Texas A&M is currently positioned as one of the best institutions in the country in terms of its student life, as demonstrated by the high degree of cohesiveness among students and the strong loyalty and outstanding success of former students. Texas A&M University inspires to gain increased national recognition among peer institutions for our outstanding student enrichment programs.

Key Ideas

- Maintain Texas A&M's uniqueness by preserving Aggie Spirit.
- Build Leadership Development into all aspects of learning.
- Triple the amount of financial aid and scholarships by the year 2010.
- Increase possibilities of experiential education.

Goals and Recommended Actions

Key Idea 1

Maintain Texas A&M's uniqueness by preserving Aggie Spirit.

Perhaps the most uniquely defining characteristic of Texas A&M University, the quintessential difference between A&M and other great public institutions, is the role of traditions in perpetuating Aggie Spirit. Aggie Spirit and our traditions are a great attraction for students whose family cultures provide an understanding and appreciation for the values that these traditions reflect. For those without an Aggie legacy or whose cultures may ascribe negative interpretations to traditions associated with an historically mostly white, all-male, all-military institution, we MUST promote Aggie Spirit through a focus on the underlying, basic human values which Aggie Spirit reflects. Values that provide a basis for Aggie Spirit include:

honesty, integrity and morality;
hard work and dedication;
loyalty, patriotism and commitment to family;
leadership and personal effectiveness;
commitment to academic excellence and accomplishments;
inclusiveness and equal opportunities;
commitment to community and civic involvement;
commitment to Texas A&M and other Aggies;
optimism and faith in the future; and
a sense of history and tradition.

Texas A&M must promote the importance of these values. This goal centers on the concept that the ultimate mission of Texas A&M University is to facilitate individual human development and individual accomplishments.

Key Idea 2

Build Leadership Development into all aspects of learning.

Texas A&M University must produce leaders for business, organizations, academia, industry, government and communities. In studying leadership, one must realize that there is a difference between socialization of a leader and leadership development. Some of the strengths of Texas A&M graduates are technical expertise, analytical skills, managing information technology, and technical know-how. They also need to excel in effective leadership: influencing people and organizations, setting directions for organizations, energizing and developing others, commitment and achievement drive, interpersonal skills, innovation, building partnerships, networking, service orientation, teamwork, cooperation, and wielding influence.

According to Warren Bennis, "The study of leadership isn't nearly as exact as, say, the study of chemistry. For one thing, the social world isn't nearly as orderly as the physical world, nor is it as susceptible to rules. For another, people, unlike solids, fluids and gases, are anything but uniform and anything but predictable. Although they acknowledge the difficulty, Bennis and others support the notion that leadership is a scholarly discipline that can, in fact, be taught.

Schools such as Harvard and Cornell have started required leadership programs. Leadership educators must look beyond the history and theories of leadership to prepare our students for what lies ahead and to help them become leaders. Beyond the facts and information students obtain in a course, there seem to be two major elements that set leadership education apart from more traditional disciplines: modeling leadership in the classroom and experiential education. Traditional students are largely untested outside of school and peers. Giving them the opportunity to apply their skills and experiences to new and challenging situations can be a personal growth experience. Without the ability to solve their own problems and the knowledge to teach that ability to others, tomorrow's leaders will not have the skills necessary to move into the future. There is no better way to prepare young people to be capable of leadership than providing them the opportunity to realize their potential for affecting their own lives, present and future.

Key Idea 3

Triple the amount of financial aid and scholarships by the year 2010.

Provide more aid, scholarships and loan funds to students of limited means and of outstanding qualifications. Find ways to increase the amount of monies that can be channeled to students through our financial aid and scholarship programs. Begin innovative programs designed to assist students with college costs.

Key Idea 4

Increase possibilities of experiential education.

Internships and co-op work experiences provide increased understanding of the work world. There is not substitute for practical work experience. No longer are just high grades, good communication skills, and participation in student organizations enough. In today's highly competitive market, students with career-related work experience have an edge. Texas A&M University must provide an expanded view of these opportunities.

Research and Infrastructure Theme Group Final Report

Members

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Van Taylor '71	Regional President, Network Operations, Southwestern Bell Telephone

Vision: Research and Infrastructure

As we enter the era of a knowledge-based society, economy, and culture, it is important to recognize the unique position of the research university as a creator, organizer, preserver, transmitter, and applier of knowledge. No other institution in our society fulfills all of these

critical functions. Research, as the creation of knowledge in the broadest sense, encompasses all forms of scholarship from creation of works of art and literature through evaluation and reorganization of knowledge to investigations into the preservation, transmission, and application of knowledge. Research is an essential function of the human race and it is through individual intellects that this creation occurs. Thus, a primary function of the university is to create an environment in which individuals, on behalf of society, may be engaged in these knowledge-based activities. These individuals, who range from the beginning freshman through the most senior professor, are engaged in various aspects of research; some are learning about previous discoveries and methods used in modern research; others are engaged in working with groups of senior graduate students and postdoctoral students to make major scientific breakthroughs.

As society becomes more knowledge-based it is even more important that all students become involved in research as a creative activity. It is though research that society makes progress. From the grade school teachers who find new ways to challenge their students to doctors who test and apply new life-saving techniques, all are engaged in research. As fundamental as research is to the entire human enterprise, there are some essential reasons why the university, should be engaged in it.

- Research provides the mechanism by which faculty contribute and learn, by creating new knowledge and expanding their own knowledge base.

- Research provides the mechanism by which students are trained to be the next generation of creators, organizers, preservers, transmitters, and appliers of knowledge.

- Research enhances the overall learning environment through state-of-the-art facilities, world-class libraries, conferences, and seminars that benefit the entire university.

- Research provides new fundamental knowledge and converts fundamental knowledge into practical discoveries that form the basis, for example of new industries, improvements in agriculture, and medical breakthroughs. The importance of university research is on the increase as American industry is generally reducing the size of their fundamental (basic) research efforts.

Research is central both to the university's broad concern for knowledge and to its specific concern for developing human intellects. Because research will play a major role in the future of the university, its importance must be recognized and enhanced by all stake holders: students, faculty, administrators, legislators, and the public.

Primarily, the future strength of the research enterprise rests with people; we must attract and retain the best people at all levels from freshman to senior administrators. Secondarily, the future of the research enterprise rests with having the resources, facilities, and infrastructure necessary to become a top-ranked public research university.

Our vision is that the centrality of research will be appreciated by all our stake holders and that this appreciation will be translated into action on campus to expand and improve the research enterprise so that Texas A&M University becomes widely recognized as a top-ranked public research university.

Key Ideas

- The vision of Texas A&M as a nationally acknowledged top-ten public research university by the year 2020 will only be realized by the selection and development of priority research areas acknowledged to be important and compelling on a national level. Accordingly, we recommend immediate and formal inauguration and institutionalization of faculty driven strategic planning for research and research infrastructure to identify, select, and establish cross-university support for the priority research areas that will enable top-ten ranking to be achieved by Texas A&M.

- An increased emphasis on research throughout the university community is essential to maximize learning and develop knowledge at all levels of education. Everyone across the university from the President, to the deans, unit heads, and individual faculty members should possess a unified view of education that emphasizes research as an essential component of every student's learning and every faculty member's responsibility.

- Position Texas A&M University to become a major source for the next generation of research faculty by attracting outstanding research personnel at all levels: senior faculty, junior faculty, postdoctoral associates, and students.

- Coordinate research administration in order to unify the planning and implementation of the University's research program and to effectively deploy TAMU faculty and physical resources in order to position A&M among the top ten public research universities.

- Expand our research activities beyond the Campus, by globalizing our programs, building stronger partnerships, marketing our strengths, and meeting societal needs.

Strategic Goals and Recommended Actions

Key Idea 1

The vision of Texas A&M as a nationally acknowledged top-ten public research university by the year 2020 will only be realized by the selection and development of priority research areas acknowledged to be important and compelling on a national level. Accordingly, we recommend immediate and formal inauguration and institutionalization of faculty-driven strategic planning for research and research infrastructure to identify, select, and establish cross-university support for the priority research areas that will enable top-ten ranking to be achieved by Texas A&M.

Goal

Create a process that will continue to move the University's research program forward.

Actions

- Create a Presidential-level faculty committee charged with strategic planning for research and infrastructure. (internal)
- Through this committee or its subcommittees audit areas of research strength and existing research infrastructure. (internal)
- Identify research areas for emphasis. These areas should have many of the following characteristics: a compelling and important area, an identified strength area, a balance between discovery and applied research, an involvement of students, a capacity to attract funding, and an outlook to develop global and industrial partners. The committee should seek to identify new paradigms for the organization of knowledge, whose adoption will lead to significant advantages for Texas A&M. (internal)
- Use an external committee of academic, government, industrial, and business leaders to review and narrow the list of focus areas. These reviews should seek to maintain and enhance existing strengths, while seeking the most critical new areas for growth. (internal)
- With the knowledge of the focus areas and an audit of the existing infrastructure, this committee or a subcommittee should create a plan to build the additional infrastructure needed to support these areas at the level of a top-ten research university. (internal)
- Utilize a competitive, merit-based, peer-reviewed, faculty-driven process to allocate funding for focus areas, for new projects (seed money), and for "bridge" funding. (internal)

Goal

Develop the support necessary to carry the research mission to its goals. The necessary support will need to include commitment by the public and government.

Actions

- Create a "Vision 2020 Strategic Research Fund" of at least $25M to provide the necessary competitive edge to succeed in our goal. (internal)
- Develop several flagship projects that will communicate the value of TAMU research to the public. (internal)
- Work with other State agencies and with the Legislature to identify and fund these flagship programs. (external)
- Revise promotion/tenure criteria to allow faculty to have highly successful careers in applied and interdisciplinary research as well as traditional basic research within a single discipline. (internal)

Key Idea 2

An increased emphasis on research throughout the university community is essential to maximize learning and develop knowledge at all levels of education. Everyone across the university from the President, to the deans, unit heads, and individual faculty members should possess a unified view of education that emphasizes research as an essential component of every student's learning and every faculty member's responsibility.

Goal

Provide an opportunity for all students to experience and gain appreciation for the value of research.

Actions

- Integrate research across the curriculum by involving students in discovery-based learning at many levels and by offering a 1 to 3 credit research course for each student as a graduation requirement. (internal)
- Encourage the use of Senior thesis as part of graduation requirements and provide opportunities for interdisciplinary research experiences. (internal)

Goal

Promote an increased emphasis on research across the faculty/staff/administration that further reinforces a cultural change.

Actions

- Recognize research as an important part of all faculty and staff responsibilities by making it part of all performance evaluations. (internal)
- Evaluate research administrators as well as faculty on their performance within the campus research culture. (internal)
- Provide faculty freedom and remove administrative barriers to carrying out research and creative activities. (internal)
- Encourage faculty teamwork and collaboration to identify emerging cross-disciplinary fields and to successfully compete for large federal grants. (internal)
- Create incubator facilities to support faculty/staff entrepreneurial activities and to assist faculty/staff in avoiding conflicts of interest. (internal)

Key Idea 3

Position Texas A&M University to become a major source for the next generation of research faculty by attracting outstanding research personnel at all levels: senior faculty, junior faculty, postdoctoral associates, and students.

Goal

Recognize and affirm that attracting and retaining outstanding faculty are the key to building an outstanding research program.

Actions

- Raise endowment funds to support faculty chairs, postdoctoral research appointments, and fellowship for graduate students. (internal)
- Establish 50 new Chair positions with at least $2M per chair. (internal)
- Use chairs to attract faculty with realistic potential to attain NAS/NAE (or equivalent) stature, and award chairs internally only to faculty of this stature. (internal)
- Dedicate institutional resources to attract and support, financially as well as scholastically, top quality and adequate numbers of faculty, research personnel, and graduate students. (internal)
- Create an "Eminent Scholars" program using institutional funds as development chairs to enhance and attract faculty until sufficient chaired positions are established. (internal)
- Expand facilities and resources to attract and retain excellent faculty, expand funds for faculty enhancement and development, and expand assistance to faculty for identifying and securing research funding opportunities. (internal)

Goal

Focus our human resources in priority areas

Actions

- Encourage donors to use broad definitions when creating new chairs to maximize the freedom to allocate chairs to focus research areas. (internal)
- Evaluate and determine where additional research faculty are required based on research priorities. (internal)
- Drive hiring to priority areas by reallocation of vacant positions from non-focus areas. (internal)
- Audit performance of research faculty especially with regard to the retention of institutional funds such as chairs. (internal)
- Retain only the best faculty by using comparisons with top-ten universities. (internal)

Goal

Increase the number of quality graduate students and postdoctoral researchers.

Action

- Increase funding for graduate student stipends. (internal)
- Establish fellowship funding for postdoctoral and predoctoral students in focus areas. (internal)
- Provide attractive benefits packages to fellowship holders. (internal)

Key Idea 4

Coordinate research administration in order to unify the planning and implementation of the University's research program and to effectively deploy TAMU faculty and physical resources in order to position A&M among the top ten public research universities.

Goal

Redefine the relationship between Research Agencies and the University to create an environment in which all faculty research is coordinated by the university.

Actions

- Create an ad hoc committee to devise a rational plan to build a unified research administrative structure in which the distribution of "returned indirect cost" and other cost accounting policies and procedures are independent of the agency through which a proposal is submitted. (external)
- Create a Chief Research Officer, charged to implement a program and process that allows A&M to become a top 10 research institution. (internal)
- Chief Research Officer needs to be charged to:
  a. coordinate/facilitate internal research funding,
  b. create and administer integrated research program support,
  c. facilitate audit of existing research strengths and resources,
  d. provide rational and consistent research administration, policies and procedures,
  e. facilitate the creativity and productivity of individual investigators,
  f. coordinate research public relations as well as relations with government, other educational institutions, and industry, and
  g. develop mechanisms by which System Agencies can support University research efforts while maintaining present reporting structure. (external)

Goal

Provide continuing assessment and evaluation of the University's effectiveness in research administration.

Action

- Create Board of Advisors with both internal and external members to advise the Chief Research Officer and the President regarding research administration. (internal)

Key Idea 5

Expand our research activities beyond the Campus, by globalizing our programs, building stronger partnerships, marketing our strengths, and meeting societal needs.

Goal

Strengthen our political/public support base.

Actions

- Promote increased emphasis on communication of Texas A&M research capabilities to state, and federal governments, and to national academic and research societies. Expand our public relations effort as a means of broadening public appreciation of the research functions of the university. Organize and publicize research related events with the public/government officials and their staff (National and State). (internal)
- Examine development of partnerships within the Houston, Dallas, San Antonio, and Austin metro areas. Expand our visibility in cities and South Texas through distance education and graduate student recruiting. (internal)
- Expand our Washington Office. Work more closely with our congressional delegations. (internal)

Goal

Enhance TAMU's international relationships

Actions

- Encourage and facilitate faculty development leaves at foreign universities and laboratories. (internal)
- Develop visitation programs for international research scholars. (internal)
- Integrate strengths in Bush School into other international programs. (internal)
- Strengthen international partnerships with foreign governments, foreign universities and multinational corporations, especially those in Latin America. (internal)

Goal

Create an environment that attracts and supports partnerships with industry, foundations, government agencies, and entrepreneurial investors.

Actions

- Enhance legal and institutional support for entrepreneurial activities by revising policies regarding patents, licensing, proprietary agreements to encourage partnering. (internal)
- Encourage the wide-scale adoption of industrial/business advisory groups for departments and colleges to conduct needs/problems analysis with corporate leaders and encourage more seminars by industry representatives. (internal)

Goal

The University should foster liaisons with other research and educational institutions, capitalizing on the strengths of the various entities.

Actions

- Develop the culture within TAMU that supports interdisciplinary partnerships. (internal)
- Develop and expand efforts with other universities and national research laboratories to attract major funding. (internal)
- Build on relationships with UT-Austin and others at the highest levels to develop shared research support facilities and services. (internal)

Resources Theme Group Final Report

Members

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Vision: Resources

By the year 2020, Texas A&M as a leading public institution of higher education, will be delivering quality education in innovative ways to a more diverse, global market; will have achieved many, highly synergistic partnerships with the private sector; will be charging tuition that more accurately reflects the value of an A&M degree; and will have successfully implemented innovative fund-raising strategies to reach new generations of former students.

Texas A&M University's goal is to continue its academic evolution and become recognized as one of the best public universities in the nation by the year 2020. As stated in the Skunkworks report, "When true quality is attained, it is an engine that fuels itself." However, in order to achieve our aspiration as a top 10 institution, the University will need to identify and enhance revenue streams.

One extremely important source of revenue will be continued public support from the State of Texas. In order to deliver improved value to our constituencies, the University will need to extend and enhance its partnership with the state. Texas A&M will need to leverage this public support by increasing non-traditional sources of funding; by charging tuition that is more consistent with the value of education that is provided to students; by developing a culture that is more conducive to the formation of public/private partnerships; and by increasing financial aid to attract a more diverse student population.

We should also anticipate that by 2020, the current model of a "state university" may be obsolete or at least no longer associated with the label "research university" in terms of funding. It may be that by the year 2020, the top 10 institutions of higher education will be significantly different, providing high quality education to an increasingly global market. In order for Texas A&M to participate in this changing market, it may be necessary to consider either partnering with organizations outside Texas A&M or creating a "private sector" A&M that will have fewer external constraints.

Finally, the importance of a well-organized and well-funded public relations campaign cannot be overstated if we are to achieve top 10 status. In order to achieve our aspirations we need to make Texas A&M more visible and, at the same time, take care to portray a "true image" of the university.

Key Ideas

- Higher education is changing rapidly. Leading institutions are innovating to deliver education to new markets. These new markets are potential sources of revenue. Moreover, because Texas A&M is a flagship, public university, we have a responsibility to develop new ways to serve an increasingly diverse state population.

- We believe that public/private partnerships will play a critical role in helping Texas A&M to establish top 10 status. These partnerships will benefit the economy of Texas, augment the financial resources of the University, enhance the educational experience of students, enrich the research capabilities of faculty and benefit private sector partners.

- It is unlikely that Texas A&M will be able to achieve top 10 recognition without charging tuition that more accurately reflects the value-added nature of an A&M degree. At the same time, financial support to students must be increased so that we can achieve our goal of a diverse student body.

- Texas A&M has long been a grateful beneficiary of income from the Available University Fund. This income has been instrumental in helping Texas A&M to better serve the state. In order for Texas A&M to achieve top 10 status so that it may improve its service to the state, it will be necessary to maintain and enhance revenue from the Available University Fund.

- While State funding will always be a vital source of financing, private funds will enhance Texas A&M's ability to improve on its tradition of excellence by the year 2020. Texas A&M University has enjoyed an excellent record of private support. Many of its fund-raising programs are considered to be among the best in the nation. We must continue to expand and build on the tradition of excellence in private support at Texas A&M.

Goals and Actions

Key Idea 1

Develop enhanced products to meet changing educational needs

Higher education is changing rapidly. Leading institutions are innovating to deliver education to new markets. These new markets are potential sources of revenue. More importantly, because Texas A&M is a flagship, public university, we have a responsibility to develop new ways to serve an increasingly diverse state population.

Goal

Identify and learn about potential markets and new customers for educational products

Actions

- Texas A&M should initiate a study to learn how different educational markets are likely to grow over the next 20 years.
- Explore international educational markets for Texas A&M.

Initiate a study to learn about the educational needs of new customers, many of whom may be non-traditional, such as high school students, junior college students, and corporations.

Goal

Develop new educational products and explore mechanisms to deliver these products

Actions

- As a flagship university, we have a responsibility to develop educational products for new and emerging markets. A wide range of products is possible.
- Create a "private-sector" Texas A&M component to compete in a global market for higher education.
- Identify incentives to encourage faculty and staff to develop these new educational products.

Goal
Identify potential partners.

Actions
- Look at creative ways for establishing or partnering with private non-profit and for-profit organizations that are not subject to government restrictions.
- Partner with organizations outside Texas A&M that are not constrained by internal bureaucracy. Dual employment with such entities might be a possibility.
- Joint-venture with other schools, such as high schools, junior colleges and other universities.

Key Idea 2

Create public/private partnerships

We believe that public/private partnerships will play a critical role in helping Texas A&M to establish top 10 status. These partnerships will benefit the economy of Texas, augment the financial resources of the University, enhance the educational experience of students, enrich the research capabilities of faculty and benefit private sector partners.

The following strategic goals are defined as those that the University can pursue that would serve to initiate public/private cooperation on a short time scale (from 2 to 5 years) and those dedicated approaches that the University will need to follow over the longer term to achieve preeminence in 20 years.

Goal (Short Term)
Place our top A&M programs into the top 10 nationally

Actions
- Identify those programs at Texas A&M that rank nationally in the top ~20 and prioritize the use of university resources to bring these programs into the top 10.
- Publicize and market the newly emerged top 10 programs or departments on a nationwide basis.

Goal (Short Term)
Develop closer relationships between Texas A&M and private entities.

Actions
- Offer internships to students and post-doctoral research associates.
- Improve the job placement of students.
- Offer continuing education programs for professionals.
- Establish a first rate hotel/conference center on campus.

Goal (Long-Term)
Raise the level of other programs at Texas A&M toward top 10 status.

Actions
- Identify the fields of academic research that have the highest potential for large numbers of patents and improve these programs.
- Leverage the recognition of Texas A&M as one of the nation's preeminent universities through the advertisement of its top 10 programs and departments.

Goal (Long-Term)
Attract businesses to the University's research park and to the Bryan/College Station area.

Actions
- Work with local economic development agencies to market Texas A&M's top 10 programs and Bryan/College Station to high technology companies such as pharmaceuticals, agricultural and energy firms.
- Attract "Research Triangle" enterprises and facilitate the involvement of students, post-doctoral associates and faculty.

Goal (Long-Term)
Increase the number of patents.

Actions
- Consult with faculty of Texas A&M who currently hold patents and ask for their recommendations to increase patent development.
- Initiate a "Best Practice" study of the patent issue at other universities.
- Identify programs at Texas A&M that have the greatest potential for generating marketable patents.

Key Idea 3
Adopt market-based tuition and fees

It is unlikely that Texas A&M will be able to achieve top 10 status without charging tuition that more accurately reflects the value-added nature of an A&M degree. At the same time, financial support to students must be increased so that we can achieve our goal of a diverse student body.

Goal
Acquire legislative approval to locally manage and control tuition and fees.

Actions
- As a flagship university, Texas A&M must obtain the ability to charge market-based tuition and fees that are commensurate with the value of the education it delivers.

- Increase financial aid so that economically disadvantaged students will not be penalized.
- Document and publicize the benefits of a quality degree from Texas A&M University to the State and to the nation.

Goal

Acquire the ability to increase local fees.

Actions

- Pursue statutory authority to charge course fees and other fees for teaching enhancement.
- Pursue a change in the statutes to allow Texas A&M to charge laboratory fees sufficient to provide state-of-the art equipment, supplies and facilities.
- Pursue legislation to allow a consolidated fee structure so that the cost of an education can be more clearly understood by Texas A&M constituents.

Goal

Develop new sources of tuition revenue.

Actions

- Enhance tuition revenue from distance education courses.
- Enhance tuition revenue from continuing education courses.
- Evaluate the possibility of increasing non-resident enrollment.

Goal

Improve the management of tuition waivers and exemptions.

Actions

- Require full funding of new and existing waivers that are designed to meet specific social objectives.
- Pursue the flexibility to allocate “enticement” waivers based on the quality of the student to enhance recruiting.
- Pursue funding for full waiver of tuition and fees for outstanding students and/or needy students.

Goal

Attract the highest caliber faculty, students and post-doctoral associates.

Actions

- Offer competitive salaries to faculty and increase start-up funds to new faculty hires that compare with those offered by the top 10 universities.
- Identify, contact and make generous scholarship offers to the very best graduating high school seniors on a nation wide basis.

- Seek post-doctoral research associate endowments.

Goal

Strive to do more with the resources that we have. Although Texas A&M annually seeks to improve its productivity, we must continually search for ways to be more efficient and more effective.

Key Idea 4

Maintain and enhance income from the Available University Fund

Texas A&M has long been a grateful beneficiary of income from the Available University Fund. This income has been instrumental in helping Texas A&M to better serve the state. In order for Texas A&M to achieve top 10 status so that it may improve its service to the state, it will be necessary to maintain and enhance revenue from the Available University Fund.

Goal

Maintain and enhance income from the Available University Fund.

In order to achieve this goal and maintain the intent of the original legislation, a commitment from all levels of Texas A&M University and Texas A&M System leadership will be necessary.

Key Idea 5

Increase private fund raising

While State funding will always be a vital source of financing, private funds will enhance Texas A&M's ability to improve on its tradition of excellence by the year 2020. Texas A&M University has enjoyed an excellent record of private support. Many of its fund-raising programs are considered to be among the best in the nation. We must continue to expand and build on the tradition of excellence in private support at Texas A&M.

Goal

Plan and conduct regular, coordinated capital campaigns that emphasize academics.

Actions

- Texas A&M should work with all three A&M fund-raising organizations (Association of Former Students, Texas A&M Foundation and the Twelfth Man Foundation) to establish annual goals.
- Establish annual goals for all Colleges in the University.
- Plan and conduct campaigns that will meet these goals.
- Texas A&M should work with the Association of Former Students and the 12th Man Foundation to increase memberships in these organizations.
- Remain accountable to all constituencies.

Goal

Strengthen gift giving from a broader former student base.

Actions

- Find ways to reach new (younger) groups of former students.
- Expand fund-raising efforts in geographic areas outside Texas, including international areas.
- Explore ways to involve former students of all ages in fund-raising projects.
- Better capitalize on the roles of former students in major corporations.

Goal

Increase our range of fund-raising strategies.

Actions

- Expand efforts to help Aggies understand the benefits of making gifts through their estates.
- Develop fund-raising strategies to address the "wealth transfer" phenomena and the aging of the baby boomer generation.
- Convince the legislature to activate a matching gift endowment program that was passed in 1993 but never funded.
- Develop fund-raising projects that are tailored to a variety of donor interests.
- Establish chaired endowments for minority faculty.
- Use information technology to improve fund-raising results.

Goal

Improve quality and the perception of quality.

Actions

- Quality and the perception of quality are factors that will be critical to our future fund-raising efforts.
- Develop a major public relations campaign that will a) spread the word about the dramatic changes that have occurred at Texas A&M over the past several decades and b) publicize the value of a degree from Texas A&M.
- Strive for national recognition in all athletic programs.

Locus of Control

Visions/Recommendations Under Internal Control

- Develop New Products
  New educational products that seek new markets and new customers are largely under internal control, although the implementation of some of these programs may fall under the domain of the State Coordinating Board.

- Create Public/Private Partnerships
  The creation of public/private partnerships is largely within the influence of Texas A&M University, although some statutory changes may be required.
- Increase Private Fund-Raising
  While state funding will always be a vital source of financing, the strong tradition of private support is a distinctive strength of Texas A&M and will most likely play an important role in our evolution into a top 10 institution. This vision and its recommendations are totally under the control of the fund-raising agencies of Texas A&M University.

Visions/Recommendations Under External Control

- Adopt Market-Based Tuition and Fees

- Maintain Income from the Available University Fund
  In order to maintain our flagship status and achieve top 10 recognition, market-based tuition and fees and support through the Available University Fund will be essential. Achieving this support will be highly dependent upon political factors that may be substantially under the control of a variety of organizations in State government.

Appendices

Other Issues Requiring Further Investigation

- Our theme group believes that it is critically important to develop a comprehensive, long-term public relations program in order for Texas A&M to achieve top 10 status. In order to achieve our top 10 aspirations, we need to make the successes of Texas A&M more visible.
- Study the "Best Practices" of other states that have developed matching gift programs, such as Florida, which has a matching program in which the State will match $500,000 for an endowed chair.
- Study the "Best Practices" of other states that have made a commitment to improve the funding of higher education, such as Oklahoma, which has a scholarship program for national merit scholars, and Georgia, which has a special program for tuition/financial aid for those with low income.
- Examine the "Best Practices" of the top 10 universities to learn how they have attracted businesses into public/private enterprises and "Research Triangles."
- Further inquiry and study is required to help determine the giving potential among a growing base of younger former students.
- Campus leaders will need to analyze, assess and prioritize the greatest financial needs for the next fund-raising campaign.

Service-to-the-State Theme Group Final Report

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Vision: Service to the State

Texas A&M University should aspire to become the pre-eminent contemporary land-grant university in the nation by 2020. Over the next two decades, this institution should successfully identify and implement new roles for its land-grant mission in response to societal needs, and should act as a model for other institutions nationally that are seeking relevance to their land-grant responsibilities. Resolving new socioeconomic challenges in the State of Texas and beyond will provide faculty and students with unique intellectual opportunities that will stimulate

inquiry, strengthen public support, and solidify the role of the university as a flagship institution in the System and in the State of Texas.

New definitions of the land-grant mission must include a strong and sustained commitment to improve K-12 education; no other factor will have such a profound effect on the future of this state and on the quality of the applicant pool for this institution, and for other System universities, over the next two decades. Assisting communities to address their complicated local issues, and assuming an active role in the state's economic development also will become prominent parts of the university's evolving land-grant mission. With its proud heritage of producing students with a strong work ethic and with leadership skills, and with the recognition of the challenges facing the state over the next 20 years, the institution can take the initiative to foster change, requiring that all of its students incur a service obligation as part of their studies. The outcomes of such a program would be profound including, most importantly, a strong influence on graduates to participate in societal issues, a national recognition by peer institutions of the boldness and appropriateness of such a move, and greatly improved public and political support.

Over the next two decades, public institutions of higher education will be expected to address societal issues as an increasingly important part of their missions. These fundamental shifts in the role of the contemporary land-grant university in a rapidly changing society will require new definitions of faculty work. Courageous decisions must be made by the university to redesign rigorous tenure, promotion, and merit reward systems for those faculty members who are creatively and productively engaged in assisting the state with its societal and economic challenges. The many difficult issues facing public schools, communities, and industry will provide rich scholarly and learning opportunities for faculty members and students, and will strengthen the academic evolution of the institution in its quest for top-10 status.

Key Ideas

- Learning Through Service

  Critical shortages of teachers in the public school system; a lack of mentors and role models for many school children; isolation of most undergraduate students from the complexity and pervasiveness of today's socioeconomic problems; a lack of understanding of the civic responsibilities that come with a university education; and a need to continue the time-honored university tradition of producing community leaders. These are some of the strongest justifications for the theme group's first recommendation that a mandatory service experience be incorporated into the undergraduate curriculum.

- University/School Partnerships: The New Land-Grant Initiative

  The future of the State of Texas and Texas A&M University depends on the quality of public education. Primary and secondary education are always the bases for any refined socioeconomic system; this is particularly important to Texas considering the rapid

population growth facing the state over the next two decades. As the land-grant university of Texas, this institution must lead the state in educational reforms at all levels. Texas A&M University must set national standards for developing and implementing exemplary educational practices including highly collaborative, focused programs and services for K-12 students that will ensure academic success, civic responsibility, economic prosperity, and an improved quality of life for every Texas citizen. The foundation for these new initiatives would be the development of a novel educational extension and research program, and the expansion of the university's outreach programs. In this way, the university assumes a leadership role in the educational initiatives of the System institutions, and does not become disengaged from the pressing educational issues affecting much of the rest of the state.

- Texas A&M University: Creating Entrepreneurial Opportunities (Texas A&M:CEO)

  Texas must continually develop new, diverse economic arenas in order to compete in an ever-changing, dynamic marketplace, and this can not be accomplished without direct participation and leadership from its leading universities. Our state is recognized internationally as the home of many advanced technology companies, and is viewed consistently as a major contender for a wide range of emerging technologies; these new industries are knowledge-based, and can not succeed without an academically strong and entrepreneurial-minded higher education system. Economic development becomes an important role for the contemporary land-grant institution in the 21st century, and forms a partnership for the research programs of Texas A&M University. Financial strength in the state will result in sustained funding for higher education, and a greater opportunity for this institution to achieve top-10 status nationally.

- The University Access Center: Window to Texas A&M University

  Each day, the citizens, communities, and businesses of Texas look to their land-grant university for assistance with a broad range of socioeconomic issues. These requests enter the university through hundreds of "windows", and it can be difficult, in some cases, to ensure that the requestor is put in contact with the right expert at the institution. Expectations may go unfulfilled, and the relevance of a land-grant institution in today's society may be questioned. Retaining the support of the people, communities, and businesses of Texas, and the Texas legislature, is critical to the university's aspiration for top-10 status. Finding more efficient ways for its constituents to access its resources will strengthen the role of the institution in contemporary society.

Goals and Recommended Actions

Key Idea 1

Learning Through Service

Goals

- Develop an awareness and a consciousness in Texas A&M University students of current and future socioeconomic challenges.

- Promote the service ethic in our students, engendering moral responsibility.
- Improve our students' understanding of the very complicated nature of today's societal problems.
- Seek to become the pre-eminent university in addressing society's challenges.
- Act as the model university in infusing the service ethic as a moral imperative.
- Add value to an undergraduate degree from Texas A&M University.

Actions

- Infuse the requirement in the undergraduate curriculum for a significant, relevant field experience addressing a socioeconomic problem in the state, so that every student will have performed service within the state, before graduation, inclusive of all disciplines.
- Identify and develop a broad range of service experiences for the students that are degree-related, that address contemporary socioeconomic challenges, and that provide meaningful experiences for the participants.
- Identify service experiences that will involve personal sacrifice on the part of the students, but also that will provide the participants with personal fulfilment and intellectual rewards.
- Identify highly influential supporters of the university who will act as champions of this new program, and create a panel of distinguished leaders to promote the initiative.
- Develop an appropriate oversight organization within the university to implement the program, monitor and ensure quality, assess outcomes, and assure appropriate program recognition externally.

Locus of Control

The decision to implement this initiative would be controlled internally, although widespread advice would be sought prior to implementation from former students, prospective students and parents, and partners with whom the university might establish service programs, in addition to the constituent groups on campus.

Key Idea 2

University/School Partnerships: The New Land-Grant Initiative

Goals

- Establish educational extension, outreach, and research as a fundamental and high-priority land-grant mission of Texas A&M University in the 21st century, and develop an exemplary, national model for this new concept.
- Influence educational reform at all levels in Texas through simultaneous renewal of university faculty members and public-school teachers.
- Develop an academic framework in which faculty members can work collaboratively to address the most pressing, broad policy and research issues facing public education, rather than working individually in a fragmented manner.

- Increase significantly the number of high-school graduates who are ready academically for college.
- Expose more students, and at an earlier age, to the opportunity of a college education.
- Improve the quality of the applicant pool for Texas A&M University and other System institutions; highly-prepared students are essential for the achievement of top-10 status.
- Integrate new educational initiatives at the university with the proposed service-learning obligations in the new curriculum (recommendation #1).

Actions

- Establish an educational extension, outreach, and research service that will be supported by state funds, research grants, and funds from school districts.
- Identify faculty members who are passionate about improving public education, and support their activities in this new program through redefined but rigorous promotion, tenure, and merit-reward criteria.
- Redefine the role of extension services, through the creative and efficient use of Internet technology.
- Promote the outcomes of the activities of the new program as a measure of the institution's top-10 status.
- Significantly expand the Office of University Outreach at Texas A&M University to influence many more students in more cities to pursue higher education.
- Recruit and re-train interested persons, for example retirees, to assist in new outreach, teaching, and mentoring programs in K-12 education.

Locus of Control

Successful implementation of these initiatives will require significant external support, including political support, new state funds, research grants, and the continued development of collaborative relationships with school districts and other academic institutions; for example, the University of Texas which shares responsibility for the funding and administration of the University Outreach centers in Austin, Corpus Christi, Dallas, Houston, McAllen, and San Antonio.

Key Idea 3

Texas A&M University: Creating Entrepreneurial Opportunities (Texas A&M:CEO)

Goals

- Enhance the financial and educational condition of the state, and strengthen the academic reputation of the university.
- Increase incomes, business profits, economic activity, and job opportunities for Texas citizens and Texas communities.
- Broaden the economic diversity of the state and expand research partnerships.
- Catalyze technology transfer for economic development.

- Increase global awareness of Texas as an outstanding environment for entrepreneurial success.
- Develop readily available tools for responding to the challenges of the changing demographics of Texas.
- Increase institutional funding, from the public and private sectors, as a result of an improvement in the financial status of the state.
- Increase research and entrepreneurial opportunities for faculty members.
- Integrate new economic development activities with the proposed new role of the university in community development (recommendation #4).
- Increase career opportunities for graduates of Texas A&M University and other System institutions.
- Add value to the receipt of a degree from Texas A&M University, and from other System institutions.

Actions

- Establish a Center for Business and Industry in the university, which is charged with:
  - Coordinating the role of the institution in economic initiatives statewide;
  - Marketing the intellectual capabilities of the university to the private sector;
  - Nurturing new spin-off and incubator companies resulting from local university/private sector collaboration, and promoting growth of the university's research park.
- Assign responsibility for the new center to a senior administrator at the vice-president level, supported by an appropriate staff.

Locus of Control

Although the decision to embark on such a program must come internally, there are many other stakeholders in this process. Externally, the institution will have to collaborate closely with the state's Department of Commerce and local Chambers of Commerce to ensure that their respective missions are complementary rather than competitive. In addition, other major academic institutions in the state and System agencies are involved in similar initiatives.

Key Idea 4

The University Access Center: Window to Texas A&M University

Goals

- Increase the availability of the intellectual resources of Texas A&M University to improve the quality of life of Texas citizens.
- Make Texas recognized globally as a source for solutions to corporate, community, state, national, and international problems.
- Develop approaches to problem-solving concerning socioeconomic issues that become models nationwide for other land-grant institutions.

- Identify strong academic opportunities for student involvement in community issues, as part of their proposed mandatory service requirement (recommendation #1).
- Expand research opportunities for faculty members interested in interdisciplinary approaches to the resolution of societal issues.

Actions

- Establish the Texas A&M University Access Center, a large "window" to the university through which most requests for assistance would flow.
- Staff the Center with a small group of individuals who are highly knowledgeable about the intellectual resources of the institution, and who will triage requests for assistance before making contact with the appropriate experts.
- Coordinate the activities of the Center closely with the administration of the proposed, mandatory service-learning program, so that outstanding student experiences can be identified.
- Define new, but rigorous, promotion, tenure, and merit-reward criteria for faculty members who are creatively and productively involved in scholarly approaches to resolving community problems.

Locus of Control

The locus of control for such an initiative would be internal, although the activities of the proposed center must be coordinated carefully with those of the System agencies, existing resource programs in the university, and state agencies.

Conclusion

The demographic changes presently sweeping through the State of Texas will gain momentum in the first two decades of the next century. The choice is clear; this state can continue to be a place of opportunity or it can decline due to serious socioeconomic problems. The flagship universities in Texas have a unique responsibility to find solutions to these difficult issues. There is no better time than now for Texas A&M University, as a vibrant, evolving land-grant institution, to assume the leadership role in addressing the challenges ahead.

Undergraduate Academic Experience Final Report

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Vision: Undergraduate Academic Experience

Texas A&M University aspires for its undergraduate academic experience to enhance its recognition as a top tier university, both in the eyes of its constituents (students, faculty, parents, employers, and citizens of the State of Texas and beyond) and by global criteria. The core of the University will be a residential, learner-centered community that attracts excellent students and provides quality learning and mentoring experiences. The University will build upon its history

and creatively adapt its potential to prepare learners for lives of discovery, innovation, leadership and citizenship.

Key Ideas

- Provide and be recognized for having the best undergraduate academic and leadership development experiences in a Research I university.

  The quality of the undergraduate experience is often evaluated under different criteria than the graduate and research components of a Research I university. Accordingly, the Undergraduate Academic Experience Theme Group based its top-tier quality criteria on constituent (students, faculty, parents, employers, citizens of the state of Texas and beyond) needs and expectations as well as on nationally recognized criteria. Additionally, it is important that the quality of the undergraduate experience will continue to build on the distinctives that make TAMU unique in its offerings to students. It is further recognized that quality competes constantly with other important values such as equity/access, efficiency and choice. These key values are in constant tension and trade-offs are made when one is emphasized over the other. Quality is paramount in our thinking, but must be balanced with appropriate consideration given to the other major values.

- Attract outstanding undergraduate students when measured by intellectual achievement as well as by potential, talent, leadership capabilities, and ethical standards. Retain students at a level consistent with top-tier institutions.

  Attracting and retaining outstanding undergraduate students presents a particular challenge to the undergraduate academic experience as we attempt to be representative of the state and simultaneously attain top-tier status based on national criteria. To meet this challenge, the university should focus on quality experiences and outputs rather than simply on quality inputs as indicators of how well we are meeting the needs of our constituents. We must consider the value added by our education. We must achieve a better understanding of our students and others as clients of the institution and the balance of the roles to be played by faculty and students in the setting of educational objectives, curriculum planning, and evaluation of the educational experience.

- Create curricula and an academic environment that prepare students for success and service in the global society of the future.

  To position our students to live and compete in a global society, Texas A&M must produce graduates who are not only academically prepared, but who have the capacity to understand other cultures and to live and work outside their own cultural framework. Texas A&M must provide opportunities for its students to have international experiences and to gain understanding of globalization issues throughout their undergraduate program.

The role that information technology will play in program quality must be understood. Information technology should not be viewed as an either/or situation in relationship to traditional modes of delivery. Rather, we should understand how it can complement, supplement, and extend time-proven instructional strategies. The residential, learner-centered nature of the campus should not be sacrificed simply to integrate technology into the curriculum or delivery systems. Distance learning, web-based courses and similar alternatives should be developed in the context of how they enrich and provide opportunities unavailable in the regular classroom environment rather than be viewed as completely alternative delivery systems.

- Expand undergraduate degree programs to encompass all subject areas generally recognized as necessary for liberally educated adults.

  Some futurists project that we know now only one percent of what we will know by the year 2020. Clearly, knowledge is increasing at an exponential rate and it has significant implications for how we prepare our undergraduate students. Additionally, one-third of the jobs that will exist in 2020 have yet to be invented. An individual may well change occupations every five to ten years during a lifetime. Accordingly, the undergraduate academic experience must provide students with a renewable knowledge base as a foundation for lifelong learning.

  We must emphasize our students' ability to learn how to learn and to seek out new opportunities for information rather than presenting them with fixed information. This will change the types of degree programs we offer and increase the need for interdisciplinary programs.

- Serve the citizens of Texas and beyond through the education and development of leaders who represent the state's diversity.

  Clearly, the changing nature of the demographics of the state of Texas is of critical concern to the undergraduate academic experience. Texas A&M must reflect the demographic distribution of our state and provide leadership development opportunities for all students. Through such an achievement Texas A&M will contribute in significant ways to building a leadership base that is representative of the state. Specific areas of concern are that the Texas population is younger and includes more minorities and more poverty than the U.S. as a whole, the state population is increasing at a rapid rate, and most minorities live in major metropolitan areas and have decreased mobility. The issue of demographics and diversity as it relates to the undergraduate experience extends not only to the undergraduate population, but also includes faculty, staff, and the community at large.

Goals and Recommended Actions

Key Idea 1

Provide and be recognized for having the best undergraduate academic and leadership development experiences in a Research I university**.**

Goal

Provide a university climate that is learner-centered; emphasizes academic rigor and high expectations of students, faculty, and staff; encourages involvement in the life of the institution beyond the classroom; fosters an environment of caring and concern; and promotes success and leadership development for all students.

Actions

- Increase opportunities for all students to develop academic and social connections that facilitate academic success and involvement in the life of the institution. Possibilities include more small classes for freshmen, on-campus housing for all freshmen who request it, living-learning communities, student groups with coordinated courses and class schedules, orientation classes, supplemental instruction, tutoring, and summer bridging programs. (I)
- Provide a more culturally and ethnically diverse academic experience by increasing student and faculty diversity. (I)
- Drastically increase the faculty/student ratio. (I& E)
- Foster close interaction between students and faculty to foster intellectual growth and provide personal/professional support. (I)
- While numbers of non-traditional learners may be relatively small, accommodate them by services that facilitate their access to education (e.g., child care, night and week-end classes, condensed practicums and short courses, and distance education). (I)
- Update and improve the student information management system so that advisors have immediate access to information and can more effectively assist students in timely degree completion and academic success. (I)
- Assess advising services offered on campus, with particular analysis of advisor/student ratios and qualifications. (I)
- Gather information about why students leave the university and use it to improve retention. (I)
- Set high quality admission standards that focus on academic preparation (i.e. required curriculum), and also include leadership and other dimensions consistent with the Undergraduate Academic Experience Vision 2020 aspiration statement. (I)
- Facilitate increased interaction between the academic and student life experiences to enhance the development of leadership skills (I).

- Establish targeted programs with separate source of funds to provide extensive and comprehensive leadership development opportunities and experiences (I&E).
- Facilitate increased interaction between the academic and student life experiences to enhance the development of communication skills and involvement in service activities.
- Provide guided, ethically-based decision-making formats for students in both academic and student life experiences.

Goal (also a Key Idea)

Expand undergraduate degree programs to encompass all subject areas generally recognized as necessary for liberally educated adults.

Actions

- Develop a phased plan for instituting degree programs in the visual and performing arts that are consistent with the needs of the state and the strengths of Texas A&M. (I&E)
- Raise funds to endow undergraduate degree programs in the visual and performing arts. (I&E)
- Build a strong letters, arts and sciences complex. (I&E)
- Establish structured interdisciplinary degree options that provide a rigorous liberal education. (I&E)
- Develop a general studies degree with a strong liberal arts core. (I&E)

Goal

Raise and provide the resources necessary to achieve a premier undergraduate academic experience, including scholarship programs and an infrastructure that provides excellence in academic and support services.

Actions

- Raise $400 million (identify correct amount) to achieve the major goals with regard to the undergraduate program. (Determine amount required by conducting benchmark studies of consensus public universities and determine state funding/gifts ratio.) (I&E)
- Raise $300 million (identify correct amount) to expand scholarship programs so that they lead other top tier institutions in dollar amounts and numbers and develop a mechanism for scholarships to keep pace with rising educational costs. (I&E)

Key Idea 2

Attract outstanding undergraduate students when measured by intellectual achievement as well as by potential, talent, leadership capabilities, and ethical standards. Retain students at a level consistent with top-tier institutions.

Goal

Recruit an academically excellent undergraduate student body with outstanding leadership potential that generally represents the state in terms of ethnicity, economic status, gender, and geographic origin, and includes diverse backgrounds.

Actions

- Provide enhanced opportunities for the recruitment and retention of students who are representative of the diversity of the state. (I)
- Enhance activities and programs that nurture potential students, such as summer bridging programs and K-12 linkages, including working with targeted high schools. (I&E)
- Expand the existing Outreach Center program in key areas of the state; start working with students earlier than junior high and involve parents. (I&E)
- Expand the number of minority faculty and staff as role models for minority students. (I)
- Expand number of out-of-state and international undergraduate students. (I&E)
- Maintain/enhance personal contact during recruiting and admissions. (I)
- Utilize students of diverse backgrounds to personally recruit prospective students (College Nights, personal visits) (I)
- Communicate an image of Texas A&M that accurately conveys the nature and scope of the institution. (I)
- Bring all recruiting and public relations materials in line with the defined image. (I)
- Use creative relationships with public and private partners to enhance recruiting effectiveness, e.g. businesses, LULAC Education Service Centers, American GI Forum, NAACP. (I&E)
- Work with public schools and community colleges to align curricula with academic expectations for student preparation. (I&E)
- Disseminate admissions standards widely so that students and parents can be better prepared. (I&E)
- Set high quality admission standards that focus on academic preparation (i.e. required curriculum), and also include leadership and other dimensions consistent with the Undergraduate Academic Experience Vision 2020 aspiration statement. (I)
- Expand scholarship programs so that they lead other top tier institutions in dollar amounts and numbers and develop a mechanism for scholarships to keep pace with rising educational costs. (I&E)
- Provide funding to allow for advancement and increased longevity for admissions recruiters so that they can cultivate long-term relationships with school counselors. (I&E)

Goal

Develop new and enhance existing retention strategies to improve the retention rate to that of top-tier institutions.

Actions

- Increase opportunities for all students to develop academic and social connections that facilitate academic success and involvement in the life of the institution. Possibilities include more small classes for freshmen, on-campus housing for all freshmen who request it, living-learning communities, student groups with coordinated courses and class schedules, orientation classes, supplemental instruction, tutoring, and summer bridging programs. (I)
- Provide a more culturally and ethnically diverse academic experience by increasing student and faculty diversity. (I)
- Update and improve the student information management system so that advisors have immediate access to information and can more effectively assist students in timely degree completion and academic success. (I)
- Assess advising services offered on campus, with particular analysis of advisor/student ratios and qualifications. (I)
- Gather information about why students leave the university and use it to improve retention. (I)

Goal

Achieve a manageable cost structure for students, including a balance with scholarship and financial aid packages.

Actions

- Balance cost of education and financial aid consistent with meeting diversity needs of state. (I&E)
- Set a cap for annual increases in tuition and fees, such as five percent, to enable parents and students to plan for their educational costs. (I)
- Coordinate the services offered by Student Financial Aid and academic advising offices to allow for proactive advising on management of academic and financial demands for students with large financial need. (I)
- Continue to engage in statewide dialogue for all students who have financial need and at least a 2.5 GPR to receive state assistance. (I&E)
- Compare cost of TAMU education relative to other selected universities. (I)
- Expand scholarship programs so that they lead other top tier institutions in dollar amounts and numbers and develop a mechanism for scholarships to keep pace with rising educational costs. (I)
- Expand institutional funds to provide financial aid to students beyond scholarships. (I&E)
- Develop strategies to reduce student educational debt. (I&E)

Key Idea 3

Create curricula and an academic environment that prepare students for success and service in the global society of the future.

Goal

Produce graduates who understand the processes of learning, have broad-based interdisciplinary experience, are well grounded in their respective disciplines, possess the habit of lifelong learning, can create new knowledge, have an international perspective, and are competent in oral and written communication, analytical problem solving, and teamwork.

Actions

- Increase opportunities and incentives for interdisciplinary experiences. (I&E)
- Create environments that foster communication and team-based analysis and problem solving, particularly at interdisciplinary borders (e.g., interdisciplinary core courses with a collaborative learning paradigm, study abroad in multidisciplinary student teams, capstone courses). (I&E)
- Develop writing-across-the-curriculum experiences to enhance communication skills and interdisciplinary understanding (I)
- Develop courses in the Core Curriculum that are taught with a multidisciplinary approach and specifically address the need for students to understand global political, scientific, socioeconomic, cultural and environmental issues. (I)
- Increase opportunities for international experiences and work-based programs. (I&E)
- Create environments that unveil and nurture creativity and inventiveness, such as hybrid degree programs and expanded research opportunities for undergraduates in laboratories or other settings. (I&E)
- Develop learning experiences in each curriculum that teach students to critically evaluate information (distinguish factual from non-factual) (I)
- Establish progressive, multi-year course sequences that enhance intellectual development by providing built-in opportunities for practice and reinforcement in the maturing student. (I)
- Significantly increase student opportunities to engage in cooperative learning experiences.
- Explore thematic approaches to interdisciplinary core curriculum experiences.

Goal

Develop a systematic approach and infrastructure that facilitate opportunities for all students to have enrichment experiences including expanded honors courses, study abroad experiences, interdisciplinary curricula, supplemental instruction, internships, cooperative education, and research opportunities.

Actions

- Devise an organizational structure that provides a systematic approach to an honors program and makes honors courses less dependent on individual department resources. (I)
- Establish an honors house that brings together faculty and students to stimulate intellectual exchange and informal communications. (I)
- Fund Supplemental Instruction by the university rather than by individual departments. (I)
- Provide incentives and mechanisms for increased faculty participation in Study Abroad programs. (I)
- Develop and implement delivery paradigms that supplement/enrich the residential academic experience. These may include providing easy access to "knowledge units" that have been developed in-house, purchased, or developed collaboratively with other institutions or private enterprise. (I&E)
- Provide alternative learning environments, including expanded uses of internships, practica, supervised individual research, on-the-job education, mini-courses, weekend blocks, and on-site courses in public and private settings. (I&E)
- Integrate research opportunities with undergraduate academics by adopting such strategies as “problem-based learning” in course work and offering undergraduate research opportunities as early as the sophomore year. (I)
- Encourage the collaboration of departments in creating interdisciplinary curricula to make the best use of enrichment programs. (I)
- Develop ways to identify and groom those students who appear qualified for national scholarship recognition. (I)

Goal

Develop strategic alliances with business, industry, education, government and other organizations to support and enhance the undergraduate academic experience.

Actions

- Raise funds to significantly increase and support a world-class internship program. (I&E)
- Foster relationships with public and private sector employers as resources to enhance advising students regarding the selection of career options. (I&E)
- Develop curriculum advisory groups that can assist faculty in program development and in reducing the time it takes to integrate new knowledge fields needs into the curriculum. (I&E)
- Increase the number of internship and cooperative education opportunities. (I&E)
- Coordinate upper division course projects with real world needs of strategic partners.
- Increase the use of strategic partners as adjunct faculty. (I&E)

- Explore corporate partnerships to develop use of high technology to allow personalized service to students

Key Idea 4

Expand undergraduate degree programs to encompass all subject areas generally recognized as necessary for liberally educated adults.

Actions

- Develop a phased plan for instituting degree programs in the visual and performing arts that are consistent with the needs of the state and the strengths of Texas A&M. (I&E)
- Raise funds to endow undergraduate degree programs in the visual and performing arts. (I&E)
- Build a strong letters, arts and sciences complex. (I&E)
- Establish structured interdisciplinary degree options that provide a rigorous liberal education. (I&E)
- Develop a general studies degree with a strong liberal arts core. (I&E)

Key Idea 5

Serve the citizens of Texas and beyond through the education and development of leaders who represent the state's diversity.

Goal

Produce diverse graduates who have the knowledge, skills, ethics, and commitment to become leaders in their fields and communities.

Actions

- Facilitate increased interaction between the academic and student life experiences to enhance the development of leadership skills (I).
- Establish targeted programs with separate source of funds to provide extensive and comprehensive leadership development opportunities and experiences (I&E).
- Facilitate increased interaction between the academic and student life experiences to enhance the development of communication skills and involvement in service activities.
- Provide guided, ethically-based decision-making formats for students in both academic and student life experiences.
- Provide enhanced opportunities for the recruitment and retention of students who are representative of the diversity of the state. (I)
- Enhance activities and programs that nurture potential students, such as summer bridging programs and K-12 linkages, including working with targeted high schools. (I&E)

- Expand the existing Outreach Center program in key areas of the state; start working with students earlier than junior high and involve parents. (I&E)
- Provide a more culturally and ethnically diverse academic experience by increasing student and faculty diversity. (I)
- Expand number of out-of-state and international undergraduate students. (I&E)
- Maintain/enhance personal contact during recruiting and admissions. (I)
- Utilize students of diverse backgrounds to personally recruit prospective students (College Nights, personal visits)
- Bring all recruiting and public relations materials in line with the defined image. (I)
- Use creative relationships with public and private partners to enhance recruiting effectiveness, e.g. businesses, LULAC Education Service Centers, American GI Forum, NAACP. (I&E)
- Work with public schools and community colleges to align curricula with academic expectations for student preparation. (I&E)
- Disseminate admissions standards widely so that students and parents can be better prepared. (I&E)
- Balance cost of education and financial aid consistent with meeting diversity needs of state. (I&E)

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Diversity and Texas A&M University

The future of Texas is tied to the future of its minority population. How well they do is how well the State will do.

In a matter of years, Texas will have an aging white population dependent on younger minority populations for health care, social services, and tax base.

Dr. Steve Murdock
Director, Texas State Data Center

The United States and especially Texas are fast becoming multicultural, multiracial, and multilingual. Earlier demographic projections estimated that the minority population in the United States will be about 71 million or some 30 percent of the total population by the beginning of the new millennium (see Loden & Rosener, 1991; Deskins, 1994). This figure is projected to increase to 115 million by the year 2020 and by the year 2056, the average United States resident will trace his or her descent from nonwhite origins (see *Time*, 1990). More recent literature reports that by the year 2030 the Hispanic percentage of the U.S. population will nearly double from 10.7 percent in 1996 to 18.9 percent., and the African American population will increase from 12 percent in 1996 to 13.1 percent.

In Texas, the rapid population growth in recent years "has been disproportionately due to minority populations" (Murdock et al., 1998). In 1990, 37.2 percent of the state's population was minority (Hispanic and African American). From 1990-1996, the Hispanic and African American populations in the state increased by an estimated 21.9 percent and 13.3 percent, respectively. For the 1996 Texas total population estimate, about 48 percent of the Hispanic and African American population is 25 years or younger (Murdock et al., 1998). By the year 2030, Texas' population is estimated to be 45.9 percent Hispanic and 9.5 percent African American (Murdock et al., 1998). In that same year, the public elementary and secondary total student school population is projected to be roughly 70 percent minority, while the public college total student population is projected to be 57 percent minority.

The purpose of this paper is twofold: (1) to provide a preliminary discussion of the future of Texas A&M University in educating students who will graduate and work and live in a diverse society (racially and ethnically) and compete in a global environment; and (2) to offer recommendations to assist the University in meeting its faculty and student diversity goals and objectives. Because the public enrollment in both public schools and colleges in Texas will be largely minority in the year 2030, educational policies and legal rulings related to education will

be particularly salient to these minority groups. The demographic projections discussed above raise several important questions about the future of Texas A&M University in providing education in a state where the public high school minority student population is growing very rapidly and the extent to which Texas A&M University is preparing students to meet the diversity challenges they will encounter in society and in the work environment. These questions are:

- How will Texas A&M University respond both internally and externally to the rapidly changing demographics of the state?

- What changes will be necessary in the infrastructure of Texas A&M University (administrators, faculty, professional staff, support services) to support a more diverse student body?

- What new academic programs/curricula will need to be put in place that will provide students with opportunities for coursework and study and facilitate the study and research of diversity issues in the State of Texas, nationally, and internationally?

- Can Texas A&M University produce graduates who possess multicultural experiences and multicultural competency necessary to work in the Texas and global workplaces?

What Is Diversity And Why Is It Important?

Achieving diversity on a major university campus does not require quotas, nor does it warrant the admission of unqualified applicants. Diversity is a means to an end. Diversity in student body, faculty, and professional staff is most important because it helps a major university fulfill its mission: provide a quality education. An internationally recognized university, such as Texas A&M University, which attracts students from all over the world and provides educational experiences at international locations, should have as an important part of its educational mission a mandate to expose its students to diverse races and cultures. This exposure is critical to the student's educational experience. The university in essence is a microcosm of what the larger society and working world is into which a student will enter upon graduation (Alger, 1997).

The literature is quite voluminous on the role, impact, and importance of diversity in an institution of higher education. For example, *Diversity Digest* (1997) notes :

- Racial diversity has a direct positive impact on the individual white student.

- Socializing with someone of a different racial group or discussing a racial issue contributes to the student's academic development, satisfaction with college, level of cultural awareness, and commitment to promoting racial understanding.
- Most educators view a diverse student body as an important educational resource that enhances the environment of learning.

Alexander Astin (1997) writes:

- [E]mphasizing diversity either as a matter of institutional policy or in faculty research and training, as well as providing research and training, as well as providing students with curricular and extra-curricular opportunities to confront racial and multi cultural issues, are all associated with widespread beneficial effects on student's cognitive and affective development.

The Association of American Colleges and Universities (1997) points out:

- Campus diversity initiatives have positive effects on both minority and majority students. They improve students' relationships on campus and affect positively their satisfaction and involvement with their institutions and their academic growth.

- Beyond their proven capacity to improve access and retention of underrepresented groups of students, comprehensive diversity initiatives also promote satisfaction, academic success, and cognitive development for all students.

- Despite these efforts, the research clearly documents that many students–including many minority students, white women, gay and lesbian students, and disabled students–still find the campus climate unresponsive to their needs, past experiences, and educational expectations. Students often feel marginalized in existing institutional cultures.

- Involvement in specialized student groups–such as ethnic residential theme houses, support centers, and academic departments–benefit both minority and majority students. These activities appear to contribute to increased satisfaction and retention of those students involved in such programs.

- Many students seem to anticipate and desire greater levels of intergroup contact than they actually experience on campus. In fact, opportunities for interaction between and among student groups are desired by virtually all students. When they do occur, such interactions produce clear increases in understanding, decreases in prejudicial attitudes, and positively affect academic success. These interactions are likely to be more beneficial when they are institutionally supported, when the participants are equally valued, and when they involve projects with common goals and outcomes.

- Research shows that when students perceive that there is a broad campus commitment to diversity, there is increased recruitment and retention of students from underrepresented groups and an increased in all students' satisfaction and commitments to improving racial understanding.
- Diversity in the curriculum has a positive impact on attitudes toward racial issues, on opportunities to interact in deeper ways with those who are different, and on overall satisfaction with the college or university. These benefits are particularly powerful for white students who have had less opportunity for such engagement.

Mitchell J. Chang (1996) reports findings that indicate the institutional climate of a college/university with a diverse student body was supported by several other attributes: a strong commitment to multiculturalism, a greater faculty emphasis on racial and gender issues in research and classroom courses, a more frequent student involvement in cultural awareness workshops and ethnic studies courses. Chang also notes that these environmental characteristics also have positive impacts on student retention, overall college satisfaction, college GPA, intellectual self-confidence, and social self-confidence.

William G. Bowen and Derek Bok in *The Shape of the River: Long-Term Consequences of Considering Race in College* (1998), perhaps the most recent definitive work supporting the use of race in the college admissions process, point out that diversity in a student body contributes a "great deal" to the development of professional skills. They note two important professional interpersonal skills which are developed and sharpened by diversity (p. 227).

- [The] ability to work effectively and get along well with people of different races/cultures.

- [The] ability to have a good rapport with people holding different beliefs.

Bowen and Bok go on to say (p. 279):

> Both the growing diversity of American society and the increasing interaction with other cultures worldwide make it evident that going to school only with "the likes of oneself" will be increasingly anachronistic. The advantages of being able to understand how others think and function, to cope across racial divides, and to lead groups composed of diverse individuals are certain to increase.

Further, a recent survey of 350 academic and corporate administrators, including individuals at the CEO and provost levels, reveals the following findings concerning the skills employers were seeking from college/university graduates (The Association of American Colleges and Universities, 1997b):

- The most sought after skills were: domain knowledge at entry level, communication skills, ability to learn, adaptability and flexibility, leadership, character, work ethic, work experience, and *multicultural experience–the critical new requirement.* (emphasis added)

- Multicultural experience included having an openness to other cultures' values, and the ability to perform effectively in varied contexts. The working definition for multi cultural competence was described as *"an internationalized understanding plus the attitudes, skills, and domain knowledge needed to apply it effectively in a specific context."* (emphasis added)

The Status of Faculty Diversity at Texas A&M University

Faculty diversity has been a concern of the central administration at Texas A&M University for a number of years. By the early 1990s the university had taken additional steps and prepared formal reports that articulated numeric goals and strategies for improving minority faculty recruitment. On September 21, 1992, a President's workshop on Minority Faculty Recruitment and Retention was conducted at Texas A&M University. In Section III of the workshop the following observation is made:

- A diverse faculty allows a university to respond to the many needs of its constituencies. Diversity in academic specialities, gender, ethnicity and experience provides advantages to the university as it contributes to solutions of societal problems, develops applications of basic science and technology, adapts to changing student demography and provides opportunities for personal and professional growth of the faculty and students.

In April, 1993, Texas A&M University prepared *Current and Proposed Strategies to Enhance Diversity*. This work states:

> The diversity of the faculty sends important messages to the students about the University's values, priorities and expectations. A diverse faculty reflects our belief that all individuals make valuable contributions to the academic discourse; that the highest level of academic achievement is open to them; that we are dedicated to franchising all students in the teaching and learning enterprise.

In 1993 Texas A&M University employed 34 African Americans and 95 Hispanics in faculty positions. By 1997 there were 37 African American and 86 Hispanic Professors. Table 1 below provides the total number of African American and Hispanic faculty at Texas A&M University and the University of Texas at Austin for the years 1993-1997. Data on the University of Texas are included to provide a comparison and to make the data on minority faculty at Texas A&M University more meaningful. Overall, a cursory view of Table 1 seems to show that numerically the University of Texas does a slightly better job of hiring African American faculty, while the number of Hispanic faculty at both universities appear to be roughly even in 1993 and 1994. From 1995-1997 the University of Texas experienced significant increases in Hispanic faculty when compared to Texas A&M University over the same period of time. From 1995-1997, both universities minority faculty numbers ranged from 5 to about 7 percent. Yet, both universities have small numbers of African American and Hispanic faculty, relative to the total number of faculty at each university. Given the demographic projections for Texas in the year 2030, it seems obvious that both universities will have to drastically alter their minority recruitment strategies to improve in their number of minority faculty.

TABLE 1: African American and Hispanic Faculty at Texas A&M University and the University of Texas (Austin), 1993-1997

	1993	1994	1995	1996	1997
Texas A&M University*					
African American**	34 (1.4%)	39 (1.6%)	47 (2.0%)	35(1.5%)	37(2.0%)
Hispanic**	95 (3.9%)	91 (3.8%)	90 (3.7%)	90(3.7%)	86(3.7%)
Totals	129 (5.3%)	130 (5.4%)	137 (5.7%)	125(5.2%)	123(5.7%)
Total Faculty	2,448	2,408	2,410	2402	2327
University of Texas (Austin) ***					
African American**	55 (2.3%)	56 (2.4%)	59 (2.5%)	63 (2.6%)	76 (3.0%)
Hispanic**	94 (4.0%)	96(4.1%)	102 (4.3%)	113 (4.7%)	115 (4.6%)
Totals	149 (6.3%)	152 (6.5%)	161 (6.8%)	176 (7.3%)	191 (7.6%)
Total Faculty	2342	2367	2398	2431	2517

* includes library faculty and faculty whose primary duties are administrative (deans, directors, administrative officials). Does not include non US citizens African American/Hispanics.
** percentages are rounded.
*** excludes faculty members whose primary duties are administrative.

Sources: Texas A&M University (1996), Texas A&M University Dean of Faculties Office, University of Texas Web Page (http://iron.utsystem.edu/MIS/FEB1998/HumanResources.html)

Recommendations

As this paper has discussed, diversity must be a critical element in the educational mission of Texas A&M University. The university recruitment area from which it draws it students is becoming increasingly minority and after the first few decades of the new millennium the

number of minority students in this recruitment area are expected to be a majority of the potential students. Texas A&M University must begin now to prepare itself for this new wave of students. Below are some recommendations for Texas A&M University in its "Vision 2020."

Minority Student Recruitment

- Establish agreements with local community colleges to improve the transfer rates of minority students to Texas A&M University.
- Admissions criteria need to emphasize the "whole" student, not just grades and test scores.
- Establish Texas A&M University "university relations" centers at selected high schools and community colleges with large percentages of minority students.
- Utilize both minority faculty and students in recruitment and outreach activities of the university.
- Simplify the financial aid application process to improve accessibility for all students.
- Sponsor high school (with large minority enrollments) visits to university activities (football and basketball, conferences, seminars, etc.).

Minority Faculty/Professional Staff Recruitment

- The central administration should designate a unit, such as the Race and Ethnic Studies Institute, to assist the University in coordinating faculty recruitment and retention activities.
- The central administration should support and encourage cross-disciplinary team teaching in which minority faculty "pair-up" to teach a course as a way to facilitate collaborative teaching and research, reduce isolation and let more students experience and interact with minority faculty.
- The central administration should formally recognize and award research /scholarship on race and ethnicity to enhance its visibility as a mainstream area.
- The central administration should support and encourage selectively growing your own minority faculty. If a minority graduate student is already in your doctoral training pipeline, why can't your department hire him/her? Or, if a department is preparing a minority doctoral student for hire at another university, why can't the department hire the individual? Or stated another way, if Texas A&M University has minority students in its doctoral programs why should they be hired by other universities when there are no minority faculty in those very same departments at Texas A&M University?

- During the interview stage of the recruitment process potential minority faculty/professional staff should meet and talk with existing minority faculty and professional staff. Potential minority faculty should be familiarized with the activities and programs of the Race and Ethnic Studies Institute.

- The central administration needs to provide a financial commitment to new and existing minority faculty to attend conferences and network with peers in their fields.

- The central administration needs to support financially a Race and Ethnic Studies Institute Post-Doctoral Fellowship Program in which selected ABDs or faculty would teach one year in their department of expertise with the Race and Ethnic Studies Institute Fellow designation.

- The central administration needs to coordinate and tie in minority faculty interests with university international programs and activities in Africa, Europe, Latin and South America, and the Caribbean.

- The central administration, under the auspices of the Race and Ethnic Studies Institute, needs to on a regular basis conduct a satisfaction survey of working conditions of minority faculty.

- The central administration needs to support financially a national conference which utilizes the minority faculty on a biannual basis and in cooperation with the Race and Ethnic Studies Institute that explores critical policy issues affecting Hispanics and African Americans.

- The central administration needs to strongly encourage and support an association with and a formal linkage of minority faculty, particularly African American faculty, with the major sports programs at the university. Since major sports programs bring the most visibility to the university both nationally and statewide, it is important that minority faculty (along with minority student athletes) are seen as an active participants in the major sports programs.

Mitchell F. Rice, Professor of Political Science and
Director, Race and Ethnic Studies Institute
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Woodrow Jones, Jr., Dean, College of Liberal Arts

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Information Technology White Paper

Information Technologies (IT) are increasingly important to all parts of the University. The aspirations of Vision 2020 cannot be realized without a high-quality information technology infrastructure. Not too many years ago computing and computer networking were of importance primarily to the sciences, engineering, and the business operations, but today all segments of the university depend on desktop computing, the computer network infrastructure, and strategic administrative systems.

A great university requires an advanced information technology infrastructure, and many of the members of the consensus top ten lists are making substantial investments in IT. For example, the Universities of Michigan, Wisconsin, and Minnesota are all in the process of replacing their major strategic administrative systems.

Benchmarks

Unlike many of the quantitative comparisons between universities that have been assembled for Vision 2020, the IT infrastructure of universities has no rankings counterpart. Charles Warlick, the former director of academic computing at UT-Austin, used to publish an annual survey of computing, but there was never an attempt to rank order the results.

In FY 97, it was estimated that Texas A&M University spent a total of approximately $39 million on computing and information technology, with an additional $10 million spent on the telephone system. This data does not count the money spent on research computing through TEES, TAES, TTI, and the Research Foundation, so it clearly under-represents our spending by several millions of dollars.

In a recent publication, UT-Austin indicated they spend approximately $70 million/year on information technology or 40% more than we estimate. Of this $70 million, only $2 million in telecommunications expenditures are included. To put this in perspective, their total student population is approximately 17% larger than Texas A&M and they have approximately 4,300 more graduate students, who are heavier computer users. Another significant factor in comparing IT budgets is that the total number of full-time staff in the academic and administrative computing areas at UT-Austin is more than twice the size of Texas A&M (450 versus 200).

The last two years Yahoo Internet Life (joined this year by Peterson's, the publisher of college guidebooks) has published "America's 100 Most Wired Colleges." In the 1998 survey, Texas A&M University ranked 38th; up from 71st in 1997. Criteria have changed between the two

years of the survey, but major elements considered were general items (including whether the campus has a computer network, web access for students, E-mail accounts for students, and campus computer labs), academic considerations (online registration, network training for students and faculty, percent of classes with online materials, and the availability of courses that are 100% web-based), social elements (student home pages, online student newspaper, local news groups, online gaming via the network, and campus cyber cafe), and computer statistics (number of public computers, age of public computers, waiting time for computers in public labs, and percentage of students that own computers). The ranking of other schools on the consensus top ten list and others that are being considered in Vision 20/20 are as follows: Univ. of Illinois (5), UCLA (23), and UC-Berkeley (42). The fact that many of the schools in our comparison list that have good computer access, like UT-Austin for example, are not included in the top 100 is troublesome, and underscores the need for reliable metrics in the area of information technology.

Texas A&M collects approximately $6 million/year in computer access fees from students that is used solely for improving the student computing environment and access. This fee pays, in part, for access to email, student web pages, modem access to the campus for off-campus students, Internet backbone access, Ethernet access in the dorms, purchase and support of 1200 computers in seven public labs, and the construction and operation of the new Student Computing Center that opened in August 1998 with 540 new computers and including three computer classrooms. Our fee of $6/SCH is the same as UT-Austin and is a little higher than the fees charged by other public universities, which average $140/year as reported in the 1997 Campus Computing Report. Approximately 57 percent of all public universities charge such a fee, up from 44% in 1996.

Unlike 70 percent of the 605 two and four year colleges and universities that responded to the 1997 Campus Computing Report, and who continue to fund most of their computer equipment, network, and software expenses with onetime budget allocations or special appropriations, Texas A&M University has a $2.25 million annual capital equipment budget for computing. This capital equipment fund has been essential to upgrade mainframe, large servers, and high performance computing hardware. In addition, a significant portion in recent years has gone to campus network backbone upgrades.

Key Ideas

An advanced computer networking infrastructure will be even more important in 2020 than it is today.

Advanced multimedia applications will be commonplace in 2020. We will take for granted the ability to video conference and share documents with our students in their dorm rooms, with our distance education graduate students across Texas or around the world, and with our colleagues where ever they might be located. We will be able to view many of the journals and other documents in the library in full text at our desktops on campus or at home. Many believe that voice telephone service will be network-based by this time as well. We will require network infrastructure in place that has sufficient bandwidth and reliability both on campus, and to faculty and student off campus residences, to support these multimedia applications. We will have to be

connected to the future high-speed Next Generation Internet (NGI) with sufficient bandwidth as well. Whereas today we wire our computer classrooms for both AC power and Ethernet, wireless technologies and battery life will likely be sufficient by 2020 that we will need to support wireless networking in all of our classrooms and across campus.

We need to be spending an additional $1 million/year in support of the campus network infrastructure and Internet backbone connection charges.

We may need a different funding mechanism to support networking in the future. Although we charge a modest installation fee for network connections, we do not charge a monthly fee per network connection. Rather, current operations are supported by a combination of a voluntary assessment by the colleges, student computer access fees, and other CIS funds. We may want to consider a monthly network connection charge similar to a telephone bill.

Currently, we fund networking through a number of mechanisms: modest installation charges for network connections, $60 for 10 Base-T, $205 for new 100 Base-T switched, and $145 for an upgrade from existing 10 Base-T to 100 Base-T switched; $600,000/year for campus backbone upgrades from our capital funds; $250,00/year from Colleges; $46,000/year student Computer Access Fees (CAF) and $80,000/year from System schools for Internet backbone connection charges; $1,000,000/year from CAF for student off-campus modem access, Network Access Point (NAP) support, and dormitory access; and $75,000 from CAF for networking. Not including the installation charges (we loose money on the $60 fee and approximately break even on the $205 fee), this totals approximately $2,000,000/year. Although many of us feel that we should be upgrading all desktop connections on campus to 100 Base-T switched today, there is not sufficient money to do this in the existing budget. This upgrade will only happen if the users pay the $145/connection upgrade fee.

There has been an explosive growth in network use in recent years. In September 1994 at the dawn of the WWW age, there were approximately 5,000 network connections. The campus network has about 25,000 devices connected as of September 1998. There will probably be another big increase in connections as embedded devices (e.g., thermostats, vending machines, security systems, door access locks) start to be equipped with network interfaces in the next few years.

In 1995, UT-Austin and Texas A&M first shared a direct connection to the Internet backbone at 45 Mbps. As of October 1998, there are three of these 45 Mbps links shared by UT-Austin, Texas A&M, and the Texas General Services Commission. Each costs $250,000 a year to maintain, with costs likely to rise. As of November 1, 1998, the new 45 Mbps link carrying Texas A&M University traffic is 95% full after only a month in operation. There is not money in the current budget to support additional links at this cost. Whatever funding mechanism we select, it is must allow us to fund additional Internet backbone bandwidth.

Students, faculty, and staff are using the Internet as an integral part of their work. More class material and information is being made available on the network. In addition, network users are

moving larger files and beginning to use audio and video applications. The campus backbone is continually evolving in speed to meet these demands. Texas A&M currently spends $600,000/year from the capital equipment budget in upgrading the campus backbone. The University is a participant in NSF's vBNS high-speed networking project that links 71 research universities in September 1998, with awards to 92 and a target goal of approximately 100. The University is a member of the Internet2 consortium, which hopes to bring high bandwidth applications like video conferencing to the desktop, and we have indicated our intent to participate in their Abilene project.

These high-speed networking projects are expensive, and our connection fees to date have come from $350,000 in NSF funding with significant matching funds from the University. We will have to fund high-speed access in the long term from our own funds, however. Even though the cost of bandwidth is decreasing, we are consuming it at a much faster rate than the prices are dropping. It is critical to all library, distance learning, and IT efforts to have sufficient bandwidth both to the desktop and to the Internet backbone.

The four major public research universities in the state (Texas A&M, UT-Austin, Texas Tech, and UH) have been working together with the Texas General Services Commission to foster the development of a high-speed state backbone network. This backbone is in the planning stages through spring 1999 with initial start up costs estimated at $25 million. We can envision the day when this backbone or its successor provides low cost, high-speed connections that support multimedia applications including video conferencing, distance learning, and telemedicine.

In the future, it will be even more important than it is today to support students, faculty, and staff at their residences off campus. CIS supports high performance modems for dial up access today. The commercial cable TV system in Bryan/College Station also supports cable modems today that operate at high-speed, and the local phone company will be offering high-speed ADSL service in the future. The University is one of the founders of the new Bryan-College Station Network Access Point (NAP) that allows traffic from local Internet Service Providers to be routed directly to campus without having to go to the Internet backbone and then back to campus. We need to continue to foster high-speed access in the community.

Texas A&M University must have administrative systems that deliver interactive information services directly to our students, faculty, and staff.

Strategic administrative systems must be replaced over the next several years. At the institutional or system level, $40 to $70 million must be identified for these upgrades or replacements.

Many of the University's strategic administrative systems (student information and management, human resources, and accounting) are 10 years old or older. While Texas A&M has modified or is modifying these systems to be year 2000 compliant, they are starting to show their age. For example, students desire a web-based registration system that allows them to look for alternative

sections of a class that fit their schedule while at the same time finding out information about the course instructor. They also want to view and print out their bill and learn the status of their financial aid application, and they want to be able to pay their bills on-line with a credit card. Distance education requirements make such a system crucial. Because of the annual need to translate financial aid software from one programming language to another every year. Texas A&M is a month or two slower than its competition in awarding financial aid each year.

Students and employees are coming to expect integrated information services. If a person supplies a new home phone number or address to one office, they will expect all administrative offices to automatically and immediately have that information. Similarly, in the networked world, people will expect consistent privacy controls throughout all offices; if a person chooses to keep their e-mail address private, all systems should honor a single privacy request. The main idea is that data should be entered only once. People are also beginning to expect "one-stop" services—they are becoming less tolerant of the need to walk around from one office and building to another to receive services just because the offices have different computer systems.

Administrative information systems need to increasingly permit on-line routing and approvals of administrative actions—often called forms routing. The "documents" of the future will be much more complex than simply forms. To accommodate electronic research administration, researchers will submit complex documents with graphics, audio, and even video content to be stored and accessed by those evaluating their proposals; funding agencies such as NIH and NSF are already accepting some research proposals electronically. External source documents of many types should be scanned or read into the administrative systems only once and thereafter made available to all that need to use them. Since electronic data systems allow people to create and process many more documents than can be manually reviewed, the administrative systems will also need to automatically apply records retention policy and facilitate open records retrieval requests.

As another example, the existing budget and payroll system, while doing a good job of issuing paychecks on time, does not support many of the features that good human resource systems offer today. Modern systems allow employees to review and update their benefits selections on-line, report changes in information about their dependents, and update their address and phone number. In the future, identification of employees and students will probably rely on "smart cards" and later on biometrics (such as fingerprint or retinal scanners). Transactions will be encrypted and authenticated using on-line directory services and public key infrastructure. All of these technologies are available today; they will become widespread as costs decrease.

The cost of replacing the main administrative systems has been estimated to be between $40 and $70 million spread out over several years of implementation. The need for Electronic Research Administration, including electronic proposal submission and approval has also been identified as a necessity.

Distance Education will be a major component of Texas A&M by 2020.

Based on Ted Marchese's May 1998 Article in the AAHE BULLETIN, "Not So Distance Competitors: How New Providers Are Remaking the Post-Secondary Marketplace," and similar studies, Texas A&M has little choice but to provide some of its master's programs in distance formats. New education providers are/will offer post-secondary education in a variety of formats compatible with the needs of adult learners. Because of its geographical placement, College Station is not easily accessible. Many people will choose options available from new providers because they are geared to the needs of people who cannot easily move to College Station to provide graduate study. Texas A&M cannot assume that "The Aggie Spirit" will continue to lure either the quantity or quality of graduate students into graduate programs. Adult learners will continue to have an increasing number of options by which they can access the educational storehouses they need to remain employed in a marketplace where knowledge is continually antiquated.

Another large group of learners need and want workforce development. This need opens up a new world of opportunity for Texas A&M to offer highly specialized, state-of-the-art information in a wide range of science, information, and engineering areas. This information, delivered via the Wold Wide Web and/or two-way compressed video, should be made available via credit card payment, where completion of the program would allow electronic notification to the Continuing Education office of the appropriate college.

Because electronically delivered continuing education, as well as for-credit courses, require information resources delivered via electronic library resources, Texas A&M must be able to provide information access to both credit and not-for-credit learners. However, the university's commitment to providing continuing education to business and industry could become a source of dollars to fund the development of these courses and information resources.

We cannot assume that funding for all initiatives will be provided by the State. Creating our own funding sources to support course development and information resource development could be partly supported by dollars received for continuing education. Becoming a provider, via distance learning, to a number of major corporations could allow Texas A&M to ask for funds from these corporations to build electronic libraries. Continuing education is also attractive in that the Coordinating Board does not regulate it. Texas A&M can charge what the market will bear, and high-quality information justifies high fees and tuition.

With the growth of continuing education, information fees, access fees, and connections fees could become a part of the cost of the courses, thus contributing to the fee pool generated by existing library fees paid by resident students. In short, continuing education can help defray some of the costs of upgrading information technology.

A strong digital library is key to having the knowledge base to serve those students unable to take courses on campus. A strong delivery system is of utmost importance to those resources that are

to be delivered in a cost effective and efficient way to the distant learners. We must strengthen the delivery system in four major ways.

Increased bandwidth for Internet types of delivery. Strong support must be provided to the development of Internet2 and its successors. Bandwidth will become available, and new technologies will be developed to distribute both text and video material.

Strengthen face to face videoconferencing, expanding this to more and more locations, where students can come for quality face to face meetings with their instructors. Even with the advent of asynchronous courses residing on the WWW, premier institutions like TAMU must insure students will have adequate time with instructors on a face to face basis, utilizing reliable equipment that delivers full motion capability when required.

Provide servers and support staff for Internet-based courses. In order to provide complete asynchronous courses and to support on-line materials for our on campus students, we need to have a funding mechanism that allows us to support large servers and to provide support staff to assist faculty in putting their course materials on-line. As an alternative to increasing our server infrastructure and support staff, we could outsource these functions.

FCC Required Transition to Digital Television. The age of broadcast television will be revolutionized during the next 20 years. We are at only the beginning now. Approximately $3 million will be required to convert the existing EBS (KAMU) analog system to digital as required by the FCC. In order to be on the air with digital TV by 2006, we will need to start expending funds by 20002 to meet this deadline. The new technology will enable efficient last mile connectivity to multiple users on new television sets that will function more like computers. Students will receive class schedules, their class syllabus, video clips about particular concepts, and live homework sessions via this technology, which will be delivered over the air and via cable television. As a top institution, TAMU will lead the way in developing materials for this new "File Server of the Air".

Personnel Retention in Information Technologies.

The demand for skilled workers in the computing and telecommunications industries far outstrips supply, and it appears that there will be a shortage of personnel in these fields for the foreseeable future. Not surprisingly, the shortages have created severe problems in the not-for-profit sector, where compensation packages are typically far inferior to those of the corporate world.

Texas A&M has not been immune to the problem of staff retention. Over the nine years prior to FY96, the annual personnel turnover rate in CIS was between 5% - 10%. In FY96, however, CIS lost 15% of its professional staff, primarily due to the combined effects of poor compensation and an active external marketplace. In FY97 and FY98, the loss rate was approximately 12 percent. While this number may not be significantly larger than industry, it is unlikely that CIS can sustain this kind of personnel turnover and still provide quality IT support to the campus.

Careful thought must be given to developing compensation packages sufficient to attract and retain qualified employees in computing and telecommunications.

To avoid loss to other portions of campus that could jeopardize our strategic computing systems, CIS should increase its compensation in relation to the rest of campus.

Provide High Performance Computing to the University Community.

Since the late 1980's, Texas A&M University's Supercomputer Facility (Supercomputer Center, until 1993) has been dedicated to providing supercomputing resources in support of research and instructional programs. The Facility has grown from an initial Cray Y-MP2 supercomputer in 1989 to its current configuration consisting of SGI Origin 2000, SGI Power Challenge XL, and Cray J90 supercomputers, as well as a 2.6 terabyte EMASS mass storage system. The Facility currently provides over 200,000 CPU hours per year and helps support nearly $20 million in extramural research.

The Supercomputer Facility is dedicated to providing the hardware, software, support, and related services (such as high-speed networks and mass storage) needed by Texas A&M faculty and students for their research and education needs. In order to continue to provide these services, we are recommending that the following three items be implemented by the University.

Renew the commitment to supercomputing by a capital investment of $2 million every five years to reposition the Facility near the leading edge of supercomputing. This will provide the needed computational environment for Texas A&M research and instructional programs.

Fund the Facility's operational budget directly at the Provost's level, rather than by annual 'voluntary' contributions from each of the colleges. In addition, increase this budget by $100,000/year to maintain current hardware, software, and staff.

Appoint a new faculty director for the Supercomputer Facility to promote the development of computational science at Texas A&M and to provide leadership and vision to keep the hardware, software, and staff at the leading edge of technology.

Centrally fund desktop computer upgrades on a continuing basis.

Texas A&M University was one of the first universities to recognize the need and fund a faculty workstation program that replaces approximately 500 desktop machines each year (funded at $1 million/year). In order to have faculty utilize information technology in the classroom, be able to access the library electronically, and put materials on the Web for their students, they must first have a modern desktop machine. This program has been well received by the faculty as it applies to everyone equally. It has made a significant difference is many disciplines where substantial research funding is not available to fund technology.

In the current environment, we need to increase funding to this program by an additional $800,000/year so that we could replace machines once every three years instead of once every four years.

We should be supporting a similar program for staff and possibly graduate students.

Support for new services.

Along with increasing demand for services, Texas A&M is encountering many changes in the types of services that our computer users require. New technologies include imaging, data warehousing, distance learning, directory servers for automatic machine configuration, enterprise-class email servers, and world wide web intranets. Computing is increasingly network centered and relies on client-server designs. These new types of services are growing quickly, but CIS funding is still derived from a decades-old rate structure based on the model of a single large mainframe.

Web services, for example, are not designed to charge the end-user that accesses a page on the server, yet the server capacity has to grow to meet demands, and someone has to pay for the growth. Central support of web course development systems is essential in supporting our own students as well as future distance education students that may be enrolled in our graduate programs.

We need to include at a minimum additional staff, hardware, and software to support enterprise-class email and web servers in support of students, faculty and staff at $500,000/year. The CIS rate structure must be revised so that we can fund new technologies and fairly bill users for the services they consume.

Training and support.

For many years, a common feeling expressed by faculty and staff is that we need to provide better information technology training and user support. With the increased use of information technology by faculty members, we will have to provide better training and support. By 2020, it is likely that all students will be required to have their own computers. While the need for our 1200 general purpose computers may go away, we will need to support students with network connections and configurations in their dorm rooms as well as our classrooms.

We should consider purchasing or developing Internet based courses that provide training for faculty and staff in common computer applications including the development of web-based courses.

All of our classrooms must be updated to have appropriate computer technology.

For several years we had a Classroom Technology Update program that provided matching funds to colleges, based on proposals, to install permanently mounted computer projection equipment

in heavily used classrooms. In the short term, we should reinstate this program with a funding level of $150,000/year to $500,000/year.

Although all of our classrooms have at least one network connection, we should initiate a program to wire classrooms for student network connections and AC power so that students can bring laptops to class. By 2020, battery life and wireless networking will likely be to the stage where we can consider a campus-wide wireless network. Wireless technology is fairly mature, although still expensive, and we should install a demonstration project and keep up to date with the technology.

A Communication Center for Texas A&M University.

Communication technologies have changed rapidly in recent years. They have created new opportunities and new challenges for every university in the country. At Texas A&M University, both academic and administrative initiatives in distance learning, broadcasting, tele-communications, and computing have begun at several locations. Current space is limited, and growth is continuing.

This growth has created pressure points on campus.

Educational Broadcast Services has expanded its community academic services including the popular TTVN compressed video network that has become a key component in statewide communication. KAMU-TV will expand into advanced digital broadcasting over the next several years under a mandate from the Federal Communications Commission that requires all broadcasters to upgrade to digital television. This will improve the quality of the broadcast signal and significantly expand the flexibility of its broadcast offerings both to the community and to the university. The broadcast signal will become a "file server of the air," offering a full digital service for the new age of television receivers. KAMU-FM has created innovative programming for the local community in response to changed methods for funding public radio at the national level.

The Office of Distance Learning is rapidly developing electronic delivery of continuing education and training programs to help faculty learn to prepare courses taking advantage of these technologies.

The Department of Journalism has expanded its academic impact with new academic programs and advanced communication labs to more than 650 majors. Student demand for mass media studies remains high despite an attempt to manage enrollment down from 750 majors six years ago. The Student Publications Program has expanded into Internet and broadcast versions of The Battalion creating new ways of providing better information to students, faculty and former students.

The Center for Distance Learning Research has expanded its work in developing new ways of delivering instructional materials using new media technologies.

The Academy for Advanced Telecommunications and Learning Technologies has initiated both teaching and research programs that offer opportunities for researchers and teachers alike to develop new ways to use communication technologies in teaching. Telecommunication research in wireless communication and computer networking are strong and growing.

The TAMU System has announced plans to expand the use of advanced communication media to improve teaching among system components.

Several TAMU committee reports, most recently the Future of Computing Report, have recommended that a new classroom building be constructed to contain a variety of sizes of rooms in several configurations "to provide instructional technologies in state-of-the-art classrooms."

These expansions represent significant improvements in the university's service to traditional and non-traditional students through new communication technologies. Texas A&M has made significant investments in advanced communication. But those investments are hidden. They are scattered across campus in inadequate facilities that share the common problems of poor location, inadequate space, and a need for centralization.
A new high-profile communication center is needed to provide better coordination of multiple initiatives by the university, a central location for the university's expanding advanced communication technologies, more efficient use of existing equipment, and a central location for instruction in the use of advanced communication technologies.

A combined space would embed the academic journalism studies, new media programs, and student laboratory experiences into the professional environment of operating broadcasting, distance learning, and digital communication production units. This unique, high technology, media-rich environment would thrust TAMU into a position leadership in mediated communication studies and enhance TAMU's bid for status as a top-10 institution. We would have one of the best programs in the country that would combine study and practice in one facility large enough to do both and to offer students the advantages of study and practice in one state-of-the art facility.

To accomplish this objective, we recommend that a new Communication Center be built around the current KAMU facilities. This location would put it immediately north of and adjacent to the new A&M Foundation building now under construction and near the Clayton Williams Alumni Center. It would be close to MSC, Rudder Tower, and the Koldus Building. It would be centrally located between the expanding West campus and main campus. This site is a relatively open space with no need for demolition of other structures.

The Communication Center would be a showplace for the many university high technology communication activities readily available to visitors to the campus. It would provide facilities that would easily tie into system-wide distance learning efforts and provide convenient locations for pooling expensive digital communication technologies for academic studies, continuing education, and production requirements of the university.

Recommendations

- We should consider institutionalizing increases in the Computer Access Fee $1/SCH every three years to keep up with increasing IT demands and the never-ending requirement for more bandwidth.

- We need to continue to build the information technology infrastructure.

- Invest an additional $1 million a year in staff and hardware to upgrade the campus backbone and individual desktop connections.

- An additional $500,000 a year is also require to fund development of emerging technologies, such as web servers and distance education requirements, as they become operational.

- To be able to purchase a new high performance computer every five years and cover increases in software costs, we need an additional $300,000/year.

- Strategic administrative systems must be replaced over the next several years. At the institutional or system level, between $40 and $70 million must be identified for these upgrades or replacements.

- KAMU must be converted from analog to digital broadcasting requiring approximately $3 million.

- We should consider increasing funding for the faculty workstation program by $300,000/year so that we could replace machines every three years instead of four years. A similar program for staff and potentially graduate students should be considered.

- Careful thought must be given to developing compensation packages sufficient to attract and retain qualified employees in computing and telecommunications.

- A Communication Center for Texas A&M University should be built to showcase our high technology communications activities and to provide state-of-the-art distance learning classrooms.

International Dimensions of the Best Public Universities

Texas A&M intends to enter the top echelon of public universities in the United States by 2020. Universities in this top tier (consensus universities) include the University of California-Berkeley, University of California-San Diego, University of Michigan, University of Wisconsin, University of North Carolina and UCLA.

A comparison of the international dimensions of the research, teaching and service missions of these universities with those of Texas A&M is critical to Texas A&M's future. As the American Council on Intercultural Education notes, "The . . . issue is one of survival. Either students become globally literate and capable of competing internationally or their community and nation become relatively inconsequential" ("Building the Global Community: The Next Step"). Texas A&M students must understand, both intellectually and emotionally, the complexity of the world, in which economic, political and social changes affect all nations.

This paper describes the world, the United States and Texas, the essential characteristics of a flagship land-grant university in 2020, and where Texas A&M stands in reference to this, as well as how it currently compares with the six consensus universities. The paper concludes with recommendations that will help make Texas A&M rank among the nation's top ten public universities in the international arena by 2020.

What the World Will Be Like in 2020

The world will be more populous.

It took thousands of years for world population to reach 2.6 billion in 1950; another 3.5 billion will have been added just 50 years later. Worldwide, Africa's rate of growth is projected to be the highest of all major regions through 2020, followed by Latin America (U.S. Census Bureau, CB96-168). The United States population is projected to increase to 392 million by 2050—about 50 percent larger than today's population of 261,638,000 (U.S. Census Bureau, P23-189).

Sustainable development must meet increasing demands for water, food, energy and natural resources. Conserving the environment while breaking the poverty cycle in the developing world is both an international and a local challenge (American Council on Education).

The world's population will be older.

Persons 65 and over are projected to be the fastest growing segment of the population in both developed and developing countries (U.S. Census Bureau, CB96-168). In the United States, longer life expectancy will increase demand on social services. For example, in 1998, the proportion of workers paying social security taxes was 4.5 to 1, but by 2050 this will decrease to 2 to 1.

The world's population will be more mobile.

In 1994, nearly one in 11 U.S. residents (8.7 percent) was foreign-born, the highest percentage since World War II and nearly double the 1970 level. Immigration to the United States is expected to continue at these levels through 2010 (U.S. Census Bureau, P20-486). Immigration and the resulting competition for jobs will require a greater understanding of cultural diversity by all citizens.

The world economy will be highly integrated.

Multilateral institutions, such as the International Monetary Fund, the World Bank, and the World Trade Organization, will strive to support closer global integration of regional trading blocs such as the Asian Pacific Economic Consortium (APEC), North American Free Trade Agreement (NAFTA) and the European Union (EU). The single global economy will be characterized by instantaneous market responses to capital and currency changes around the globe.

The global economy will be highly responsive to energy supplies and environmental quality.

Consumption of the world's finite energy resources will double by 2040. U.S. demand will increase steadily. The projected growth of population will have significant impact on the environment. Deforestation and depletion of fish stocks, insufficient water supplies, air and water pollution, and growing demand on energy resources will have a serious impact on the global economy. In addition, if global warming disrupts weather patterns, new agricultural and water problems might further contribute to resource depletion. Prudent management of these resources will be of strategic importance in the geopolitical arena.

Society will be transformed by information technology.

Rapidly developing technologies, including computers, satellite and fiber optic systems and the Internet, will change the way we live and work and will transform higher education (American Council on Education).

What Texas Will Be Like in 2020

Texas will be more populous.

Texas is the second most populous state after California. If current growth rates continue, Texas will increase its population by nearly 100 percent between 1990 and 2030, to nearly 34 million (Murdock, 1997).

The Texas population will be older.

By 2030, when all of the baby boomers are older than 65, about 18 percent of Texans—one in six—will be older than 65, compared to about 10 percent in 1990. In 2030, when 18 percent of the population will be older than 65, 25 percent of Anglos but less than 12 percent of Hispanics will be older than 65. Thus, aging Anglo Texans will be taken care of by young minority Texans (Murdock, 1997).

More Texans will be minorities.

Hispanics will continue to be the fastest growing ethnic group. The African-American share will remain constant (11.6 percent) while the Anglo share will decline from 57.4 percent in 1997 to approximately 51.4 percent in 2010. Roughly 87 percent of the net additions to the Texas population between 1990 and 2030 will be minorities. Already in 1998, 55 percent of the children in Texas public schools and 58 percent of the births in Texas involve minority population members.

By 2030, seven out of every ten children in Texas elementary and secondary schools, six of every ten college students, two of every ten persons in the labor force and a majority of consumer expenditures in Texas will involve minorities(Murdock, 1997).

More Texans will be foreign-born.

In 1994, Texas ranked fourth in immigrant population (behind California, New York and Florida), with more than one million foreign-born residents. Texas is expected to remain in the top four states for immigrant population through 2030 (U.S. Census Bureau CB95-08).

Texans will be poorer.

If current demographic trends of minority groups being in lower income levels continue, the poverty rate will increase and the average Texas household will have an income that is $3,000 less in 2030 than in 1990, in 1990 constant dollars (Murdock, 1997).

Median income levels for African-American and Hispanic households are between 55 and 70 percent of those for Anglos, and their poverty rates are roughly three times those of Anglos. About 30 percent of Hispanics and African-Americans lived in poverty in Texas in 1990, a level expected to continue through 2030.

Texans will be less well educated.

The increase in the number of minority citizens will negatively affect participation in higher education if current minority demographic trends continue. The number of Texans participating in public higher education in the state will increase slightly, but the overall percentage of the population participating will decrease as the population continues to grow and age. In 1997, less than 24 percent of the Texas population had participated in postsecondary public education (Texas Higher Education Coordinating Board, Oct. 1998).

The Texas economy will be highly integrated with the global economy.

As the nation's third largest exporter, Texas will continue to rely on foreign trade into the 21st century. Mexico will continue to be the state's most important trading partner, and linkages with other countries in Latin America, Asia and Europe are expected to grow (Texas Department of Commerce). Thus, fluctuations in the global economy will impact Texas.

How Global Challenges will Shape a Flagship Land-Grant University in 2020

Anticipated global changes will present unprecedented challenges to public higher education on issues of access, equity, resources and technology. According to one expert, higher education by 2020 "is likely to evolve from a loosely federated system of colleges and universities serving traditional students from local communities, into, in effect, a knowledge and learning industry" (Duderstadt, 1998).

Internationalization will affect the three missions of the flagship land-grant university of the 21st century:

Teaching.

By 2020, the notion of the university as an elite "ivory tower," through which knowledge is created and disseminated by faculty, will be changed drastically. Universities will be learner-centered, as information technology is used to respond to the changing needs of students (Duderstadt, 1998).

As workers at all levels must retrain and master new approaches to their jobs ever more quickly, the university's role in career preparation will be transformed into a provider of "lifelong learning" in which current categorizations of K-12, undergraduate and graduate education become a "seamless web" (Duderstadt, 1998).

In addition, thematic, multidisciplinary programs will infuse international dimensions into traditional academic programs (American Council on Education). This is critical because students will need to have a high level of acquired multidisciplinary skills, including the ability to communicate in one or several foreign languages, to interact in multicultural environments and to be technologically proficient.

Technology will change the traditional domestic framework of institutions, making possible unprecedented innovation and responsiveness to change and further eliminating the obstacles presented by geographic distance in the student-professor relationship (Kellogg Commission, 1998).

Research

Researchers in the global environment of 2020 will be more interdisciplinary to address issues that transcend disciplinary and geographic boundaries. Research partnerships will enable U.S. higher education institutions to strengthen their curricula and research, and to provide students and faculty with opportunities to address global problems, as well as assist the development of leaders nationally and internationally. Research increasingly will be conducted through partnerships with foreign universities, government organizations, the private sector and others worldwide (American Council on Education).

Outreach/Service

Globalization, with its enormous demographic and social changes, will require new ways of thinking about responsibility as citizens and a heightened commitment to diversity in society. While globalization on one hand advances uniformity through economic and technological interactions, on the other hand it also elicits a greater accent on cultural differences (Kellogg Commission, 1998). Universities will play a key role in preparing students for global responsibility, through imparting an understanding and appreciation of cultural diversity. Universities will help foster global views on society, and thereby encourage governments to formulate public policies with global perspectives and benefits (Kellogg Commission).

What the Consensus Universities Are Like Today

In 1998, the six consensus universities without exception shared the following common traits of resource allocation and implementation of international education:

Broad support of international opportunities for students and faculty.

These universities share a belief that students and faculty must understand the complexity of the global 21st century and have invested in centralized support of international initiatives at the university and college levels, resulting in area studies centers, interdisciplinary research centers, language centers, and overseas study centers, among others, as a means of responding to this complexity.

These institutions have invested in broad-based international educational experiences for students (including study abroad, international internships, international field trips, and others). The University of California-San Diego, for example, refers to this support office as the Programs Abroad Office, in reocognition that there are many ways for students to develop global competence. In addition, programs at each campus of The University of California System are

supplemented by a system-wide study abroad program that offers opportunities for study at more than 100 institutions in 33 countries.

In addition, in many cases the universities enjoy great flexibility in providing out-of-state tuition waivers, reciprocity in exchange agreements, and other incentives for current and prospective students and faculty. Faculty receive financial and other incentives to participate in international scholarly activities either individually or through area research centers and other units.

These universities also build on their respective disciplinary strengths and regional foci to attract international students, who in turn perpetuate the university's prominence in a given field in their home countries. Without exception, these universities have considered their international students to be an integral component of the university, and have developed broad long-standing relationships and extensive networks of former students throughout the world, providing a foundation for addressing the global challenges of the 21st century.

Environment

The campus communities of these peer institutions understand, appreciate and encourage the diversity inherent in an international community through both academic and administrative programs. The University of California at San Diego and at Berkeley have residential facilities for students, faculty, and visiting scholars from the U.S. and abroad, and the University of Michigan provides centralized support services for visiting scholars and their departmental sponsors, regarding housing, orientation and access to campus and community services. In addition, several of the six consensus universities have networks of faculty and staff who host monthly social activities for visiting international scholars and others.

Flexibility in addressing global issues

The universities systematically determine an international focus that builds on institutional strengths to increase the university's prestige and presence in the international arena. This focus changes as the needs of constituents and the university change. For example, the University of Wisconsin in the 1950s focused on technology transfer; in the 1960s on institution-building initiatives; in the 1980s, on environmental concerns, macroeconomic policy, and development of the private sector; and in the 1990s, on democratization and economic transition in Eastern Europe and the Russian republics.

Each of the consensus universities has at least six international research centers, programs, and institutes—and the University of California-Berkeley has more than 40—that provide ongoing program support for international projects by bringing together collaborative research teams that include faculty from several disciplines who share methodologies and expertise to explore a particular issue of global and local importance. This approach helps the universities address the interdisciplinary needs of the 21st century.

At the University of California-Berkeley, more than half of the doctoral dissertations being written in the social sciences, humanities and professional schools deal with international topics, indicating strong preparation of graduates to respond to the complex challenges of 2020.

Interdisciplinary approach

The six consensus institutions have implemented strategies based on Ernest Boyer's (1994) recognition that internationalization "will occur not through special courses, but rather by changing the way academics think about their work"—an interdisciplinary as opposed to a disciplinary approach.

The University of Wisconsin, for example, has adopted an "International Education Cluster" approach, a large network of specialized programs and activities that are designed to ensure that knowledge "will know no borders." The university's eleven academic colleges provide "vertical" units that form the "backbone" of the university's academic and professional programs. The university's international education community has created "horizontal units" that cut across disciplinary, department, and college lines. This network forms an "invisible college" made up of all the international educators in all the schools and colleges. At the University of Michigan, new cross-disciplinary programs and new community spaces draw students and faculty together as a model of the "divisionless university" (Duderstadt, 1998). The University of North Carolina created the University Center for International Studies in 1993 to support the university's interdisciplinary programs, to encourage an international focus in teaching, research, and service, and to sponsor outreach programs to communities statewide. Similarly, an International and Area Studies unit was established at the University of California-Berkeley in 1990 "to coordinate and extend Berkeley's international programs and enlarge the university's international contributions and visibility" (1998 IAS brochure).

Use of technology to support interdisciplinary, international efforts

Today, there is no such thing as domestic or international knowledge. There is only knowledge, as the integration of computers and telecommunications now forces us to rethink the fundamentals of our educational philosophy (American Council on International Intercultural Education).

The six universities recognize that technology will have reshaped societies around the world by 2020 and thus invest in technology for the generation and dissemination of knowledge. The University of Michigan, for example, has teaching facilities in Europe, Asia and Latin America, linked with "robust information technology" (Duderstadt, 1998). In Ann Arbor, the university has created a Media Union (multimedia environment), a virtual university (Michigan Virtual University) and has used the Internet to explore "cyberuniversity" themes (Duderstadt, 1998).

In these universities, access to information is further enhanced by extensive electronic and traditional library collections that support their regional and area studies centers and other international activities.

Resources

Each of the six universities has committed significant human resources, administrative and other infrastructures, and facilities to maintain and strengthen the university's presence globally and recognize that even greater support will be needed to maintain their top ten status by 2020. For example, if the personnel of the University of Wisconsin's "international college" were put in a separate unit, it would be among the largest on campus. The "invisible" college teaches more courses, conducts more research, and runs more specialized programs than many of the "visible" schools and colleges. Similarly, the University of California-Berkeley has more than 160 staff members in its International and Area Studies program, hosts more than 2,000 visiting international scholars each year, and teaches 80 foreign languages.

What Texas A&M University Is Like Today

Texas A&M has begun to build a foundation for international program efforts to help students prepare for the increasingly competitive 21st century. However, large gaps remain that must be addressed before Texas A&M can reach the 1998 level of the six consensus universities, much less attain top ten status by 2020:

Broad support of international opportunities for students and faculty

Texas A&M has recognized and supported the need for international opportunities for students and faculty by creating study abroad opportunities, student internships, faculty abroad programs, faculty curriculum development and research grants, and the establishment of two study centers. However, the current infrastructure and resources are not adequate to support the growing demand for these services by students and faculty.

Texas A&M has not adequately addressed the demands of the global marketplace and student awareness of the importance of an international education. Texas A&M seniors consistently rank the level of international knowledge and understanding they gained during their college experience well below that of seniors at peer institutions (Texas A&M University Office of Measurement and Research Services).

Despite the fact that employers increasingly seek graduates who have a global focus and the ability to be successful in a culturally diverse workforce (U.S. Department of Education), only about 6 percent of the Texas A&M student body studied abroad in 1997-98. The largest increase in the number of Texas A&M students studying abroad in 1997-98 occurred in non-Texas A&M programs. Yet, barriers such as the lack of portability of financial aid for non-Texas A&M study abroad programs often limit student access to these programs. These barriers, combined with a lack of an internationalized curriculum, limit students' opportunities to gain a global experience while at Texas A&M.

Furthermore, the needs of students who recognize the importance of campus-based international educational opportunities and seek them out often cannot be met. For example, demand for the

International Studies undergraduate degree program has been about double what the program can accommodate since it was established in the early 1990s.

Similarly, the university lacks a systematic strategy for recruiting the top international students from key countries or regions to strengthen the university's disciplinary and geographic initiatives. A foundation for this has been laid through support from the Association of Former Students in an initiative to locate former students in other countries and include them in an "International Aggie Network." However, limited funding for top international students will make it difficult for Texas A&M to compete with peer institutions in the United States and abroad to maintain the current proportion of international students, thereby diminishing the university's international environment.

In addition, current international programs are inadequate to help faculty remain competitive with their peers at other research institutions. Significant barriers exist, including a lack of funding for international travel and an insufficient rewards structure for international scholarly work. Barriers resulting from a lack of resources and restrictive state policies also hamper a scholar's ability to pursue international opportunities that will benefit the state and the nation. Texas A&M will have difficulty attracting top students and faculty unless incentives and rewards for international work are in place, and international scholarly work is rewarded in the promotion and tenure process.
Furthermore, Texas A&M will not be considered a top ten university without the capability for teaching and research in many languages. Texas A&M offers only a few selected Western European languages, and a foreign language is no longer required in the core curriculum.

Environment

With 2,700 students from nearly 120 countries, as well as more than 500 visiting international scholars each year, Texas A&M must work with the local community to ensure that all residents feel safe, have access to basic services and are encouraged to participate fully in the life of the community. However, this important task remains incomplete. A lack of affordable housing, transportation, international markets and other basic needs has resulted in international "ghettos" rather than an integration of diversity throughout the community.

Flexibility in addressing global issues

Texas A&M has established two region-focused offices to provide support in assisting colleges and faculty to develop research and exchanges in Latin America and Asia. The university also has built a presence in Mexico by establishing a center in Mexico City. However, despite the state's proximity to Mexico, Texas A&M still has no campus-based regional study centers for Latin America.

Similarly, university-wide interdisciplinary programs that address global issues such as energy resources, human and animal health, the environment, trade, information technology and leadership development, among others, have not been created. The university has not developed a systematic and coordinated approach to identify and support research and academic initiatives

that build on Texas A&M's strengths to address global issues. Consequently, Texas A&M students and faculty are less competitive than their counterparts at the consensus universities for national and international grants and fellowships for research focused on global issues

Interdisciplinary approach

Texas A&M has not developed the type of consolidated, coordinated interdisciplinary programs that most effectively generate international awareness and understanding. The majority of the consensus universities have developed a "cluster" approach of interdisciplinary programs having either a regional or disciplinary focus that infuse a global perspective throughout their academic colleges. This global perspective will be essential for graduates in the 21st century.

Use of technology to support interdisciplinary, international efforts

Texas A&M has made great strides in recent years to incorporate technology into the international arena, notably via the university's TTVN link to its Mexico City Center. In addition, a TTVN link has been established in Costa Rica that eventually will reach 34 countries in the Western Hemisphere.

However, while Texas A&M has conducted several pilot academic programs that will reach other countries through the telecommunications link, there remains no systematic university-wide approach and coordinated support for developing and offering interdisciplinary, international master's and professional degree programs and continuing education through an electronic delivery mechanism.
Texas A&M lags far behind its peer institutions in library collections, and access and outreach to foreign countries.

Resources

Texas A&M has not committed sufficient resources to meet the needs of its 43,400 students and 2,500 faculty for global education. For example, the university's investment in study abroad programs in 1997-98 was about $7 per student. If the portion that comes from student service fees is not included, then the university investment drops to about $3.30 per student. Scholarships for study abroad programs total about $145,000 per year, about two-thirds of which comes from student fees. Additional college support varies widely.

Sufficient resources—either through increased state appropriations or endowments—are required to increase academic, administrative, financial and other support for international programs, and to enable the establishment of endowed chairs focused on global and regional issues to strengthen a college's international capabilities and provide the basis for research centers and area study centers.

Campus culture

A university's ability to serve students and other constituents is determined largely by its organizational culture. A university must convey to faculty, and the faculty to students, a full

understanding and a strong belief that international education is an integral part of every student's academic experience. Vital to the internationalization of teaching, research and service, are the attitudes and expectations that set the standards of a university. These norms determine the person-to-person experiences of everyday life both formally and informally on campus and involve not only faculty and students, but also administrators and everyone else in the campus community (Kellogg Commission). Texas A&M has not developed a campus culture that supports and sustains internationalization.

Conclusion and Recommendations

The disparities between Texas A&M's international education efforts and those of the six consensus universities will increase if prompt action is not taken. Texas A&M must invest in its commitment to become truly international if it is to enter the ranks of the nation's top public institutions by 2020. Indeed, Texas A&M must inject significant resources simply to avoid lagging further behind the 1998 level of the six consensus universities. Otherwise, Texas A&M cannot prepare its students for the increasingly competitive global marketplace and fulfill its mission of preeminence in teaching, research and service.

Ultimately, Texas A&M's reputation will rise or fall not according to the number of area study centers it establishes, or the number of international research projects it conducts, but according to the ability of its graduates to lead in the increasingly complex and interrelated 21st century. If Texas A&M is to be recognized as among the very best of the nation's universities, a significant change in organizational culture and attitude must take place.

The following key recommendations will help Texas A&M's effort to become a top ten public university by 2020:

- Commit administrative and programmatic funding sufficient to support the kind of international opportunities that will lead to long-lasting and mutually beneficial relations with foreign institutions.

- Create an international endowment for funding chairs and professorships, a wide array of international opportunities (including internships, study abroad programs and exchanges) and development of programs that cross traditional disciplinary boundaries.

- Invest in international initiatives at the university and college level to create language programs, overseas study facilities, interdisciplinary research and/or area studies programs that build on Texas A&M's disciplinary strengths. For example, an interdisciplinary center on Latin America and an Institute on Global Leadership Development are two areas in which Texas A&M has campus-wide capabilities.

- Adopt an "International Education Cluster approach" to integrate an interdisciplinary, international focus into the academic colleges.

- Create a systematic university-wide approach for using technology and providing information access to develop and offer international distance education programs, including master's degrees, professional development and continuing education.

- Establish an education program aimed at Texas leaders in the public and private sectors, as well as the general public, underscoring the significance of international education to the future of the state and nation.

- Work to reduce parochialism and develop a campus culture and attitude that make international education a truly integrated part of the university's academic programs and campus life.

- Work with the campus and local communities to make Texas A&M and the Brazos Valley places that welcome international scholars, students and visitors.

- Provide facilities for students, faculty and visiting scholars from the U.S. and abroad.

- Continue to build an Aggie Network of former students worldwide to recruit top international students and build on the university's disciplinary strengths through research and exchange programs to address global issues.

Texas A&M must build on its historical strengths and reputation for leadership development, and implement these recommendations if it is to counteract what Ernest Boyer (1994) termed "a temptation to drift along, to not take the lead, to not take the responsibility to develop a vision." To become truly great, Texas A&M must cultivate students and faculty who have what Boyer (1994) termed "the larger view—leaders who think globally and can imagine a better tomorrow for education, cooperation and coordination."

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The College of Agriculture and Life Sciences in 2020

Vision

Committed to unparalleled excellence through distinguished teaching, research, extension and public service programs, the College of Agriculture and Life Sciences aspires to be the premier and 'preferred' college in the nation as judged by our peers, and more importantly, as viewed by those we serve.

Mission

As the land-grant and flagship college of agriculture and the life sciences in Texas, the College embraces its goal of developing future leaders for the agricultural, environmental, food, human and life sciences industries by fostering an intellectually and challenging academic environment focused on the individual needs and interests of each student. Scholarship through excellence in teaching and research is central to this mission. The College of Agriculture and Life Sciences – *serves Texas and the nation* – by providing leadership through research discoveries; furthering the transfer of knowledge within the academic and extension program of the Land-Grant University System; and supporting a network of industry partners and global linkages to advance research and learning.

Context

The next quarter of a century promises a host of new opportunities associated with dramatic, revolutionary advances in the life sciences and an expanding technological, information age. The agricultural industry is in the midst of a major transformation as it becomes more global and diversified in nature, customer-driven and highly competitive, and responds to environmentally sensitive issues.

The College is responding to these challenges with programs to address critical concerns associated with economic growth, a clean environment, technological innovations, a safe and nutritious food supply, international competitiveness and a quality life for all. New knowledge and well–prepared agricultural graduates and science leaders are essential. In responding to these challenges, the College and its affiliated state agencies are committed to serving the diverse needs of the agricultural industry and the citizens of Texas with quality teaching, research and outreach programs.

Priorities, Goals and Directions

The College of Agriculture and Life Sciences joins the member components of the Agriculture Program of the Texas A&M University System in aspiring to unparalleled excellence in being recognized as "the best" agriculture program nationally and internationally. Our aspiration will be fulfilled as faculty, staff and the administration of the College work together with the agricultural state agencies and the affiliated System agricultural academic components to create the synergy which allows us to reach premier status within our respective missions and for the Agriculture Program as a whole.

In preparing a vision for the future, it is important and essential to establish broad benchmarks by which to aspire. To complement its existing strong programs in the agricultural, environmental, food, human and life sciences, the College's vision for the future includes the following special emphases:

Emphases through Scholarship in Academic Programs

- Support a portfolio of undergraduate and graduate programs with fundamental core competencies and interdisciplinary research and leadership experiences necessary to ensure graduates possess the knowledge, technical training and problem-solving capabilities to serve as tomorrow's leaders.
- Utilize state-of-the-art computer technology and information systems to support distance education and internet web-based programs that provide access to a diverse community of lifelong learners.

Emphases through Scholarship in Research

- Champion a world-renowned life sciences program within the University with strong emphases in animal and plant biotechnology and genomics.
- Sustain a prominent food science and engineering program with state-of-the-art food processing and production laboratories and equipment.
- Serve as a national leader in the development of new varieties of fruits and vegetables that prevent diet-related diseases and provide enhanced health benefits.
- Advance the development and coordination of geomatic and informatic systems throughout the teaching, research and extension programs.

Emphases through Scholarship in Public Service and Outreach

- Provide access to all citizens through enhanced utilization of computer technology and information delivery systems.
- Strengthen the development and expansion of public/private partnerships within academia, industry and corporations to enhance and sustain premiere academic and world-renowned research programs.

"*Some may boast of prowess bold . . .*" – Texas A&M University has long been recognized for its outstanding agricultural programs within the state and nation. Given this rich history, the College of Agriculture and Life Sciences and its affiliated state agricultural research and extension agencies have a long-standing tradition of providing leaders and leadership within the agricultural industry and community. This tradition speaks for itself – the College's strong teaching, research and outreach programs have stood the test of time in meeting the needs of Texans and the agricultural industry, and we are committed to sustaining that tradition throughout the 21st century.

The College of Architecture in 2020

Vision

We will educate the leaders of the professions and industries of the built environment in Texas, the nation, and the world. We will have a direct, significant influence on the "state of the art" of all aspects of the design and construction of the built environment. We will be recognized as the most important College of its kind in the nation.

Mission

Teaching Mission: To develop and implement the best means of translating the knowledge and abilities of the disciplines that plan, design and construct the built environment to the best qualified undergraduate and graduate students with the best qualified faculty members.

Research Mission: To develop critical new and applied knowledge and processes for those who plan, design, construct, evaluate, finance and use the built environment in order to maximize the influence of our students, faculty, staff, and former students.

Outreach Mission: To develop "knowledge partnerships" with government agencies and private industries which make our research and teaching available to the state of Texas and the world. Our outreach mission will attain the stature and critical mass to merit recognition as the most important College of its kind in the nation.

Context

Many challenges and opportunities anticipated by the College will be brought by changes in the built-environment professions and industries - architecture, landscape architecture, planning, land development, visual design, and building construction. Practitioners of these professions will operate in a truly global economy. Location of projects will no longer influence selection of the project planning or design-build firms; successful practitioners will be effective in the global range of physical environments, customs, and cultures. Practitioners will completely renew their knowledge base regularly.

Resources to support continued population growth will begin to become scarce, and energy shortages will dictate strict measures to promote sustainability in all aspects of the built environment. The need for transdisciplinary solutions to complex problems will require professionals to be competent in many fields. Pervasive, ever more capable, information technology will be the medium of all projects, with a strong emphasis on the efficiency of visual languages. Project programs will respond to critical societal needs, ranging from sophisticated

health requirements to basic infrastructures necessary for survival. Built environment projects will be of immense size and complexity.

University challenges include student enrollments which reflect the diversity of society and required partnerships with governments and industry for both teaching and research. Pervasive information technology will yield new methods of delivery of education. Students will demand multiple options to prepare for uncertain futures. The corporate emphasis on productivity and cost effectiveness will continue to affect academia. . Quality differences between universities will become great.

Priorities, Goals and Directions

Capitalize on Existing Attributes of the College

Size: we are currently the largest college of its kind in the US, and because of our size, we have the critical mass of faculty, students, alumni, and resources necessary to excel in the next century.
Structure: we currently contain all the significant disciplines critical to the professions and industries of the built environment. We have established research centers that inter-relate with all degree programs in the College, with other disciplines in the University, and with government, business, and industry; our range and size of our research structure is unique in the nation.
Quality: we have an accomplished faculty, qualified students, and successful alumni who form the base of a tradition of excellence and a commitment to quality upon which to build.

Emphasize Opportunities for Students

- We will emphasize opportunities for students through large enrollments, multiple degree offerings, and alternative learning environments. We will have the critical mass of serious students and qualified faculty that will give students the best opportunity for success. Multiple degree offerings, coupled with certificate programs and areas of specialized study, will allow students the option of selecting the discipline or disciplines which best suit their abilities and aspirations to plan, design, and construct the built environment. Our present degree offerings in architecture, landscape architecture, building construction, land development and planning will remain the core degrees of the College.

- Have a new emphasis on art and visual design that will influence our undergraduate and graduate degree designations and program offerings.

- Expand graduate enrollments to maintain our present national ranking as the largest Ph.D. granting institution in our fields while stabilizing or reducing undergraduate enrollments.

Expand Our Research Agenda

- The expansion of the research agenda will be based on public-private partnerships and integrated with teaching. These new "knowledge partnerships" will extend our influence and resource base.

- We will capitalize on our College's unique national position in established research centers by making them stronger, increasing their integration with our teaching programs, and forging new public-private partnerships. The seven research units presently existing in the College comprise our current research agenda. These are Centers / Laboratories for Visualization; Health Systems & Design; Housing and Urban Development; Hazard Reduction & Recovery; Historic Resources Imaging; Environmental Psychophysiology; and Leadership & Management in the Design & Construction Industry.

- We will increase integration of research and teaching to inform future architects, landscape architects, land developers, planners, and constructors of the research services our College offers. + We will form new research partnerships to provide business and industry with applied research assistance in an increasingly competitive and complex global environment for planning, design, and construction. These partnerships will respond to emerging demands of business, such as sustainability.

- We will explore new roles for "land grant universities of the future" in research collaboration that will respond specifically to shifts in the socioeconomic needs of Texas.

Strengthen Our Emphasis on Information Technology

- Information technology will enhance teaching/learning and serve as a digital / virtual modeling tool for design and research. Information technology, particularly as applied to visual languages, will become pervasive in the College.

- We will capitalize on our College's lead in teaching and research in visualization by providing the expertise and resources to advance the state of the art in media applications to issues of the built environment. Leading edge expertise gained by our students will allow them to assume leadership positions in the global marketplace. Leading edge expertise developed by our faculty will allow them to play influential roles in the advancement of knowledge in our disciplines.

Recommit to Quality in All Our Endeavors

- The College currently enjoys an accomplished faculty, qualified students, and successful alumni who form the base of a tradition of excellence and a commitment to quality upon which to build. Our new commitment must be relentless.

- We will establish indicators of quality, such as faculty / student ratios, national recognition for accomplishments, and outcomes assessment procedures, to continually evaluate our status.

Expand Global and Professional / Industry Connections

- This expansion will blur the boundaries of the College so that we are critical partners within and outside the University.

- We will establish "field schools," off-campus locations with strong environmental influences. These schools will be embedded in on-going entities ranging from communities to professional offices to industrial sites. The field school concept will support both teaching and research abroad as well as in urban and rural locations in Texas; therefore, these schools will assist in TAMU's integration with metropolitan areas. This new mode of learning and research will be critical to our efforts to empower our students and faculty to become participants in the global marketplace. Distance learning strategies will also be an integral component to the field schools.

- We will expand our connections with the professions and industries of the built environment through expanded public-private partnerships for both research and teaching. All of our programs will develop partnerships with private sector and governmental units as we decrease our dependence on public support.

- We will develop entrepreneurial / risk taking strategies in our teaching, research, and outreach operations. All units of the College will adopt these strategies to respond quickly as new requirements and opportunities unfold in an increasingly uncertain future. Accommodation of the experimental programs and procedures will be considered routine.

Recommit to Diversity

- Diversity of the faculty, staff, and student body will provide intellectual vitality and ensure our viability in the global market economy.

- We will reduce the national shortage of qualified minority faculty in the built environment disciplines by increasing our minority graduate enrollments.

Be Recognized as the National Leader Among Colleges of Architecture

- The College of Architecture at Texas A&M can be recognized as the most important college of its kind in the nation by 2020. Dominant colleges in the future must be large, and we should maintain our position as the nation's largest.

- We must foster our reputation for recruiting the most qualified students and the most outstanding faculty, known both for their excellence in teaching and contributions in research and scholarship.

- We must foster our reputation for placing graduates in the best firms, and for the leadership roles our former students play in the professions and industries of the built environment.

- We must foster our reputation by establishing and maintaining a thorough public relations/public information process that makes our accomplishments known to all our publics.

Lowry Mays College & Graduate School of Business in 2020

Core Vision

Our current and core vision through 2020 is to provide exemplary service to multiple constituencies to achieve excellence and advance the recognition of the Lowry Mays College & Graduate School of Business and its programs.

Diversity and Values

Our diversity and values vision through 2020 is that of a multicultural organization—one with students, faculty, and staff that include and embrace the full mix of cultures found in the population at large and a commitment to the full utilization of its human resources. This multicultural organization and its commitment to diversity is only possible through a set of shared and living values. We see our current core values as enduring and central to our quest. They include:

- A dedication to the freedom of inquiry and the search for truth.
- Consistent demonstration of respect for the ideas and feelings of all individuals whom we serve.
- An unwavering commitment to integrity and ethical behavior.
- Willingness to share ideas and efforts with others in a spirit of teamwork to accomplish common tasks.
- A quest for quality, innovation, and efficiency in all that we do.

Undergraduate Academics

Our undergraduate academics vision through 2020 is to ensure that undergraduate students develop a set of core business competencies and specific functional competencies as relevant to their life long professional and civic pursuits. Students will graduate with the commitment to a life-long learning process to achieve excellence in the application of these competencies and the acquisition of new competencies throughout their multiple careers and citizen roles. We envision continuing as a resident campus undergraduate program, while effectively utilizing all available technologies to enrich this program.

Graduate Studies

Our graduate studies vision through 2020 is to offer a rich portfolio of premier masters and doctoral programs that are nationally ranked and recognized among multiple constituencies. This

portfolio will continue to evolve and include an increasing number of dual degree, joint degree, graduate-level partnerships, and innovative delivery systems.

Enrichment Education

Our enrichment education vision through 2020 is to increasingly engage our students in professional and personal developmental opportunities that transcend academic courses and aid in preparing them for leadership roles in all walks of life.

Faculty

Our faculty vision through 2020 is a continuing quest for improvement and the achievement of excellence in all that we do. The recruitment and retention of a diverse and outstanding faculty is at the heart of our core and all other visions.

Research

Our research vision through 2020 is to create and disseminate knowledge—in all of its forms—on issues that are vital to businesses, instructional programs, and the professional fields represented in the Mays College. The pursuit of this vision will increasingly require cross-disciplinary, team-based, and global-oriented research initiatives.

Information Resources

Our information resources vision through 2020 is students, staff and faculty with access to leading-edge and comprehensive libraries and information technologies—both here and globally. All students, staff and faculty will have the capabilities to take full advantage of these new and changing forms of information resources.

Globalization

Our globalization vision through 2020 is completing our journey to fully incorporate international dimensions into our educational, research, and outreach programs and being recognized nationally and internationally as a leader in this journey.

Service-to-State

Our service-to-the-state vision through 2020 is to continue the development and expansion of programs that are of direct benefit to businesses in the state, nation, and abroad through our graduates and centers of excellence. The current centers include: Center for Business and Economic Analysis, Center for International Business Studies, Center for Executive Development, Center for Human Resource Management, Center for Management of Information Systems, Center for Retailing Studies, and Real Estate Center.

Leadership, Governance & Organization

Our leadership, governance and organization vision is to operate as a learning organization by supporting continuous innovation and creativity in all programs. The ability to operate as a learning organization is a cornerstone—in addition to the cornerstones of *diversity and values*, *information resources* and *globalization*—to achieving our recognition among multiple constituencies as a preeminent and internationally renowned business school.

Resources

Our resources vision through 2020 is a configuration of physical, financial, and human resources that enable us to achieve our potential and compete effectively with top-five public supported business schools. To compete effectively, we will require a substantially expanded resource base.

The College of Education in 2020

Vision

We are a community of learners engaged in multiple forms of scholarship and scientific inquiry with the will to create a just and literate society by our work with children, families, and adults.

Mission

The mission we have embraced is to learn with our many constituencies about ways to improve human cognitive, academic, physical, emotional, and social development and human performance. The knowledge that is collaboratively discovered and constructed assists our students in attaining leadership positions in their various professions and in promoting social justice.

Context

The pluralism of our nation in terms of ethnic heritage and economic status will continue to challenge the skills of educators and other professionals to establish and maintain high quality, rigorous schooling/educational experiences. Linguistic diversity and rapidly changing knowledge bases coupled with the pervasive effects of generational poverty on children and families create a context in which our College of Education Community must focus on the preservation and enhancement of democracy.

Public schools, industry, health and mental health arenas are all affected by the transition of our economy to an information, high technology base. Leading edge knowledge must be generated that applies broadly and specifically to varying cultural and economic situations. Pedagogical approaches must be created that are firmly rooted in the belief and outcome that every citizen can learn. Outreach and service must be planned to enhance and extend research and teaching missions while being responsive to the needs of the State and nation.

The College of Education is home to a diverse group of learners whose common commitment is scholarship and scientific inquiry that improve practice.

Priorities and Goals for 2020

In 2020 the educational context of the University and the public schools (which may be better termed “learning places” in the future) may be quite different from today’s experience. In 20 years, we will reach specific goals in teaching, discovery, and application:

- We will have strategic alliances with many "learning places" (e.g., public schools, business, industry, government, and health care) that renew them and us simultaneously. Much of our scholarship (discovery/construction, integration, application, and teaching) will be closely aligned with the problems that confront our constituencies. We will provide leadership for a collaborative research service for schools, state education agencies, and other learning organizations.

- We will contribute effectively to the knowledge bases associated with the planning, design, delivery and evaluation of education and training in specific contextual settings in Texas and in our global community. Examples of these areas of inquiry and knowledge are: human cognition, academic achievement, physical, emotional, and social development, human performance, research methodologies, pedagogy, distance education, health, leadership, and organizational behavior.

- Our scholarships will focus increasingly on self-directed adults in need of literacy, technology, human relations, health, and leadership training. Our connections with industry training and development efforts will be appropriate for life-long learning and continuous improvement.

- Early childhood interventions in learning, linguistic diversity, literacy, mental health, and health will be a major focus of the College. Family literacy and interprofessional partnerships will be of great importance because of this focus. We may have a new College name (e.g., College of Education and Human Services) to describe our strong commitment to comprehensive programming for human needs.

- We will be the national leader in educational distance/electronic learning and teaching technologies. All of our course offerings will be available using the latest technology, and we will engage in research and development activities on instructional and distance technologies in an effort to enhance their effectiveness and implementation. New models of teaching/learning will prevail; substituting flexible modules of active learning for rigidly scheduled courses and student credit hours.

- Our programs will emphasize broad cultural understanding and highlight global issues with multicultural learners. The graduates of all our programs will be representative of the demographic makeup of our state. Their diversity will expand our success in meeting the needs of a changing state. In addition, our international focus will influence our pedagogy and the services we offer.

- In partnership with various constituencies, we will have even greater success in obtaining external funding to pursue excellence in the scholarships of discovery/construction, integration, application, and teaching.

- Our doctoral-level graduates will, increasingly, be professors at research universities. This will complement the current success our graduates (both doctoral and masters) experience in leadership positions in their various professions.

- Our bachelor-level graduates will continue to be highly sought after for teaching positions. In addition, the expansion of our non-certification programs will place our graduates as instructional specialists in many different organizational contexts.

- Our College organization will be much more fluid with less emphasis on departmental boundaries and more on teams of faculty, staff, and students with shared interests in inquiry projects and coordinated teaching and service efforts. Our connections with liberal arts, the sciences, and agriculture will result in a University-wide academy of professors who are committed to preparing educators.

- Our community of learners will be very diverse, resulting in new forms of scholarship and indicators of excellence.

Summary

We will be an exemplary learning organization that facilitates the development of our students, faculty, staff, and our partners. We will meet the needs of our clients in authentic and timely ways. Our strategic intent in 2020 will be to assist all citizens to lead productive lives and to participate fully in a just democracy as highly literate, and physically and mentally healthy individuals.

The Look College of Engineering in 2020

Vision
To be a recognized national and international leader in engineering education, research and service by the public and our peers.

Mission
Consistent with the historical responsibility of a land-grant university, the mission of the Dwight Look College of Engineering is to:

- Create and develop new knowledge
- Disseminate and apply the results of the discovery process through undergraduate and graduate education programs, outreach activities and technology transfer, and
- Inspire engineers who can apply that knowledge to solve problems and foster entrepreneurship for the benefit of the citizens and economy of Texas and the nation.

Context
The 21st Century will be one of technology, with continued dependence on the capabilities of engineers, computer scientists and technologists. Texas universities will place more emphasis on these areas, and the flagships will further develop world class programs. The Look College of Engineering, already highly ranked and one of the largest, will meet the challenge and be recognized as a national and international leader in engineering. It will include faculty, staff and students of the highest quality, supported by excellent facilities and powerful outreach to the rest of the University and beyond. The College has a special relationship with the System Agencies which strongly contributes to this success. As this destiny is achieved, the Look College will have the following characteristics.

Priorities, Goals and Directions

Faculty
- In 2020, the student to faculty ratio will be better than the average of our peers. This will require an increase in faculty of 25% or a decrease in students of 25%.
- This faculty will have a more balanced load between teaching, research and service.
- It will be a truly distinguished faculty, with a majority of the faculty holding endowed chairs or professorships. At least 15% will be members of the National Academy.

- It will be a faculty that reflects the rich ethnic diversity of our state and it will be much more balanced between men and women.
- Most important, it will be a talented, distinguished faculty with an international research reputation, but with equal dedication to teaching and curricular excellence. It will be well versed in delivery mechanisms, including the traditional classroom and those based on telecommunications at a distance. Its members will be editors of journals, officers of national societies, winners of research awards, winners of teaching awards, chairs of conferences, members of international panels and commissions and will be people who are sought by national and state leaders for their opinions.
- It must be a faculty which is rewarded both financially and in other ways which make it attractive to be a part of the Look College of Engineering.

Staff

One of the most important features of our College and indeed, the University is our staff. In general they are talented and dedicated and nearly of adequate numbers for today. In 2020, however, we will live in a community of more than double its current size, with a strong high tech industrial base. The competition will be stiff for the educated, trained and developed staff we will require.

- We must pay well, recognize staff achievement, provide better benefits, encourage continued development and training, while working diligently to provide a good and attractive environment in which to work.
- Not only will this staff be more talented and better trained, but it also will be more reflective of the ethnic makeup of our region.

Students

- In 2020, the students of the Look College will be the best qualified in the state of Texas and some of the best in the nation.
- At the same time, they will be as diverse as the population of our state.
- They will be active in student government and activities throughout the university.
- They will be educated through the most modern and effective curricula available, with the use of excellent laboratories, high technology classrooms, and in may cases through faculty “exchange” via telecommunications around the world where special expertise is required.
- The undergraduates will constitute about 75% of the student body and will enjoy curricula infused with team learning, integrated knowledge transfer across related fields and all of the best features currently being produced by our NSF Foundation Coalition.
- The graduate students will make up 25% of the student body. They still will come from all over the world, but an increasingly large portion will be domestic students. All will be among the most talented in the nation and, indeed, in the world.
- The Look College of Engineering will be one of the most selective in the United States. This will be a necessity if the projected student population of about 9200 is to be maintained and our goals of excellence achieved.
- This combination, when tied to a first rate faculty and excellent research facilities will produce knowledge at the cutting edge. This will bring further fame and reputation, both to

the University and the College. Undergraduates will find jobs upon graduation with the highest caliber technology based firms or will be sought by the very best universities as graduate students. Graduate students likewise will be sought by the best research organizations or will be placed as faculty in best universities.

Outreach

- Many partnerships with industry individually and in consortium form will continue to be a powerful part of the efforts of the College and will bring greater opportunity for our faculty and students in terms of technical liaison and jobs, as well as strong financial support of our program.
- Other outreach will come in the form of partner ships with other universities, other colleges at Texas A&M University. Just as one example, the partnerships with other universities of recent years have found strong support within multiple congressional delegations, leading to higher chances for success. This will aid in keeping the Look College among the top schools in research expenditures.
- Sponsorship of short courses and major conferences will occur to greater degree even than today.
- Certainly, a powerful feature of Texas A&M University and the Look College has been strong relationships with former students. By 2020 this task will be more difficult because of the much larger number of former students. One the other hand, this will present an even greater opportunity to continue and strengthen these relationships. Again, this will lead to better feedback into our programs from an extremely valuable constituency. It will also lead to an even stronger support base for the college and the University.

Summary Statement

Looking forward to the year 2020, the Look College of Engineering will be known as one of the best in the nation through its efforts in teaching, research and outreach or service. This will be accomplished through the interaction of very high quality faculty, staff and students, supported by excellent facilities and powerful outreach to the rest of the University, to other universities, to industry, to former students and, no doubt, to many others.

The College of Geosciences in 2020

Vision

The College of Geosciences intends to become the world's leading University program in Geosciences teaching, research and service, (consistent with the University's Land Grant, Sea Grant, and Space Grant missions), and to be recognized as such at state, national and international levels.

Mission

The College of Geosciences is dedicated to excellence as we strive to understand the physical, biological and human systems of our planet and the ways in which they interact. We investigate the forces that shape the past, present and future of the solid earth, the oceans, the atmosphere, the biosphere and human cultures and society. We work with society to develop, sustain and enhance our planet's resources as responsible stewards of the environment. We address the needs of people of Texas, the nation and the world by rising to the challenges posed by a changing global environment.

Context: A World of Opportunities for Geosciences

The next century holds unprecedented challenges for Geosciences as the world experiences hitherto unknown rates of population growth. Estimates vary, but the world's population is expected to rise dramatically, from 5 billion now to about 9 billion in 2020, placing enormous new pressures on natural resources and environments. Water, food and energy, worldwide, but particularly in developing nations, will require increasingly careful management to avoid potentially catastrophic problems, such as famine, waste, and environmental degradation. By 2020 new concepts and understanding will be urgently needed to find new natural resources and protect environments. In the 21st century, better Geoscience knowledge will directly affect the quality of human life, and for many vulnerable populations may be a matter of survival. Large numbers of people will become vulnerable to short term natural disasters such as earthquakes, volcanic eruptions, landslides, flooding, drought and severe weather events. Medium and longer term changes in climate will have more gradual, but potentially very severe, impacts on national and state economies in both developed and developing regions. Global economies will use ever increasing amounts of the world's resources, and will change our natural environments - some for the better, some for the worse.

There will be a wider range of jobs for geoscience professionals to provide leadership in exploration for many different types of resources, particularly water and energy, and in the management of diverse environments, especially for example, along coasts. Policy makers,

planners, lawyers, and business leaders will need a firm geosciences background to ensure appropriate “land use” decision making. A better informed public-at-large, understanding environmental and resource issues, and committed to conservation and recycling practices, will be part of a more “geoscience aware society.” It will be apparent that both local and global economic development and growth must take place within a conceptual framework of “sustainable development” if earth’s resources and environments are not simply to be depleted and destroyed by the uniformed demands of one or two generations.

The “Geosciences” - Atmospheric and Oceanographic Sciences, Geology and Geophysics, and Geography -offer improved understanding of Earth’s natural resources and environments, and human interaction with them. Geosciences provide important information on the origins, distribution, and availability of natural resources, such as water, energy, and minerals. Geosciences also seek to understand the natural processes which have shaped the Earth, and the factors which create natural hazards. Geoscientists analyze how environmental systems function, and define opportunities and limitations for human use. Geoscientists also provide key perspectives on human use of earth’s environments and resources, including historical, cultural, and social, and economic interrelationships. They predict future constraints, and impacts, in different geographic settings. The Geosciences are, by definition, supremely interdisciplinary, with important links and complementarities internally between the “core” disciplines. The Geosciences are also strongly cross-disciplinary with many natural ties with engineering, agriculture, architecture, education, business, science and liberal arts. Such capabilities, roles and partnerships will be key as Geosciences seize the opportunities which lie ahead to serve burgeoning societal needs in a finite world.

Priorities, Goals, and Directions

Goals As We Move Toward 2020

- Attract top quality faculty, staff and students in our teaching and research programs and provide them with appropriate and competitive salary, scholarship and facilities support

- Develop, nurture and support a diverse community of scholars representative of state and national demographics

- Transcend disciplinary impediments to develop inquiry-based, interdisciplinary teaching and research programs that prepare students for careers in resource development, environmental management, policy and planning, environmental law, biodiversity, landscape and coastal ecology, hazard mitigation and geobusiness.

- Enhance teaching and research partnerships with industry by attracting visiting scholars and business leaders, encouraging joint research projects, and fostering external support and advice for college units.

- Co-locate the diverse college elements in a new Geosciences Complex to bring together the academic, research and service elements in a more synergistic whole.

- Build and maintain state-of-the-art capability in computing, communications, distance learning, field and laboratory equipment; anticipate obsolesence and plan for orderly replacements.

- Manage fiscal and personnel resources with clarity, fairness and openness; provide effective strategic planning at the unit and college levels with unceasing emphasis on excellence.

Developing Actions and Initiatives

- A new Master of Geosciences degree with an educational focus on Texas teachers has the goals of promoting science literacy and building geoscience content in high school curricula.

- A new Bachelor of Arts degree in Geology, with emphasis on environmental sciences, is the basis for future combined degrees with law, business, agriculture and engineering.

- Agreements are in place and others are being negotiated to develop teaching and research opportunities with China, Korea, Taiwan, Russia, Central America and emerging nations in Central Asia.

- New administrative relationships with the Galveston campus will encourage enhanced development of joint research and teaching, more graduate faculty appointments, enhanced student recruitment on both campuses, and a revitalized role of the Texas Institute of Oceanography in service to the state.

- Our applied geosciences unit, GERG, is leading developments in life and biological sciences with discoveries of new deep-sea species, subsea hydrate resources, and subglacial exploration of life in extreme environments that may serve as analogs for other planets or moons, such as Mars or Europa.

- The college will vigorously compete for renewal of the Ocean Drilling Program after 2003. The new program will employ the latest technology in drilling in diverse environments with expanded capabilities for studies in oceanography and life sciences. A special emphasis will be on greater synergy between ODP and research and teaching activities in the college.

- With continued growth in the Texas coastal population, the Texas Sea Grant Program plays an increasingly important outreach role in the college by providing targeted research support, marine education, and objective advisory services for land use, aquaculture and biological resource issues.

- The academic departments in the college are all developing new research and teaching initiatives that emphasize interdisciplinary studies; e.g. satellite observing systems and climate change modeling; landscape ecology and geoinformatics; hydrogeology and coastal hazards; real-time ocean observing systems and ocean “weather” prediction.

The College of Liberal Arts in 2020

Vision

The College of Liberal Arts is a diverse and inclusive academic community of exceptional quality, productivity and reputation, leading Texas A&M University to a position of world renown through research excellence, innovative and effective instruction, and responsive service to our multiple constituencies.

Mission

Our mission is to make a significant contribution to humanity through the community we create, the leaders we prepare, the knowledge we impart, and the truth we discover. Our faculty will provide intellectual leadership and important scholarly contributions to their disciplines. Our programs will temper the minds and enrich the lives of all Texas A&M University students. Our graduates will be in high demand and make notable achievements in their chosen endeavors. Our campus community will reflect our highest values and best efforts, producing an environment that respects, challenges, supports and rewards each individual.

Context

Though the subject matter and the technology of learning change, the results of a good liberal arts education remain constant over time and are increasingly "practical" in our global society. Liberal Arts "teaches the fundamental and transferable life skills required for the many adaptations to career and life changes that will be necessary in the 21st century. Students who have mastered these skills will be able to think critically and creatively, to analyze and synthesize ideas in order to make decisions and solve problems, and to communicate effectively through writing and speaking." [1] Study of the liberal and fine arts creates in students the interest and ability to become their own best, lifelong teacher. It fosters a tolerance of ambiguity and complexity and an ability to imagine and share the perceptions of different individuals, cultures, and times. It cultivates an appreciation of communities global and local, and prepares students to find their place in them and contribute to society through public and private service. These are aspirations we hold for all students of Texas A&M University and constitute the fundamental argument for strengthening and expanding the liberal and fine arts programs at Texas A&M University.

[1] Vision 2020 Arts and Sciences Draft Document, Page VII - 1

In addition, President Bowen has undertaken the Vision 2020 process with the stated goal of moving Texas A&M University into the ranks of the best public universities of the nation. "All of the very best (universities) exhibit strength in the core programs of traditional liberal arts and science. No fact may be more apparent in the analysis of our comparator universities."[2] Top public universities have well-developed programs in Arts and Humanities and Social and Behavioral Sciences. They offer doctoral degrees in a large number of programs in these areas, programs that are highly regarded in rankings against both public and private universities. What distinguishes the top schools from the less well known is the number of programs that achieve top 20 or top 10 status and core competence across all disciplines. Having the core is not enough; each of the programs that make up the core must achieve a measure of distinction. In the core fields of inquiry, Texas A&M University is clearly lacking. In the status of its existing programs, Texas A&M University distantly trails its aspirational peer group. The College of Liberal Arts is a young college, only recently celebrating its 25th anniversary. Partly as a consequence, it has few fully mature programs, and none of national pre-eminence. Certain disciplines are conspicuously absent or have de minimis representation in the university's table of programs. The challenge is to simultaneously advance current doctoral programs into the top ranks, develop solid graduate programs among other existing disciplines, broaden substantially the fields of inquiry leading to (at least) undergraduate degrees - especially in the Arts and Humanities, and foster interdisciplinary initiatives of unique and substantive value.

Priorities, Goals and Directions

Research

Master's and doctoral degree programs in traditional disciplines and emerging fields of study. 90+% graduate students supported. Double the number of funded research projects. Many programs in top 20; some international reputations. Acknowledged intellectual leadership by our faculty.

Interdisciplinary Studies

Noted programs include International Studies, American Studies, Telecommunications, Health/Quality of Life, and the Bush School. Internationally prominent Humanities Center. Personalized curricula leading to a Bachelor of Liberal Arts degree. Distinctive arts program; excellent, stable performing and visual arts departments.

Teaching

Largest producer of SCH (as now); largest number of undergraduates (now 3rd) and second largest number of graduate students (now 4th). Array of innovative, learner-centered teaching technologies. Distance learning to access underserved populations and meet continuing education needs. Ties with other A&M System institutions. Flexible and personal academic experience. Reduced faculty-student ratio to 1:16.

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[2] Phase Zero, Vision 2020 Draft Report, Classical Arts and Sciences Section, page 12

Development

Highly successful college and department-level development efforts. Support of Liberal Arts Complex, 100 endowed professorships, 500 undergraduate scholarships, and other specific events and initiatives.

Administration/Infrastructure

Faculty and staff salaries exceeding peer average. Incentives for personal and professional development, taking risks to improve service and add value, and for contributing to building the community. Rewards for outstanding achievement in teaching, research and administration. Liberal Arts Complex - new and remodeled facilities at the core of campus including Performance Studies Center and Social/Behavioral Sciences building.

Summary

The sine qua non of Texas A&M University's Vision 2020 is the College of Liberal Arts. If we achieve everything else imagined in the draft reports and fail to strengthen dramatically the College of Liberal Arts, then Texas A&M University will never be considered among the elite public universities of the world. The College of Liberal Arts will enable Texas A&M University to make Vision 2020 a reality. We commit ourselves - heart and soul - to this goal.

The College of Science in 2020

Our Vision

The College of Science will continue to provide the foundation for education and training in the life sciences, the natural sciences, the medical sciences, the engineering sciences, the earth sciences, the information sciences, the political and human sciences, and the management sciences. Its departments' basic research and service programs will all reach world class status, and the college's outreach efforts will make an even bigger impact on solving the problems of the state and nation.

Our Mission

The College of Science at Texas A&M University is dedicated to 1) providing the highest quality educational experience to students, 2) contributing new information to the human knowledge base through creative scholarship, and 3) providing mathematics and science-related services to the university, the state, and the world.

Context

The College of Science faces two overarching challenges in providing state of the art undergraduate and graduate education and world class programs in all of its departments:

- The college is seriously underfunded in the areas of faculty/student ratio and attracting and retaining the faculty and students required to be top-ranked in all areas. In the past 35 years, Texas A&M has grown from a small, all-male, all-military college to a huge, state-supported, flagship university with hopes of joining the top echelon of such universities. During this time, the College of Science has striven mightily to lead in the university's efforts. For the first 20 years of this period, the college shared in the huge funding increases based on the state's unprecedented prosperity. Foundations were laid for the current top-ranked programs in chemistry and statistics, and pockets of excellence were established in biology, mathematics, and physics. The lack of funding growth over the past 15 years has delayed the attainment of top-ranked status in the latter three departments. This is a major challenge to the goals of Vision 2020; without highly ranked programs in all of the basic laboratory and mathematical sciences, Texas A&M has little hope of reaching top 10 public university status, particularly given Texas A&M's traditional nature.

- Endowed chairs, professorships, fellowships, and scholarships must be available to attract and retain the best faculty and students. Our challenge is that most Texas A&M graduates in

a position to establish endowments have their first loyalty to colleges such as business, agriculture, and engineering. The scientific core of the university has thus suffered and a development program targeting the core must be established to provide the College of Science an additional 15 endowed faculty chairs, 100 endowed graduate fellowships, and 100 endowed undergraduate scholarships.

Despite these challenges, there are several opportunities to be taken advantage of in the next 20 years, including:

- Two of the overarching theme areas established by Texas A&M are life sciences and telecommunication/informatics, areas that will require significant involvement by the college.

- Universities everywhere have acknowledged that interdisciplinary research is not only desirable but a necessity. The College of Science has been historically strong in interdisciplinary activities and will remain so.

Priorities, Goals, and Directions for 2020

- The Department of Chemistry must solidify its high national rankings by attracting three National Academy of Sciences members and retaining its best faculty. It must become universally regarded as a top 10 department, and it must play a crucial role in interdisciplinary programs such as materials, life, and environmental sciences.

- The Department of Statistics must solidify its current top 10 ranking and strengthen both its national leadership role in complex model development and its collaborative roles on campus, particularly with the health and environmental sciences.

- The Department of Mathematics must reach a top 25 status and gain a reputation as being one of the up and coming departments with outstanding strengths in broad areas of analysis and a strong reputation for collaborative efforts on campus, particularly in materials science, large scale computation, and information technologies.

- The Department of Biology must become a driving force behind Texas A&M's nationally recognized programs in the life sciences. Biology must also strengthen its relationships with agriculture and the health science center so that Texas A&M can achieve much higher status in each of the seven biological sciences programs recognized by the National Research Council.

- The Department of Physics must strengthen its core research areas with the addition of two National Academy of Sciences members while at the same time establishing strong relationships in condensed matter and atomic physics with the industries of Texas. The department must reach top 20 status nationally.

- The departments in the college must become national leaders in the widespread use of technology in traditional classroom settings as well as in workforce development, continuing education, and master's degree programs via distance. It must have strong outreach and training programs for high school mathematics and science teachers to relieve the shortage of math and science teachers in the state.

The College of Veterinary Medicine in 2020

Vision

As the only College of Veterinary Medicine in the State of Texas we:

- Aspire to be the top ranked college of veterinary medicine in the nation based on superlative achievement in the education of veterinarians, in the development of outstanding applied clinical and basic research programs in signature areas, and in exceptional undergraduate and graduate education in biomedical science.

- We will uphold and build on the special position of respect and trust we hold in the public domain, and as such we will operate within the highest standards of integrity and excellence on all our mission activities creating the image of veterinary medicine as the "caring profession."

- Will foster an atmosphere that clearly welcomes a diverse population of faculty, staff and students that is reflective of the population of the state.

- Will be careful stewards of the resources we receive operating with honesty and openness, managing effectively with a full understanding of our mission and responsibility to the public.

- Will continually seek new ways to enhance and expand our mission into areas of teaching, discovery, integration and applied medical sciences to meet the changing needs of Texas society.

Mission

The mission of the College of Veterinary Medicine at Texas A&M University is to generate, transfer and apply knowledge in the veterinary and biomedical sciences for the protection and promotion of animal and human health and well-being. This mission will be carried out through:

- Education - Professional, Undergraduate, Graduate
- Research - Strategically focused "Signature Programs"
- Patient Care and Consultations
- Public and Institutional Services

Context

Opportunities

- Superbly trained in basic biomedical sciences, comparative medicine, and the art and science of veterinary medicine the graduate veterinarian is uniquely equipped to fill multiple roles in the community of medical scientists for the foreseeable future.

- The enormous value placed on animals by today's society: as intrinsic to the health of the world's environment; as loved family members when viewed through the window of the Human/Animal Bond; as utilitarian companions from the seeing eye dog to the performing killer whale, from the rescue dog to the rodeo horse; as an irreplaceable component of the research environment; and as reminders of the "humanness" of our species, will provide opportunities for veterinarians hitherto unknown or underutilized.

- The opportunity and challenge to re-define the role of the veterinarian in society from care-giver for animal species to extraordinary scientist capable of addressing issues of concern for the health and well being of all species, including the human species.

- An expanding role in the Life Sciences to include:
  - Enhanced understanding of the Human/Animal Bond
  - A key role in the tremendous challenge of Food Safety and Public Health
  - The study of Human and Animal Nutrition to be better able to feed the World's population
  - As leaders in the understanding of reproductive technologies
  - As active players in medical and surgical research including the understanding and development of new therapeutic agents
  - As experts in the identification of animal models for human disease
  - As research scientists.

Challenges:

- To change the mind set of the public as well as that of the veterinary applicant to include the broad based field of opportunity envisioned in this document
- The high cost of veterinary education coupled with stagnant veterinary income as a deterrent to highly qualified applicants to the veterinary profession resulting in a decline in number of outstanding graduates
- To create a challenging profession that attracts a diverse population reflective of the changing population of Texas
- To generate the resources necessary to bring this vision to life

Priorities, Goals, and Directions

Priorities in Education:

Goal: We are committed to produce graduates from the professional, graduate and undergraduate programs who are knowledgeable, flexible, life long learners and who are well prepared to address issues of human and animal health and science in the 21st century. Our priorities include graduates who are:

- Knowledgeable and adept in their understanding of an ever expanding, technologically-oriented, marketplace, and capable of integrating new technology into their base of skills.
- Effective communicators and collaborators with scientists from other backgrounds in matters related to those areas where human and animal health interface.
- Intellectually curious, seeking to adapt their broad based biomedically oriented education into the development of new areas of expertise and to integrate their skills into scientific areas new to veterinary medicine.
- Committed to continue to explore the expansion of technologically based pedagogical methodology to meet the diverse educational needs of Texas society.

Priorities in Research and Scholarship:

Goal: To enhance and expand the research programs of the College of Veterinary Medicine, creating a balance between basic discovery and applied research, fostering the development of interdisciplinary, collaborative programs. Our priorities are:

- To continue to explore the fundamental processes of biological functions at a molecular, cellular, organismal and population level.
- To develop and apply new techniques for the prevention, diagnosis and management of spontaneous disease.
- To conceive, design and apply innovative teaching technologies within the veterinary profession and for presentation to external constituencies.
- To continue to explore the interfaces between humans and animals for the betterment of all species.

Priorities in Patient Care and Consultation:

Goal: To develop new scientific modalities to expand and enhance the art and science of veterinary medicine to better serve the animal and human constituencies within the state of Texas and the U.S.A. Our priorities are:

- To create a dynamic center for the generation, integration and dissemination of basic and clinical scientific knowledge.
- To creatively interface with veterinary practitioners, other veterinary institutions and a cadre of interdisciplinary faculty to provide an effective and efficient unit to better serve the expanding animal and human health needs of the state.

Priorities in Public Service:

Goal: To redesign the societal contract between veterinary medicine, the citizens of Texas and the veterinary and human health professions and to better meet the changing socioeconomic needs and demographic population patterns of our state. Our priorities are:

- To better inform the public about new advances in animal and human health.
- To identify new ways to solicit feedback from our constituencies to better meet changing needs.
- To serve as a true repository of information, accessible to all constituencies, relative to animal and human health and well being.

Summary

The College of Veterinary Medicine is prepared to move aggressively into the 21st century with new leadership, a continuing commitment to excellence and a vision for the future. As the only college of veterinary medicine in the state, we are committed to this vision - but it can only come to life if we are able to achieve the resources to make it happen. It will require a firm commitment from the University, from the State, and from the private sector if we are to be able to make the vision real.

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Shared Governance at Texas A&M University

The traditional concept of shared governance is at the heart of any great university. It reflects a general commitment on the part of the faculty, the staff, and the administration to work together to strengthen and enhance the university, and it reflects a mutual respect in the university community for the contributions that all of its members bring to the educational enterprise. One of the three reasons the American Association for University Professor provides for heeding the call to mutual understanding of the government of universities is that "a college or university in which all the components are aware of their interdependence, of the usefulness of communication among themselves, and of the force of joint action will enjoy increased capacity to solve educational problems." These three concepts–the awareness of interdependence, the usefulness of communication among all constituents, and the power of joint action–which have been and continue to be part of the essential nature of a vital university community–are concepts needed for Texas A&M to become one the top ten public universities during the next century.

The faculty have typically been responsible for decisions concerning curriculum, including subject matter and methods of instruction, research, the selection and promotion of faculty, rules dealing with academic standards, especially in terms of admissions, retention, and graduation, and those aspects of student life which relate to the educational process. Areas of critical importance for joint decision making with faculty are also generally thought to include long-range planning, physical plant and facilities, development and utilization of resources, the university calendar, budgeting, and the selection and evaluation of administrators.

Through the Vision 2020 initiative, the university administration has attempted to bring together a large number of participants to represent both the on-campus and the off-campus members of the university community to be part of this long range planning effort. In fact, this effort has itself been an exercise in shared visioning and planning, and the extent to which the vision provided here captures the imagination of the members of the university community and shapes their future individual and joint actions will be the extent to which the vision will be realized. Some of the top 10 universities have suggested that faculty participation in governance "promotes and encourages diversity of ideas, a sense of shared responsibility, collaboration, collegiality, and institutional excellence." These five goals for faculty participation in shared university governance fit well into the overall vision for Texas A&M University in the 21st century.

Areas of concern in the successful implementation of university shared governance will continue to be the establishment of productive communication among all university constituencies; the institution of open, well-communicated, timely, and participatory decision making processes

used for accomplishing academic goals; the use of appropriate faculty governance procedures for all academic units, including departments, schools, colleges, and universities; and the question of how to make the university as participatory as possible by involving a broad range of faculty in university governance through a well developed committee selection process that involves both the election and the appointment of committee members. The importance of shared governance to the well being and productive decision making of the university will be articulated to the broader community through the example provided by Texas A&M University and through the leadership provided by Texas A&M University faculty, staff, and administrators at the community, state, and national levels.

To begin to accomplish this broad vision of increased faculty participation in shared university governance at Texas A&M University, the following recommendations are provided:

The application of the principles of governance to all academic units.

It is suggested that while the principles of governance shall apply to all units, the forms of faculty governance may vary among units. However, it is recommended that each academic unit at Texas A&M University be required to have a set of written rules and procedures for its governance and that those rules and procedures be made available to all faculty members.

The development of a Faculty Handbook.

This handbook will clearly present the principles of shared faculty governance, will provide: links to the university rules specifically dealing with faculty issues and concerns, may provide additional clarifying information related to rules governing faculty concerns, will provide a complete picture of all campus committees that invite faculty participation, including both Faculty Senate committees and other university committees, including those that answer to the president, the executive vice president and provost, and the other vice presidents.

Broad faculty participation on university committees.

The first step to increasing participation on university committees would be to publish the existence of, the purpose and functions of, and the selection procedures for each university committee. Then each year the whole faculty should be asked to provide a list of the committees on which they would like to serve. This list should be kept in the Faculty Senate office to be used by the Committee on Committees, the Executive Committee, and any other group or individual wishing to select faculty participants for university committees.

Providing both more timely and more participatory decision making processes.

The Faculty Senate and the university administration should establish additional regular channels of communication, so that academic decisions can be informed by broad faculty input solicited in a timely manner.

Strengthening of communication and cooperation with other constituencies of Texas A&M University and with other faculty groups throughout the state.

It makes sense that advocates for higher education work together to publicize common concerns and ensure that the voices in support of higher education are heard.

Formation and continued strengthening of the Faculty Senate as the representative voice of the faculty in the shared governance of Texas A&M University.

Since its formation sixteen years ago, the Texas A&M University Faculty Senate has assumed a prominent role in decisions affecting the faculty, staff, and students at Texas A&M University. The challenge is to maintain the vigor of the senate and continue to strengthen its role in the governance of the university.

Submitted by the Executive Committee of the Faculty Senate, Texas A&M University,
Diane S. Kaplan, Speaker of the Faculty Senate 1998-1999

The Campus in 2020

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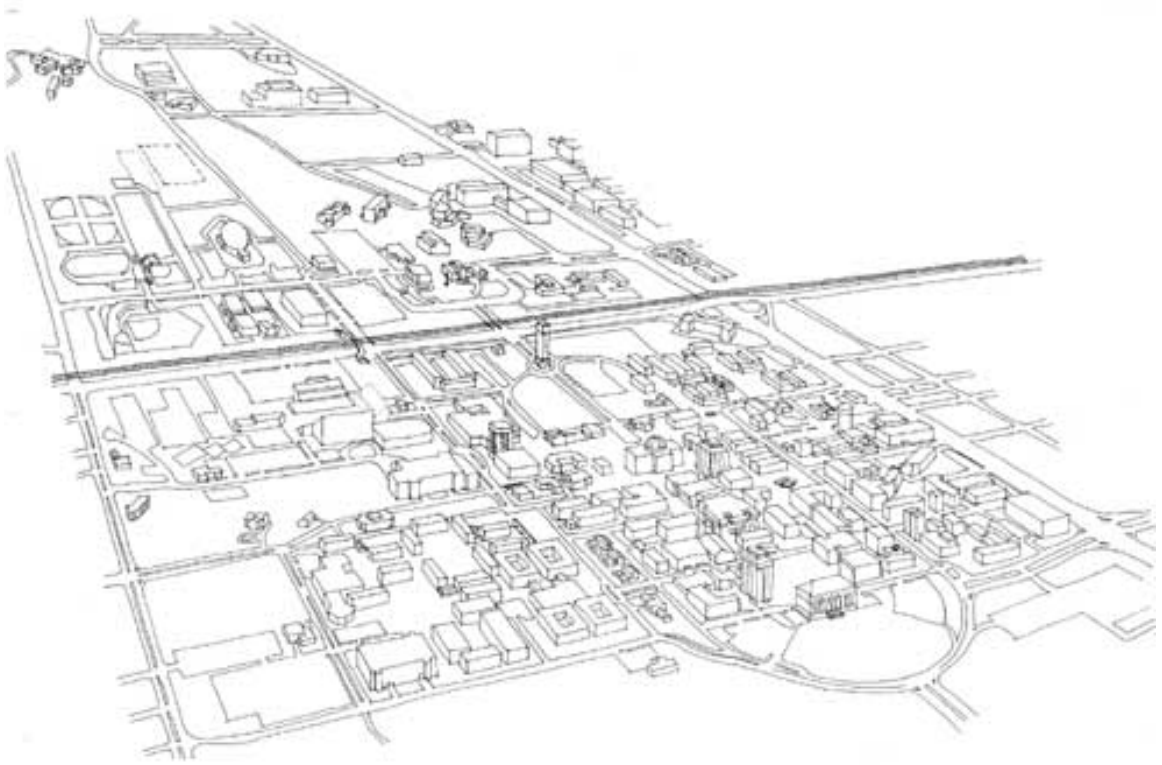
Introduction



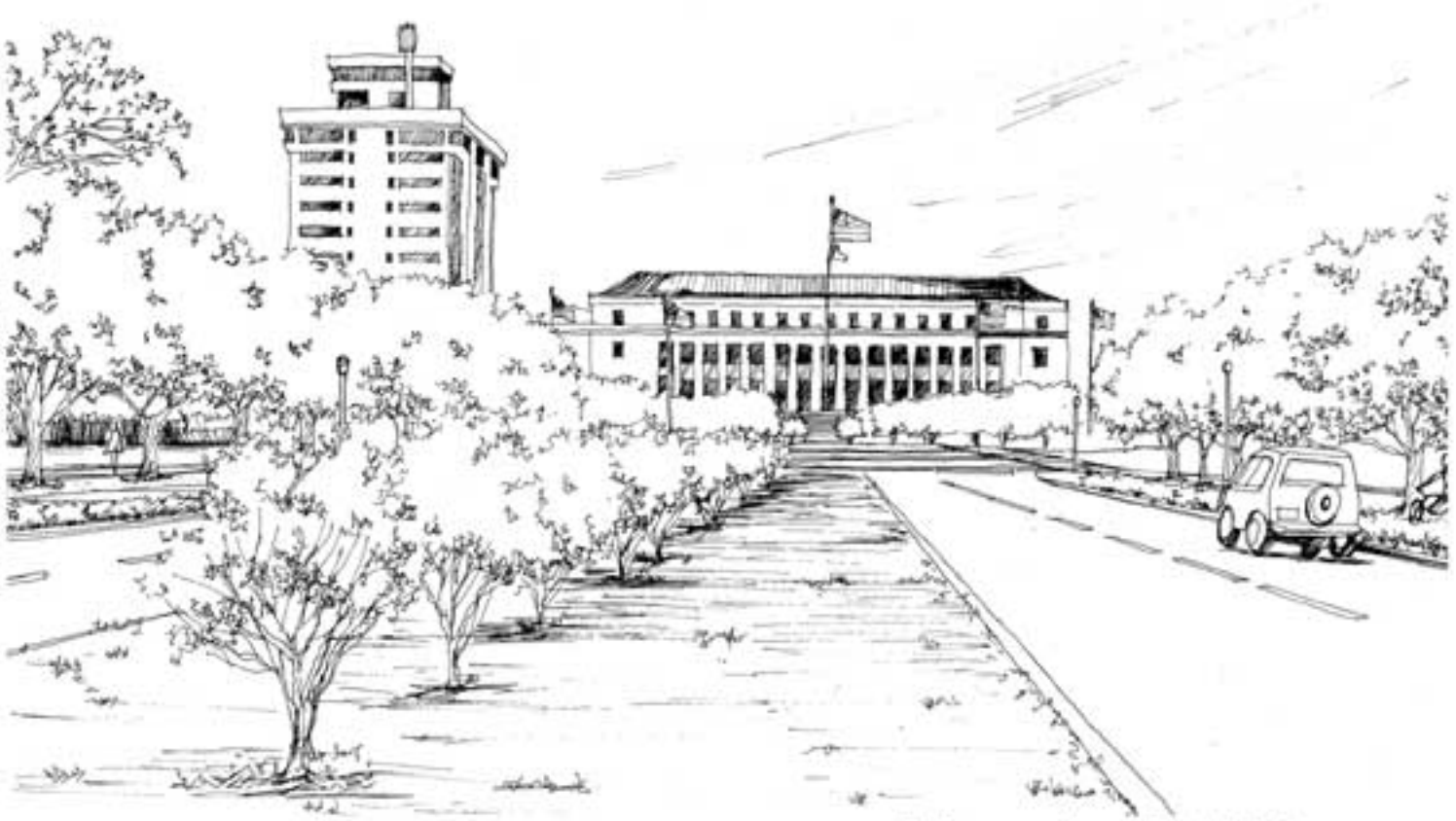
The Texas A&M University experience is unique and memorable for every student and visitor. The people we meet, the friendships we make, the rituals we share are the spirit of Aggieland written large in the lives of thousands. This institution of magnificent traditions is also an educational 'city' with 43,000 students, almost 2,400 faculty and more than 5, 600 staff. For its size, the A&M campus runs with remarkable efficiency considering the number of people and activities and services operating within the two-square mile campus.

But there are some challenges in Aggieland that are a product of its popularity and growth. Students waste valuable time waiting for parking spaces. Distances across campus between classrooms may take longer to traverse than the time allotted between classes. New construction is extending the campus further from its original core and changing the character of the live oak-lined walkways and streets.

A vision for what the Texas A&M University campus can be in twenty years has been formulated by a design studio in landscape architecture in response to two of the imperatives in Vision 2020: Creating a Culture of Excellence, Imperative 8: Enrich Our Campus and Imperative 9: Build Community and Metropolitan Connections. Three areas of concern are identified and ideas illustrating their expression are portrayed. First - to restore a sense of campus identity. Second - to reconnect the East and West Campuses now divided by a highway and railroad track. Third - accessibility must be improved for getting into and around the campus.

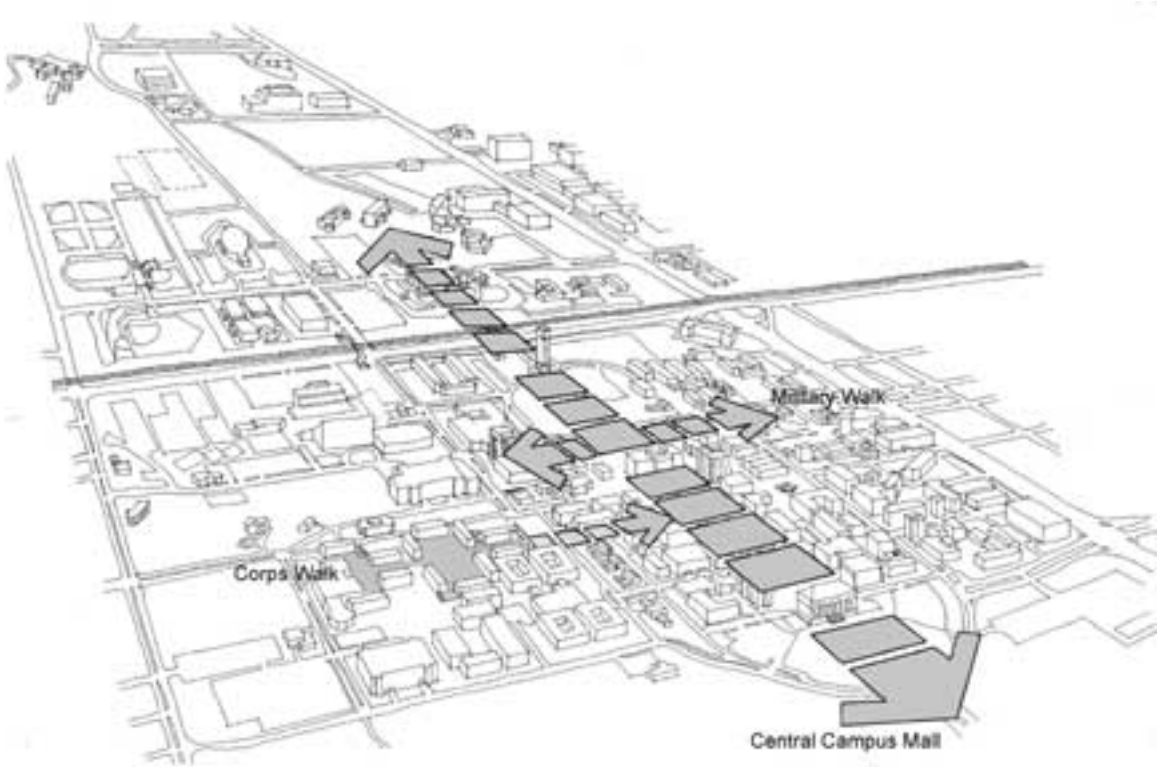
Imperative 8: Enriching the Campus

Texas A&M is fortunate to be a university rich in traditions. The list of activities and places on campus that are celebrated by successive generations of Aggies is long and distinguished, but every Aggie remembers the Bonfire sites, Midnight Yell Practice in Kyle Field, Reveille's graves, and the statue of Sul Ross. As we look toward to the next century we must ensure that the traditions of Texas A&M are continued and enhanced in the physical campus. There is a story, a narrative to Aggieland and being an Aggie. The campus physical environment should tell that story to students, alumni and visitors every day.



A Perspective of Main Entry
in front of Jack Williams Administration Bldg.

Restoring a Sense of Campus Identity

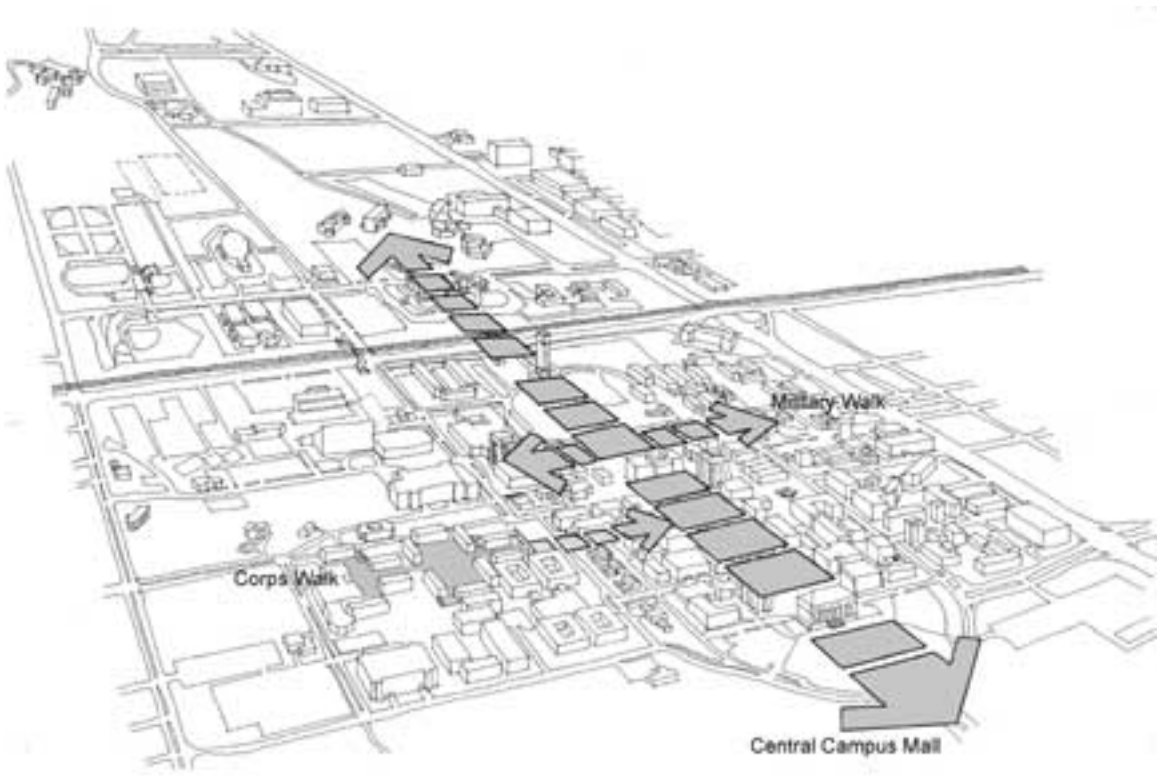


Whenever someone mentions Texas A&M a distinct image of the campus should spring to mind. Perhaps the elegant front drive along the central campus axis in front of the Jack Williams Administration Building or maybe the wonderful shady walks under spreading live oaks are the treasured memories. The sense of being a member of this institution should be carried into the physical presence of the campus itself. There is a narrative of traditions and experiences to being an Aggie and the campus should have special places that reinforce that narrative. Military Walk from Rudder Center to Sbisa Hall, the walkway from the Corps Quadrangle to the central campus axis and Evans Library, the pathways followed by seniors during Elephant Walk are all examples of campus pedestrian experience reinforced by university rituals. These rituals need to be made manifest in the everyday campus experience of students, faculty and staff just as the dedicated lawn around the Memorial Student Center is a daily reminder of those who made the ultimate sacrifice for their country.

Our visitors to campus have difficulty orienting themselves. Little welcome is provided to those parking in the garages and walking to various buildings; not even a campus map is provided. Clear orientation is important for visitors to feel welcome. Leading people into the central campus axis walkways is an effective way to introduce them to campus and provide an orientation system for moving among buildings.

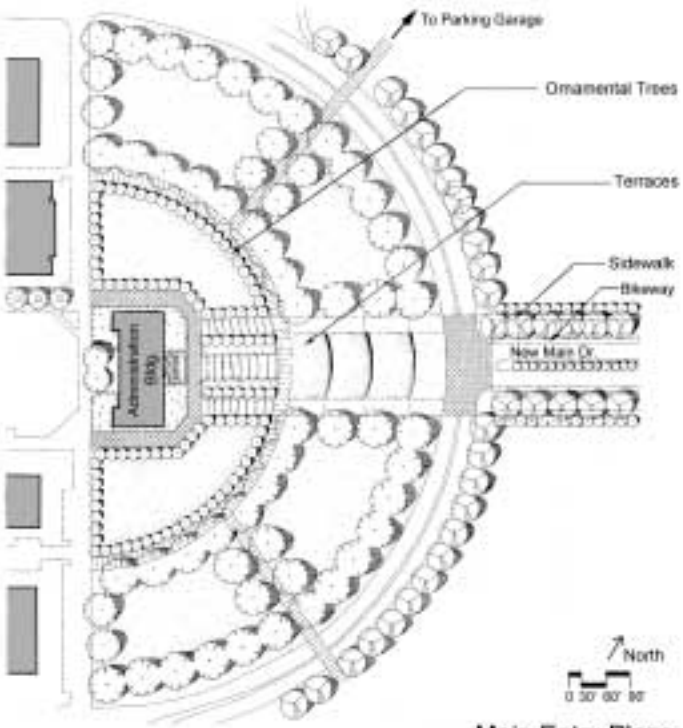
Central Campus Axis

The central campus axis connects East and West campus. It simplifies campus movement and represents the traditional spirit by redesigning the open spaces using different paving patterns and materials. This will also function as a wayfinding device. It reinforces the orientation of the campus buildings by reconnecting Military Walk, surrounding Silver Taps Plaza, the new cultural diversity plaza, and the pedestrian underpass connecting east and west campus at Wellborn Road.

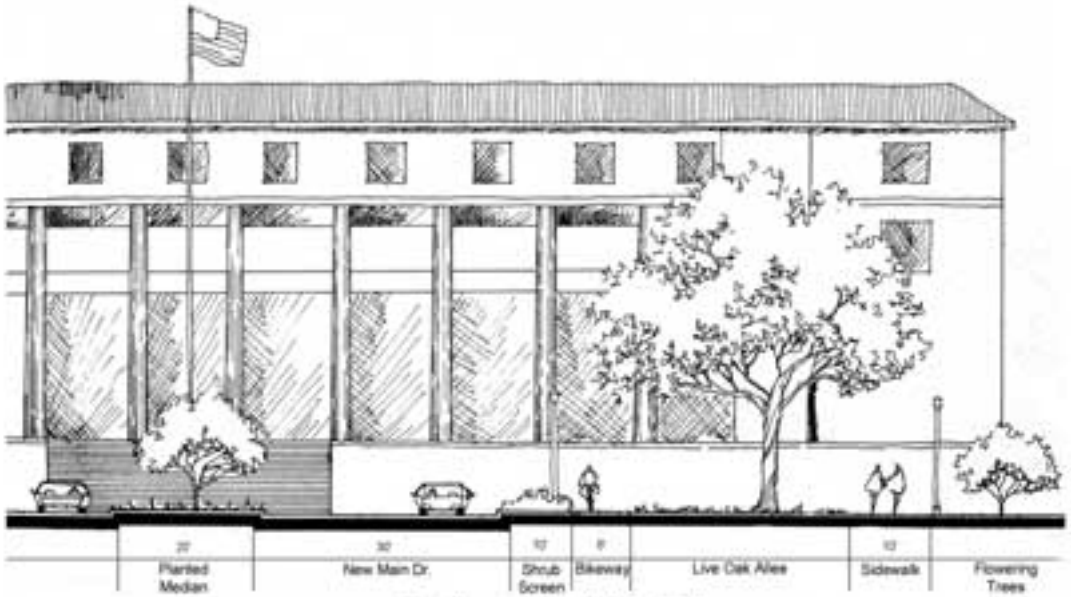


Main Entry Plaza

Suggestions that would enhance the image of the Main Entry Plaza include planting more flowering trees to frame the Williams Administration Building, redesigning the front garden to eliminate the steps and create terraces, and removing the flanking parking lots.



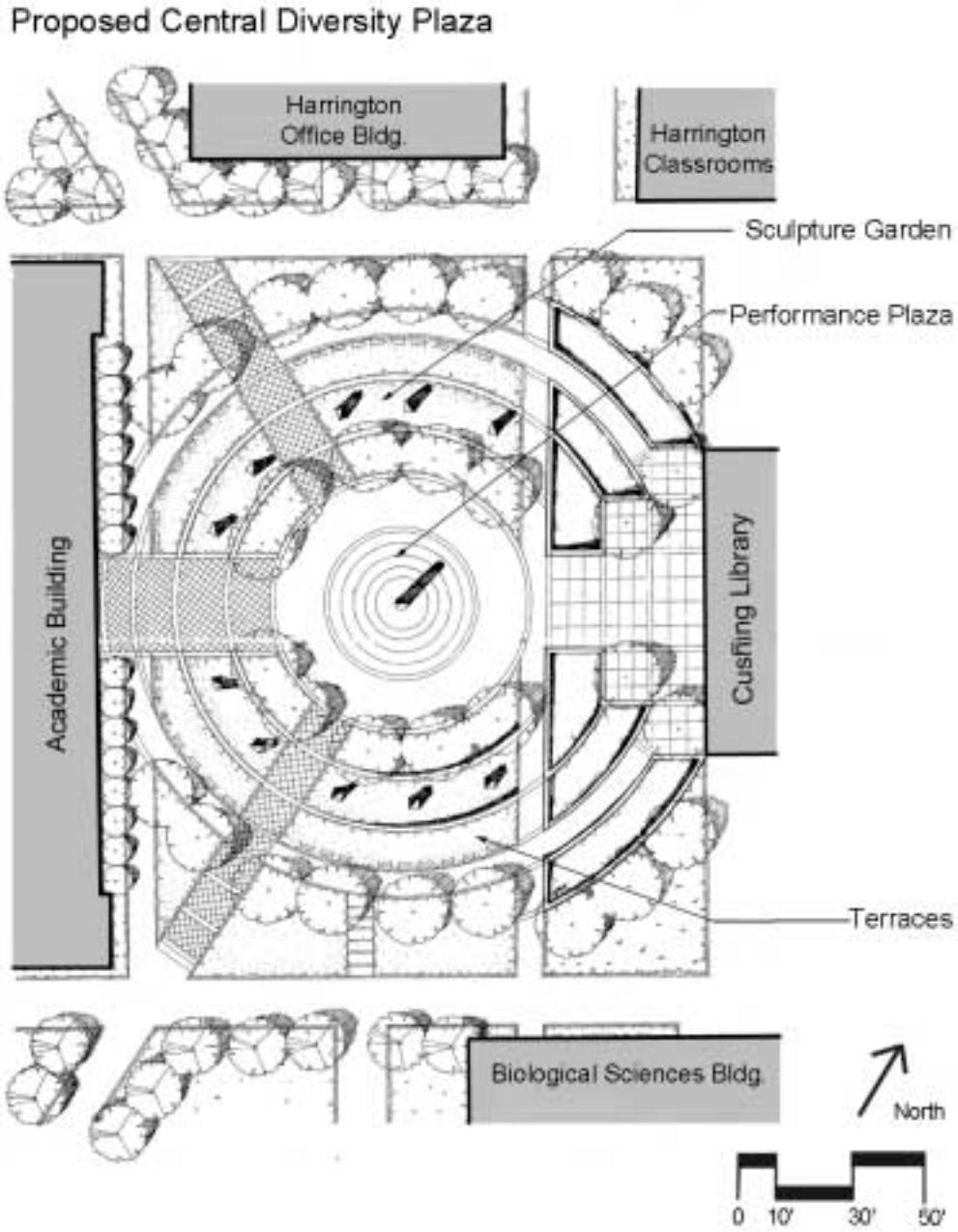
Main Entry Plaza



Section of New Main Entry

Diversity Plaza

Diversity Plaza is located between the Cushing Library and Academic Building. The main concept is to represent diversity by designing a sculpture garden and performance plaza. The sculpture garden represents a multi-cultural image. The performance plaza provides a venue for student activities, which retell the Aggie traditions with a personal cultural interpretation. In order to deal with the elevation changes, the plaza uses retaining walls to create terraces and seating areas. The shade trees provide comfortable places to watch people and take a break between the classes.



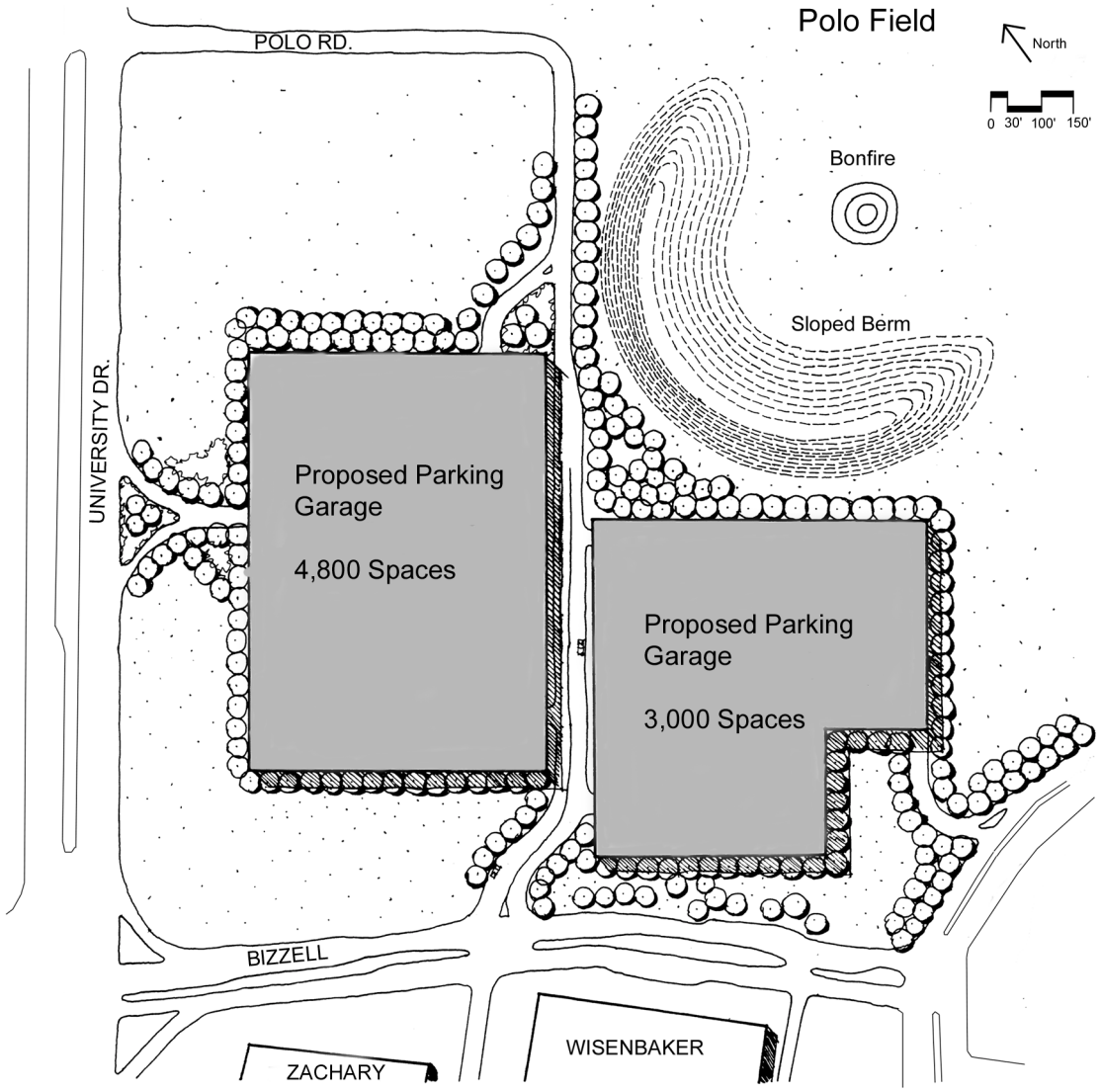
Military Walk

Military Walk, from Rudder to Sbisa Hall would be redesigned in a simpler form. The proposal is for two tree-lined, fifteen-foot wide walkways that would permit both ends of the walk to be visible. At the intersection of Military Walk and the central campus axis, in the space in front of the Sul Ross statue, would be a designed space for Silver Taps to commemorate future Aggie Silver Taps honorees.

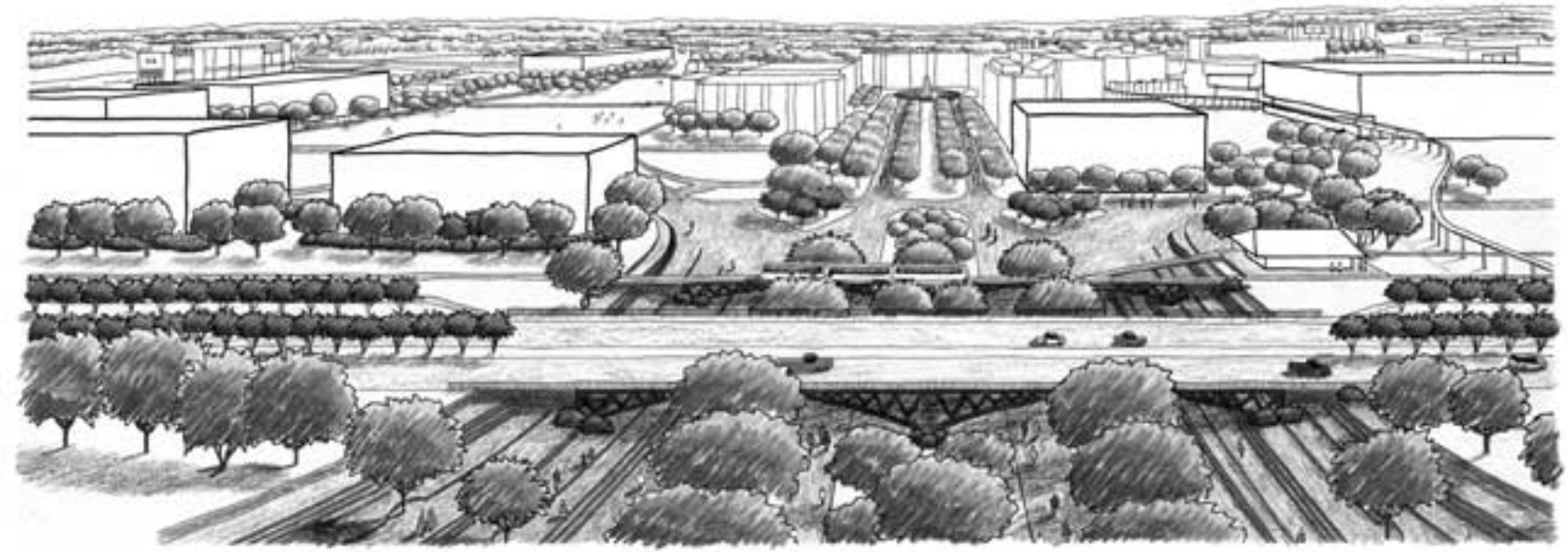
View of Military Walk Towards Sbisa Dining Hall

Bonfire Site

The location of Bonfire is not visible year round. The proposed berm would provide a definition of the space used for bonfire and provide an observation area during the stack and burn. It would form a natural amphitheatre for the main event. Throughout the rest of the year the berm would provide an outdoor space for sunbathing, reading, and gathering after Bonfire was over and the site reclaimed.



Connect East and West Campus

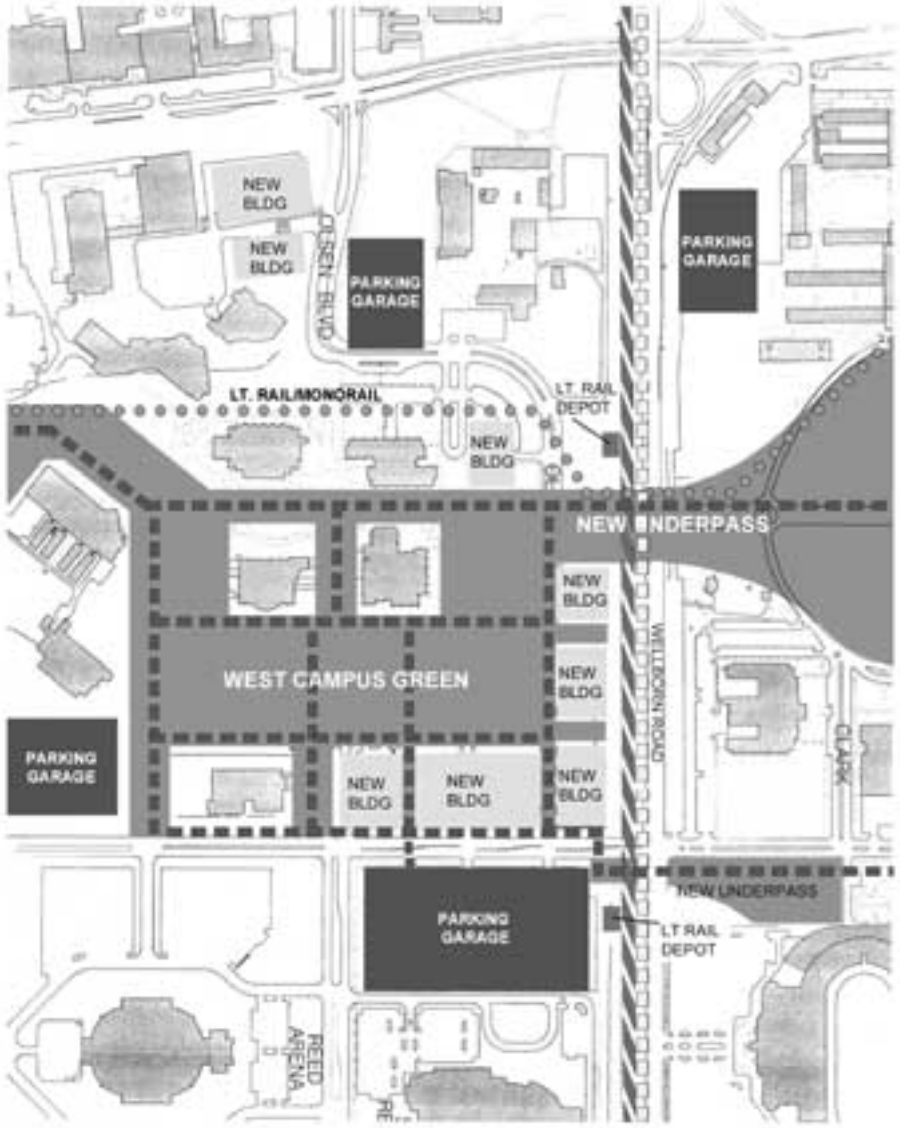


The original campus axis from Texas Avenue through the middle of campus, the Academic Building and Evans Library out to the Albritton Tower needs to be reawakened and made more obvious. West Campus has lost its sense of orientation to the central axis and the proposal shown is one idea for reclaiming West Campus as the other, equally important half of campus. West campus suffers from a lack of pedestrian friendly experiences, too many parking lots, not enough shade, and a suburban office park setting that is incongruent with the original campus center.

West Campus Green

Future development of west campus to increase its density will help integrate it with the existing campus to the east of Wellborn Road. Integral to this plan will be the designation of future building site to control campus sprawl, as well as define the new west campus green. Similar to Simpson Drill Field on east campus, the new west campus green will provide not only a focal point but also a multi-use space important for recreation. It will also serve as the central link between the new campus underpass and the proposed Barbara Bush Arboretum, providing a pedestrian link from the campus entrance on Texas Avenue to the George Bush Presidential Library and Research Park.

The new pedestrian underpass at Wellborn Road will connect east and west campus through a park like setting minimally affected by the overhead road. A new lake and fountain will terminate the central campus axis. The new west campus green will invite a variety of recreational uses. Designated building sites will reduce sprawl and maintain the designed open spaces. The light rail system will provide efficient and timely travel within the campus.

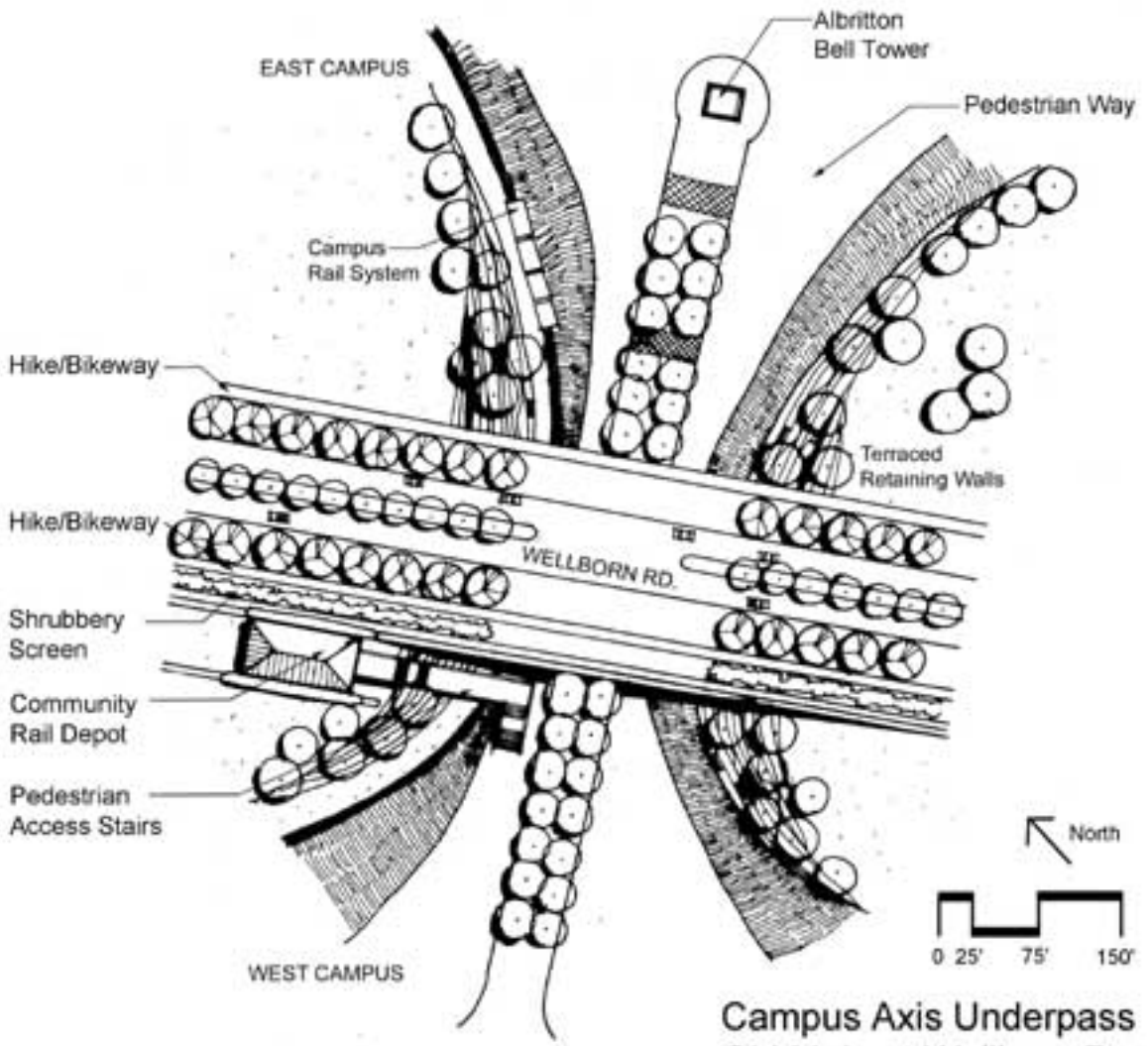


CAMPUS ROUTES

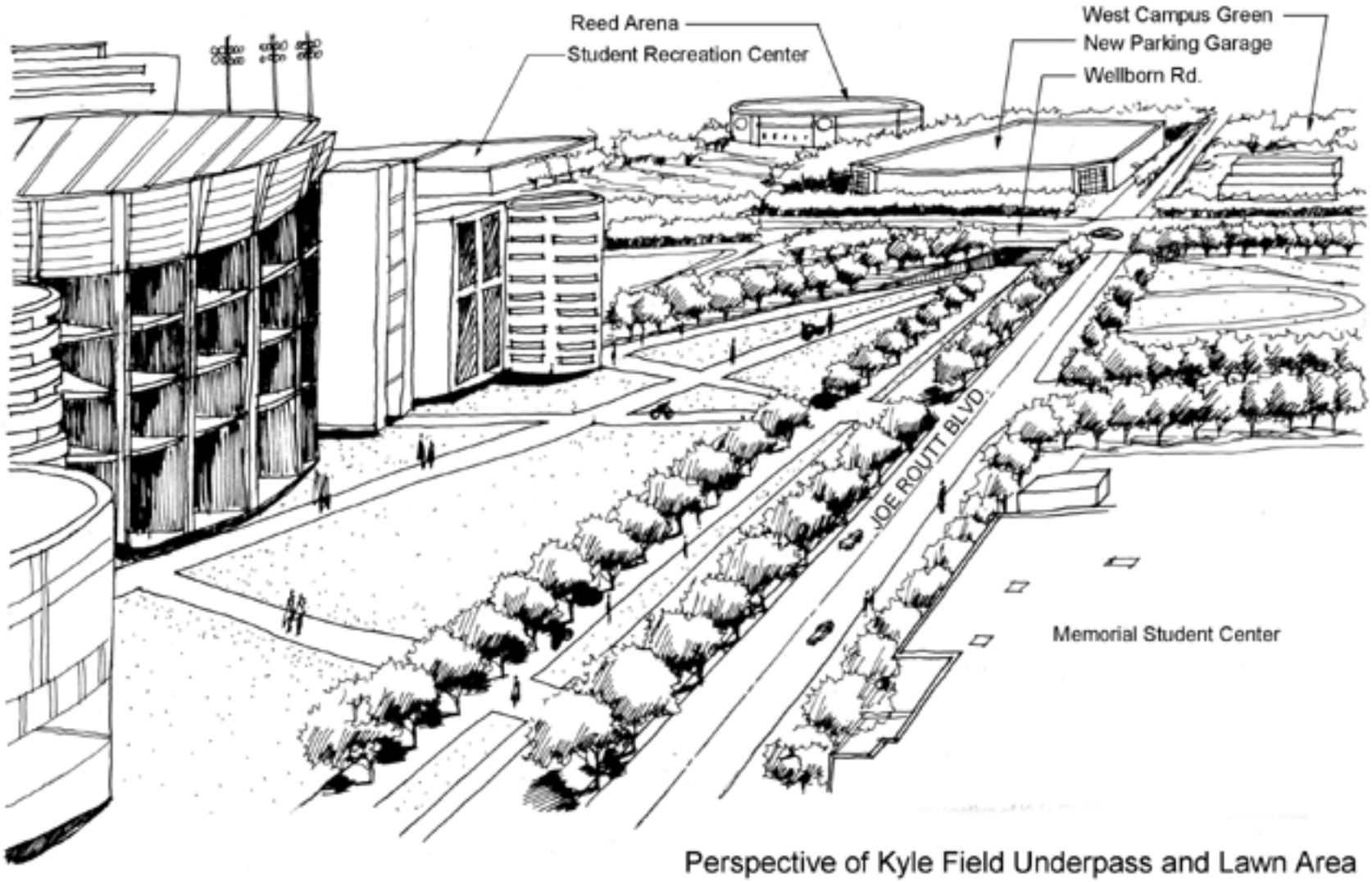
PEDESTRIAN
HIKE/BIKEWAY
CAMPUS RAIL
COMMUNITY
LIGHT RAIL

Campus Underpass : Old Main at Wellborn Road

The creation of the pedestrian underpass will provide the link from east to west campus. The double arches will span approximately 160 feet, enough to accommodate the light rail system, pedestrians, and bicyclists. The underpass's paving will clearly define the lanes for bicyclists and pedestrians. The terraced edges, planted with a variety of plant species, will allow for sitting and gathering space.

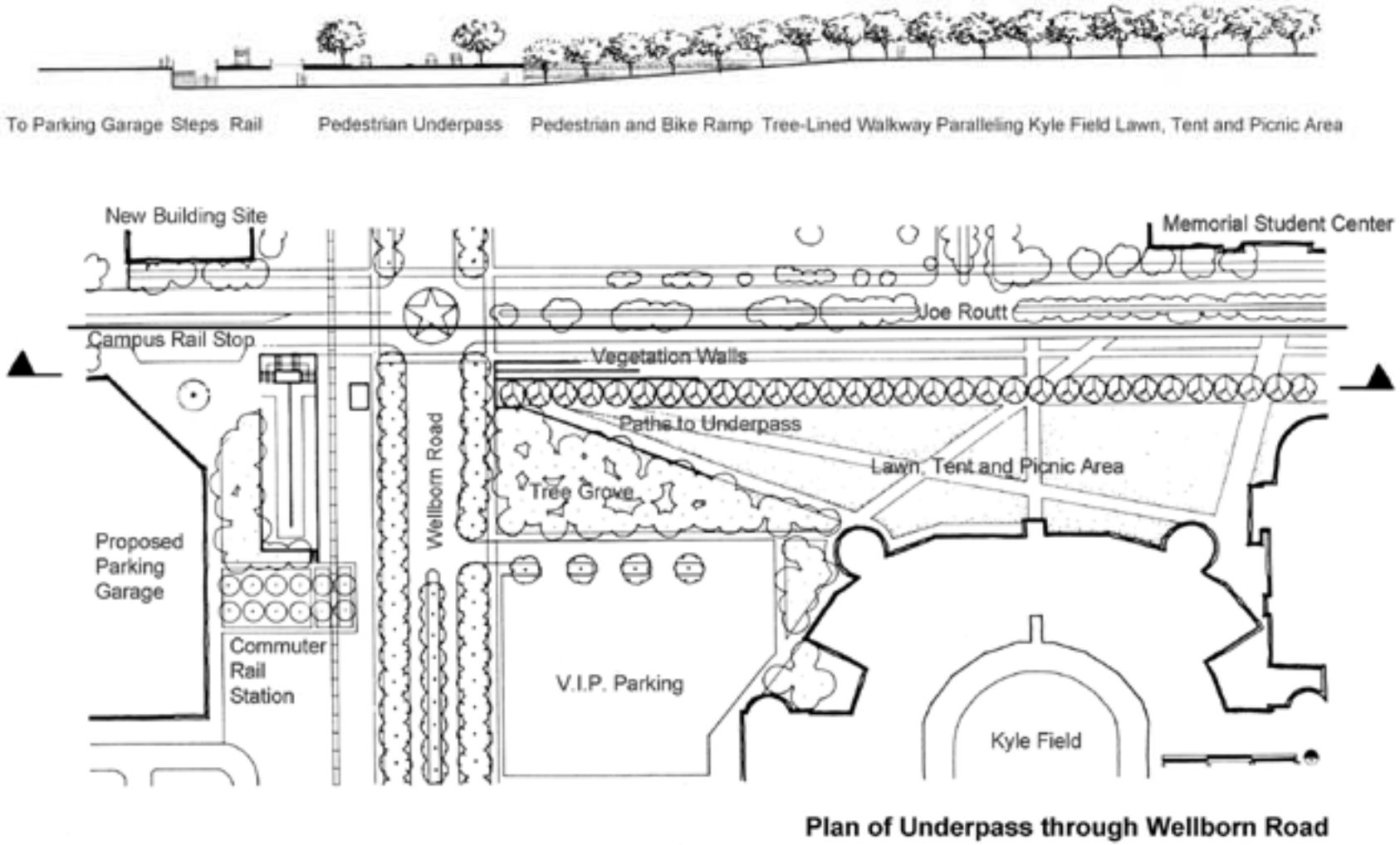


Kyle Field Underpass



Perspective of Kyle Field Underpass and Lawn Area

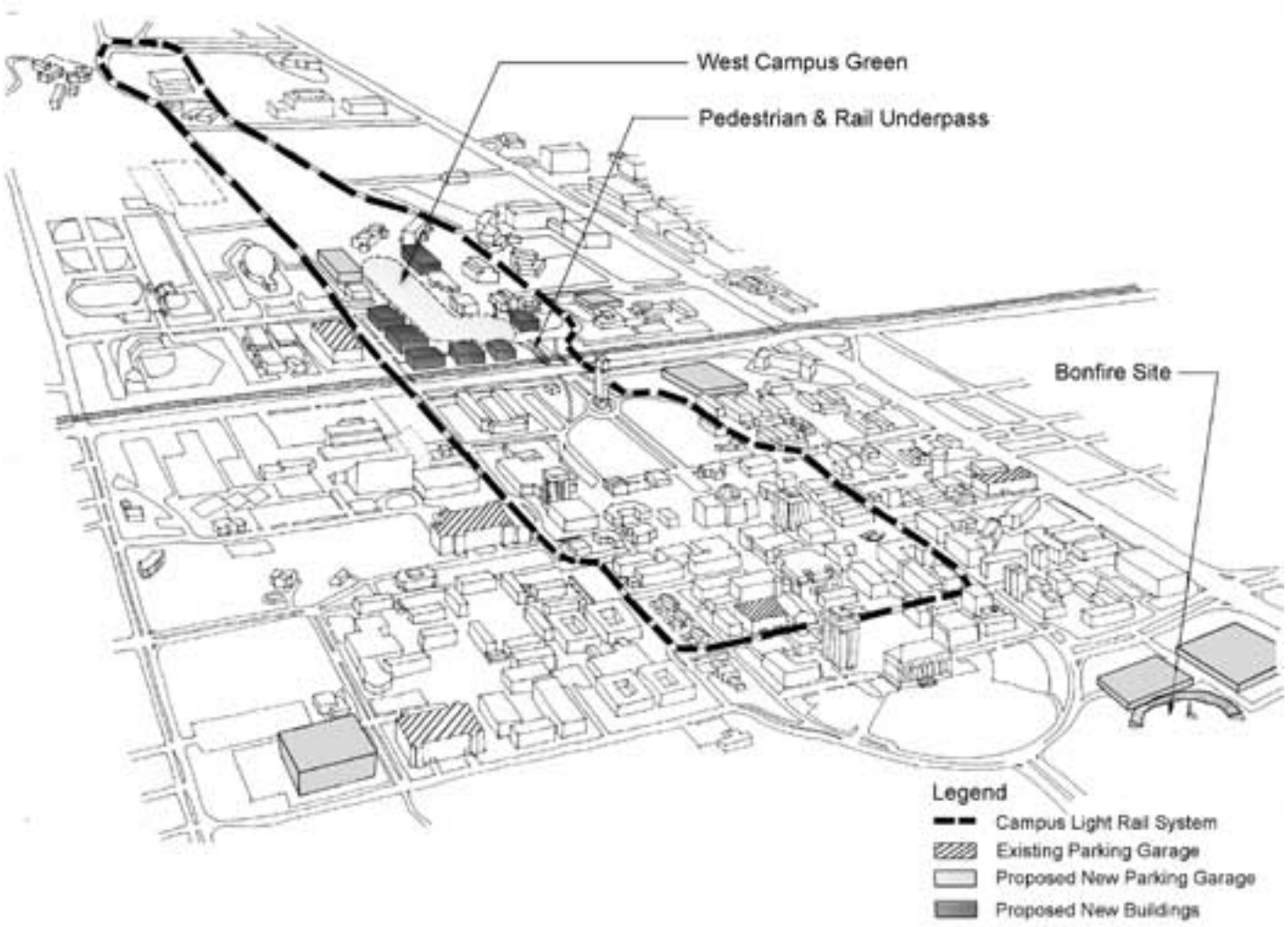
Campus Underpass: Kyle Field at Wellborn Road



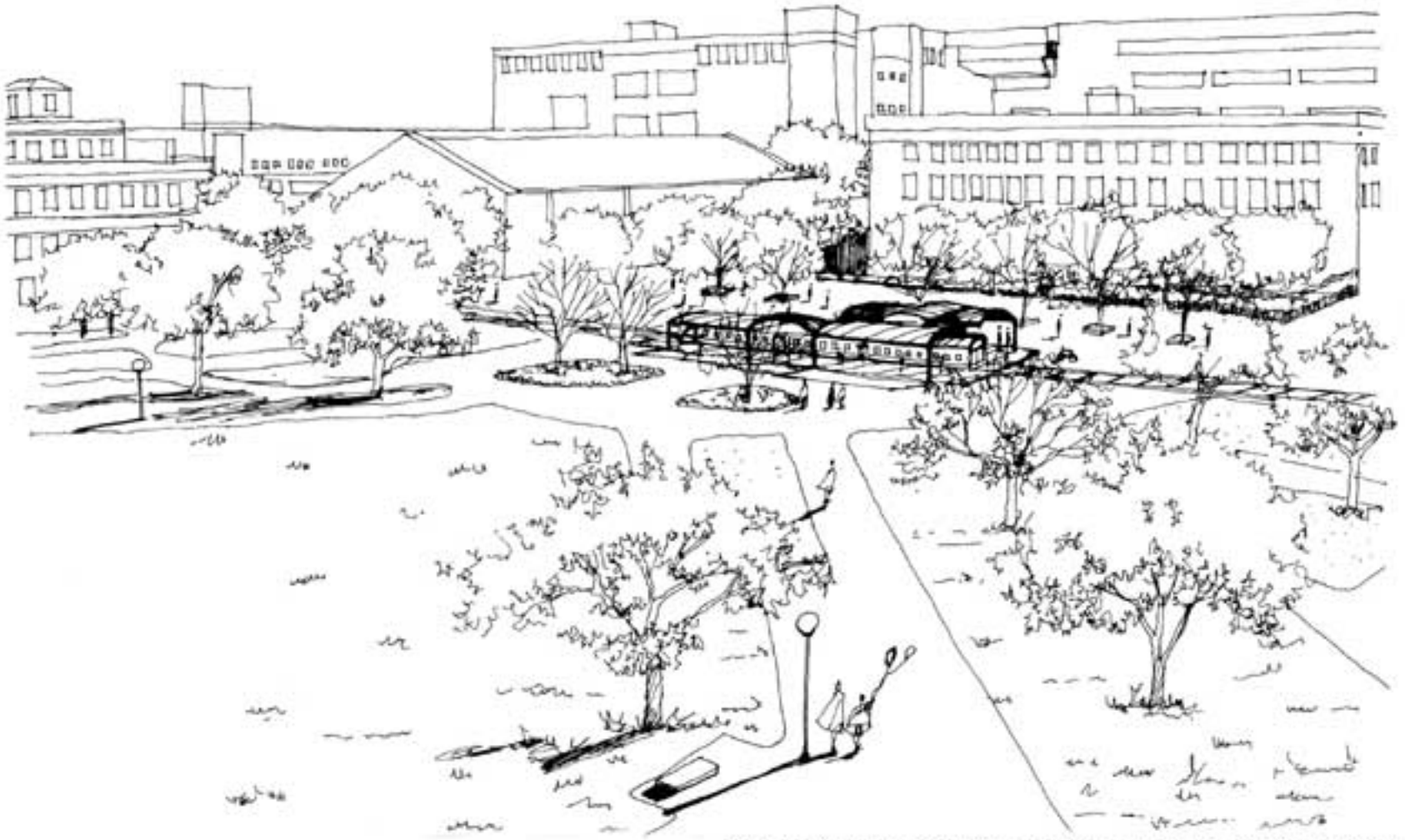
Plan of Underpass through Wellborn Road

Campus Light Rail Loop

The proliferation of surface parking lots and the spread of campus buildings on West Campus has created a time problem for students moving among buildings to different classes. A three-mile looped light rail system is shown as an alternative to buses and half-hour walks from peripheral parking. While the construction of a light rail system may seem excessive today, such a system will permit easy and quick access to all parts of campus regardless of a person's physical ability. Efficient and barrier-free movement around campus via a rail loop improves everyone's experience at Texas A&M. This would be especially important during special events to facilitate distributed parking.



Pavilion Rail Stop



Scene of Light Rail System through campus in front of Pavilion

Koldus Building Rail Stop

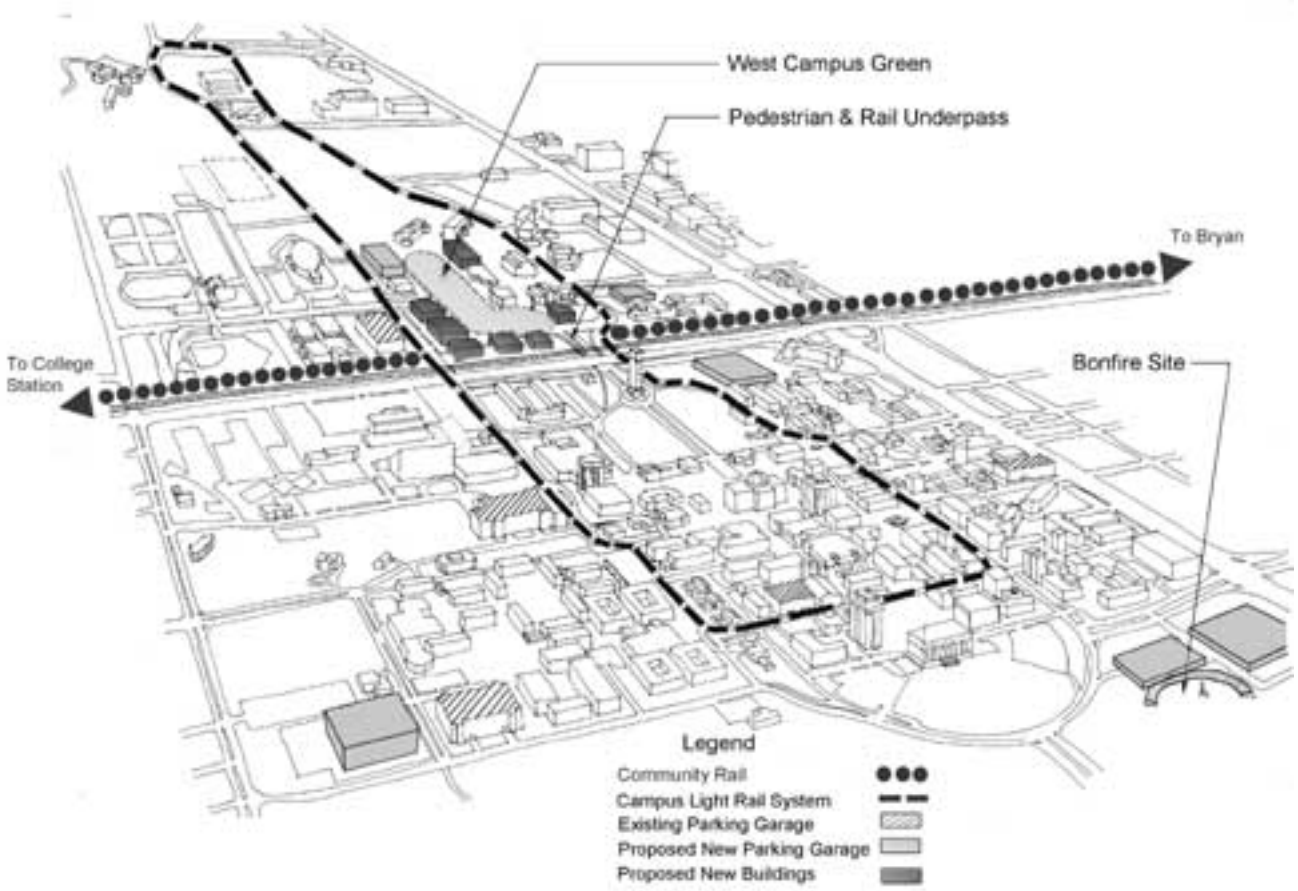
View of Light Rail System through campus in front of the Koldus Building

Improve Campus Accessibility

Access to campus by pedestrian, bicycle and automobile is a challenge currently. Poorly distributed parking areas make parking on campus a daily challenge. A bus system loops through the community and back to campus, but is not a preferred mode of travel for students despite the inconvenience of finding a parking space. Student proposals included increasing the number of parking garages and locating them closer to the East and West Campus cores and along the light rail loop. Rail stops for "Aggie Rail" would be adjacent to the new garages to facilitate getting around campus. The garages would also be only a few minutes walk away from the campus central axis so visitors could easily orient themselves within the campus.

A new 'center' for West Campus is proposed to replace the surface parking lots across Wellborn Road between Kimbrough and Old Main Extension. Parking would be in new garages. A minimum of eight new building sites are identified in that location. Buildings would surround a large open lawn lined with trees, similar in scale to the Drill Field on East Campus.

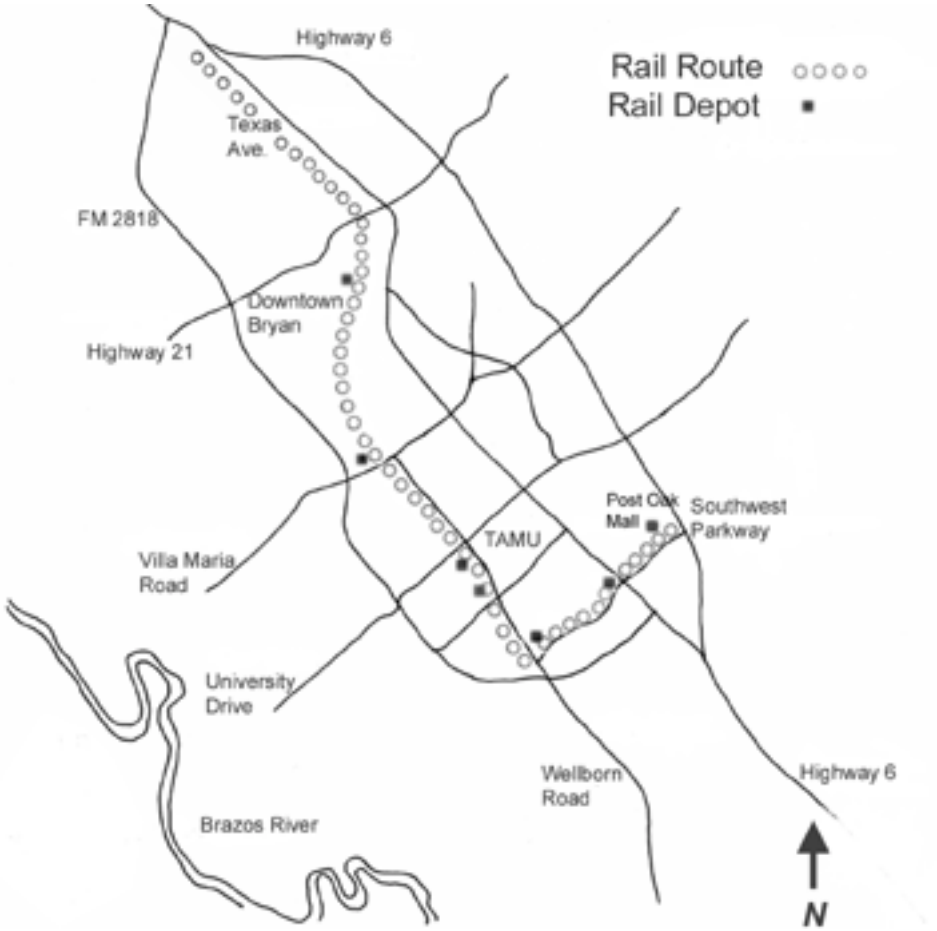
Linking Bryan and College Station to the A&M campus with a proposed light rail system would be a more beneficial and efficient system that the current bus system. Light rail is safe, fast and combines easily with pedestrian and vehicular traffic. It is environmentally friendly and totally accessible.



Community Light Rail Connections

The existing heavy rail right of way along Wellborn Road could be converted into a light rail system, reducing production costs and construction time. From the south, the rail would run along Southwest Parkway, sharing the street with vehicular traffic. The current eastbound lane would be converted into the light rail lane, and traffic moved to the existing turn lane. The northbound train would connect downtown Bryan to the campus using the existing heavy rail right of way. The two tracks would come together at the "main" station near the proposed campus pedestrian underpass. The southbound train would have a second campus stop near the parking garage north of the Student Recreation Center.

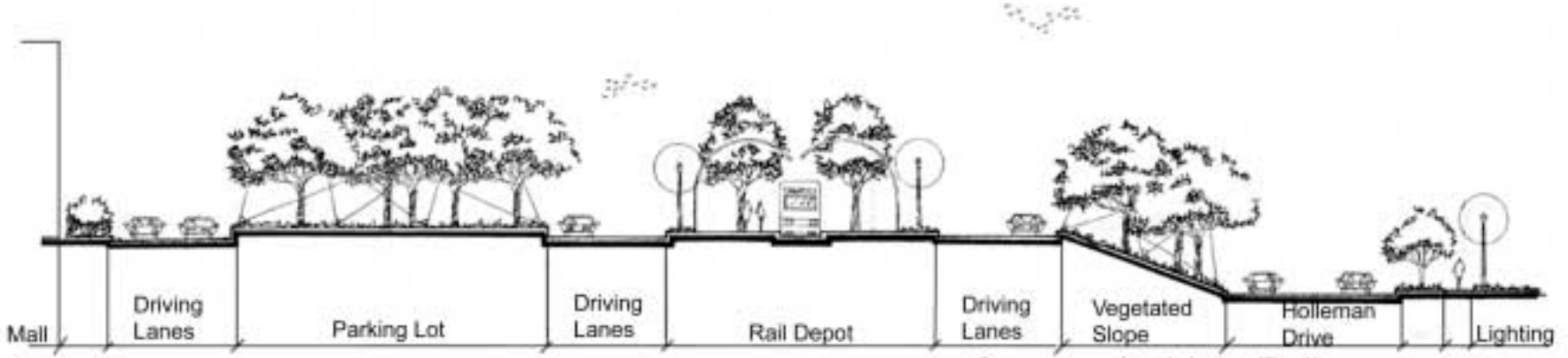
The low floor train is totally accessible, with no elevation change from the platforms onto the train. Each train would be composed of three 30-foot cars, capable of carrying approximately20 passengers and several bicycles. Speed will be between 15 and 35 mph. The frequency of southbound trains will be greater due to the population density in the area served.



Light rail is conveniently built in "sections" allowing for future development. The proposed light rail could link the two communities onto a loop system that would service all areas of both communities. Further expansion can also provide lines and alternative transportation to Austin, Houston and Dallas.

Rail Depots at Old Main Underpass and Post Oak Mall

Campus Pedestrian Underpass Section at Wellborn Road



Community Light Rail
Southern Terminal at Post Oak Mall

The Bryan-College Station to Houston Corridor Study

Introduction

The rail project summarized below is a graduate student assignment in transportation planning (PLAN 612) which was completed as part of the Masters in Urban Planning program in the Landscape Architecture and Urban Planning Department in the College of Architecture at Texas A&M University. The assignment was to design a rail system to support a hypothetical new research park between College Station and Houston.

The transportation planning strategy and approach employed for this assignment is unique. Normally, a transportation need or problem would be identified and various solutions (e.g., additional highway capacity, bus lanes, rail, or whatever) would be evaluated, leading to the selection of a "locally preferred alternative." Under this procedure, rail would be very difficult to justify in a sparsely populated almost rural corridor such as between College Station and Houston. In the analysis presented here, contrary to the usual procedure, the rail system is planned in conjunction with the research park. The two projects are envisioned as totally integrated. The rail system, therefore, provides "dedicated" service to the research park in that the research is the primary destination served by the system. Travelers with other destinations may, of course, use the rail service. (One ridership scenario involves the diversion of College Station / Easterwood Airport passengers to Houston / Bush Intercontinental Airport via the rail line.)

As a consequence of this approach, issues such as mode share (i.e., the diversions of travelers from other modes, primarily the automobile) are less critical. Since the rail system is planned for implementation along with the research park, there is very little modal competition. The rail system will always be competitive with the private automobile in terms of travel time. This logic justifies the relatively high mode share shown in the analysis. (The two scenarios show 20 percent and 50 percent of research park employees using the rail system, respectively.) It also justifies the directness of the route and the limited number of stations (both of which contribute to the operating speed which is discussed next).

Another feature of this analysis is the rail technology envisioned. Existing commuter rail systems typically operate at speeds of approximately 40 miles per hour (mph). The rail system envisioned in this analysis is assumed to operate at 90 mph. This is well within the capability of existing technology. It is also consistent with the limited number of stations (basically College Station, the research park itself, northwest Houston, and Bush Intercontinental Airport). This relatively high operating speed is reflected in the operating cost estimates which use the highest

cost per vehicle mile recorded for an existing commuter rail system (as opposed to the vehicle hourly cost which would underestimate operating costs).

Finally, while funding is not a primary aspect of the analysis at this level, the unique nature of the project and procedure allow for a range of innovative and non-traditional funding options, including but not limited to various public-private cooperative ventures (e.g., the use of public right of way for the tracks based on the savings associated with not having to expand the existing highway facility to serve the research park, and/or the partial funding of the operating costs of the system as part of the operating cost of the research park itself).

. . . . . .

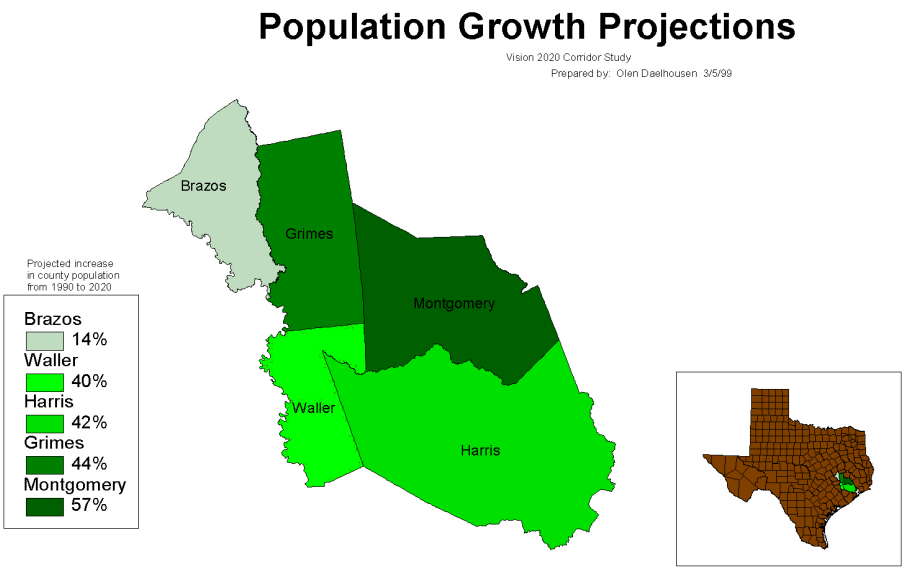
Metropolitan Connection

Connections to metropolitan areas offer many advantages and enhancements to universities. Historically, universities followed the earlier pattern of monasteries and located away from the distractions of populated areas. As we enter the 21st century, and hi-tech manufacturing grows, linkages between universities and applied science are becoming more important. A new form of land use, the research park, was first created semi-spontaneously in the 1950s at Stanford University and created a symbiosis between research, academics, and business. Locating a research park between Bryan-College Station and Houston, in a transportation corridor, would draw on the academic resources of Texas A&M University and business resources of Houston. The research park would benefit the mission of Texas A&M University and help businesses apply Texas A&M's research and create jobs.

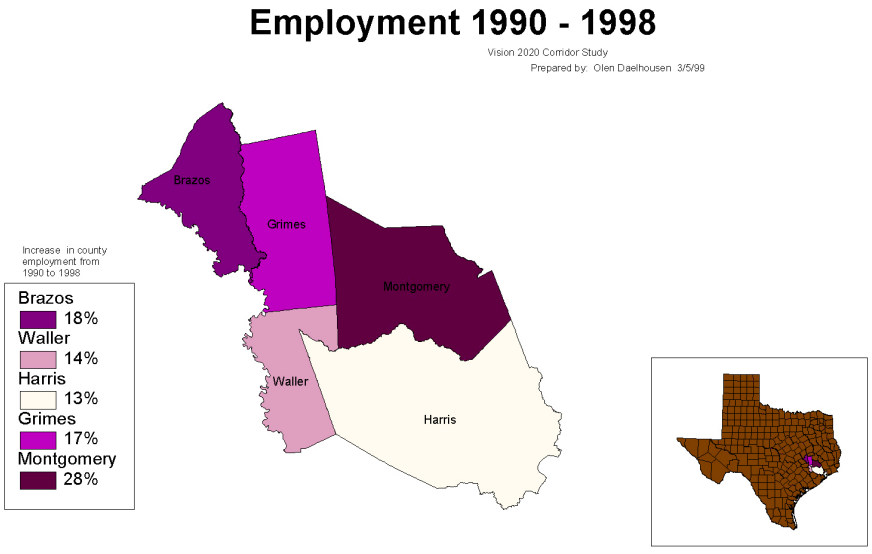
Demographics

Both College Station and Houston are growing toward each other and may eventually meet. Greater Houston is growing to the northwest at a rapid rate. Between 1990, the most recent year for which census data is available, and 2020, the population of Harris County is projected increase by more than one million people, and Montgomery County will add almost 100,000 people. Growth in Brazos County is primarily in a southeast direction. College Station has overtaken Bryan since the 1990 census, and is growing in a southward direction, in accordance with its comprehensive plan. Brazos County is projected to add 20,000 people during the same period.

Population projections are based on the 0.5 migration scenario which was produced by the *Texas Population Projections Program*. The projections included several different scenarios, ranging from 0.0, no net inmigration or outmigration, to 1.0 which assumed migration would continue at the 1980-90 levels, and scenario 1990-96, which assumes that migration rate will continue at 1990-96 levels. The 0.5 is an approximate average of the 0.0 and 1.0 scenarios. For this study, the 0.5 scenario was chosen because it is the most conservative scenario and the most likely to happen. The 1.0 scenario was not used because the 1980-90 migration rate is not expected to continue. The 1990-96 scenario was discarded because the time period was about half of the 1980-90 based scenarios.



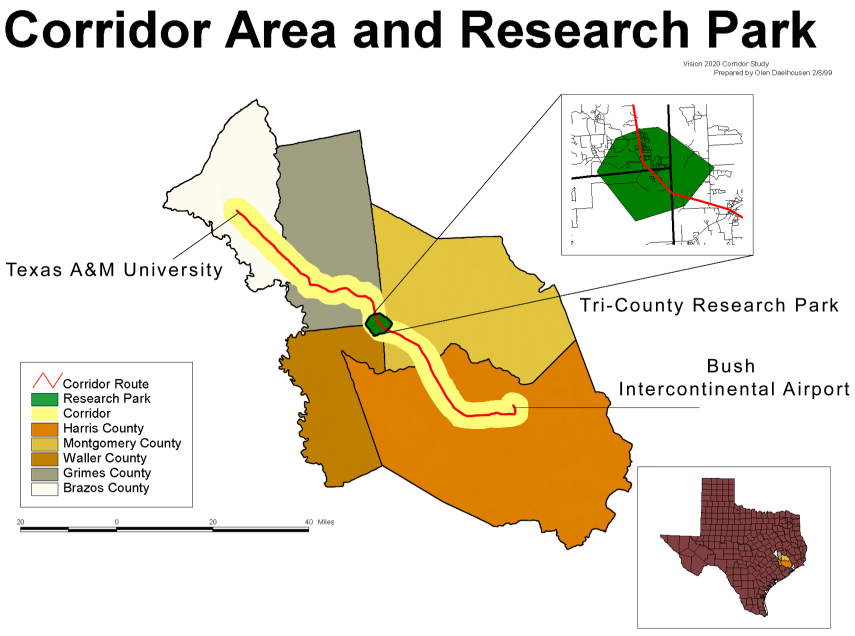
Complementing the population growth along the corridor, is a growth in employment from 1990 to 1998, the only years for which data are available. Brazos County added 12,031 jobs, Montgomery County added 34,307 jobs, and Harris County added 220,004 jobs. A research and technology park midway between College Station and Houston would draw from the resources available in both areas and fuel future job growth in hi-tech industries and research.



Research Park Concept

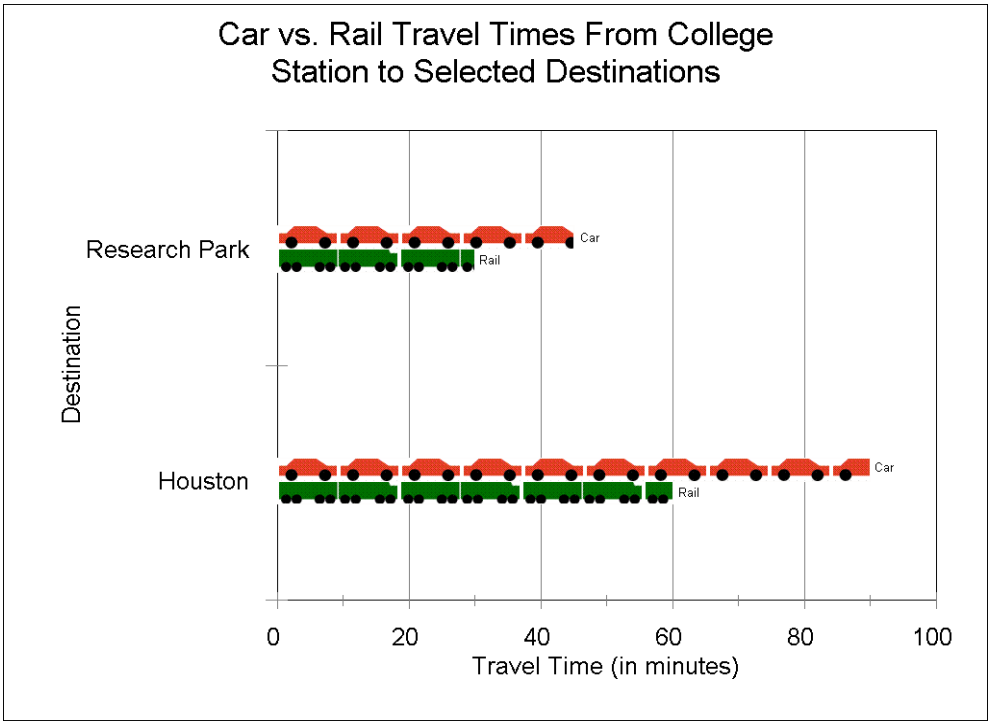
The research park creates a synergy between the pure science from the university and applied science of high-technology companies. Besides this symbiotic relationship, businesses that locate in the park would complement and learn from each other, benefitting from their proximity. They would also have a synergistic relationship with Texas A&M University on one end of the corridor and Houston area businesses on the other. The research park's linkage with academics, applied research, and business, would expedite new ideas from conception at the university end, through the research park, to application in businesses located in the park or Houston. Practical application of research serves the mission of Texas A&M University because it would increase learning opportunities for faculty and students. These increased opportunities may develop new areas of research and teaching at the university. A research park will also convert knowledge from the university to economic opportunities for both Houston and College Station because of the synergies created by the park. Along with the symbiosis between academics, researchers, and businesses, physical design is important for the success of the research park.

A research park provides a break from the monotonous steel and concrete of the modern urban environment, with ample greenbelts and open space. Research Triangle Park in North Carolina, one of the most successful and best known parks, covers 6,900 acres. It includes 15 million square feet of building space. Different parks have different densities. Floor area ratios (FARs) vary throughout the parks, but range from 0.31 to 0.5.



Access

Access to the research park is critical to its success. If the park is to benefit from the university and vice versa, they must be readily accessible to each other. Another critical factor is locating the park near a major airport, so that visitors (scientists, business leaders, visiting scholars, political leaders, and foreign dignitaries) can easily and comfortably travel to the park, and scientists and workers at the research park can easily leave to present their findings and attend conferences. Most successful research parks are located within 20 miles of an airport. The research park at CU-Boulder is an exception, it is 50 miles from the Denver International Airport. The proposed research park is within 30-45 miles of Bush Intercontinental Airport. Inside the research park, pedestrian access must be considered because once people arrive, by whatever means, they will move around the park on foot.

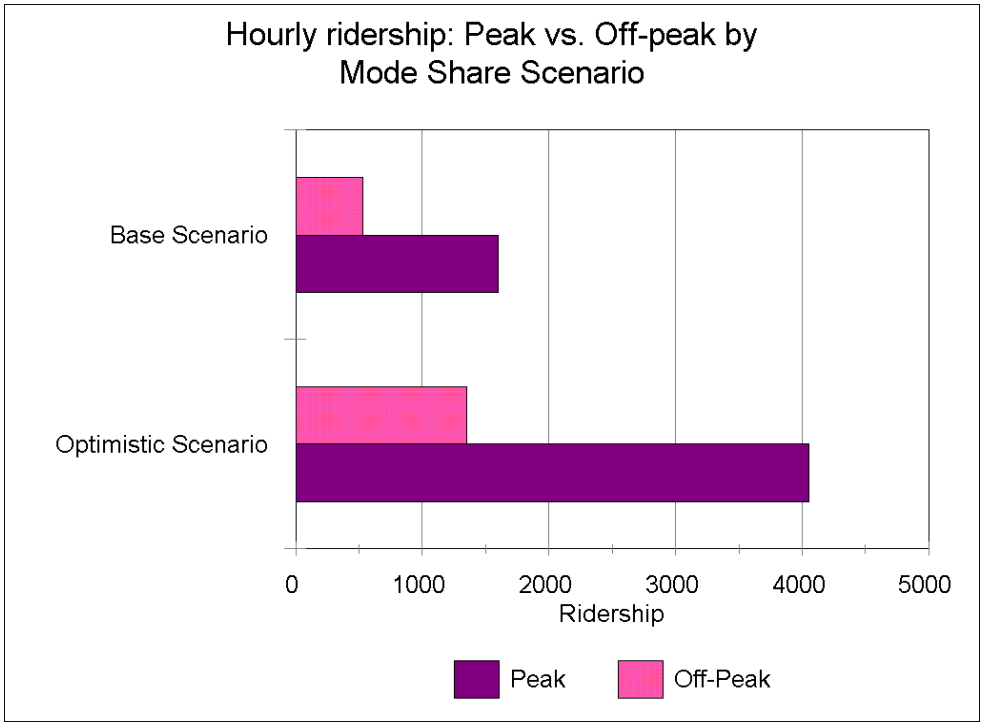


The rail line in the corridor will serve the research park and be integral to its success. By carrying large numbers of people to and from the park in a short amount of time, the rail will allow the park to reach its build-out potential. An advantage of the rail line is sprawl prevention, because of limited stops along the corridor. Adding highway capacity to serve the research park would result in commercialization and sprawl along the highways. Rail access will preserve the predominantly rural character of the corridor, while still retaining the ability to move large numbers of passengers quickly and efficiently to their destinations in College Station, the research park, and Houston. Commute times on the rail line will be approximately 30 minutes, compared to a 45-minute trip by automobile, saving time and money for the riders. If the

highways become congested during peak hours, the rail will save even more time and money for the riders.

Ridership Projections

The businesses located in the research park would increase the number of trips between the research park, College Station, and Houston. Workers at the research park would make trips primarily during the peak periods. They will commute between College Station or Houston and the park. Research Triangle Park in North Carolina covers 6,900 acres and employs over 40,000 people, approximately 1,400 acres are still available in the park. Based on these numbers, at maximum build out, the park between College Station and Houston could easily employ as many as 40,000+ people.



If the rail has a 20 percent mode share (amount of passengers that choose a particular type of transportation, usually measured as a percentage of total passengers), commuters will make 16,000 daily trips to and from the research park. Optimistically, if rail reached a 50 percent mode share, commuters would make about 40,000 daily trips. The rail line is necessary to allow the research park to achieve its maximum buildout potential. It is not expected that the rail will carry 40,000 daily trips as soon as it opens, the rail and the research park will grow together.

Table 1: Projected Ridership, Capacity, and Operating Cost for the Rail System				
	Base Scenario (20% Mode Share)		*Optimistic Scenario (50% Mode Share)*	
	Peak	*Off-peak*	*Peak*	*Off-peak*
Locomotives	4	2	6	4
Coaches per train	4	4	7	4
Total coaches	16	8	42	16
Headways (minutes)	30	60	20	30
System capacity per hour	3,520	1,760	9,240	3,520
System capacity per hour (one way)	1,760	880	4,620	1,760
6:00 AM - 7:00 AM	1,600		4,050	
7:00 AM - 8:00 AM	1,600		4,050	
8:00 AM - 9:00 AM	1,600		4,050	
9:00 AM - 10:00 AM		533		1,350
10:00 AM - 11:00 AM		533		1,350
11:00 AM - 12:00 PM		533		1,350
12:00 PM - 1:00 PM		533		1,350
1:00 PM - 2:00 PM		533		1,350
2:00 PM - 3:00 PM		533		1,350
3:00 PM - 4:00 PM	1,600		4,050	
4:00 PM - 5:00 PM	1,600		4,050	
5:00 PM - 6:00 PM	1,600		4,050	
6:00 PM - 7:00 PM		533		1,350
7:00 PM - 8:00 PM		533		1,350
8:00 PM - 9:00 PM		533		1,350
9:00 PM - 10:00 PM		533		1,350
10:00 PM - 11:00 PM		533		1,350
11:00 PM - 12:00 AM		533		1,350
Projected employment	40,000			
Projected employment passengers	16,000		40,000	
Airport passengers	0		500	
Total passengers	16,000		40,500	
Capital Expenditure	$225,147,456.00		$270,708,088.00	
Operating Costs/mile	$13.11		$13.11	
Annual operating costs	$14,158,800.00		$24,777,900.00	
Annual Vehicle Revenue Miles	1,080,000		1,890,000	
Annual Vehicle Revenue Hours	12,000		21,000	
Annual Passenger Miles	180,000,000		455,625,000	
Cost per Trip	$3.54		$2.45	

Aside from employees, local businessmen and local scholars would travel between College Station or Houston and the park. Out-of-town visitors would travel between the airport and the park. Visitors staying overnight would also travel between the park and Houston or College Station.

Non-park commuters from College Station to Houston or the reverse comprise the other peak period corridor users. Non-park trips could also include College Station to Bush Intercontinental Airport trips and the reverse.

From 1982 to 1994 the Roadway Congestion Index (RCI) in Houston has varied from a high of 1.21 in 1986 to a low of 1.12 in 1994. Although the RCI appears to be decreasing, it has been above 1.0 for the 12-year period. A congestion index greater than 1.0 means that area-wide congestion is experienced. Because of the congestion in Houston, a rail line would save users travel time, making it an attractive mode choice. The rail line would not significantly reduce highway congestion in Houston, because it is only serving a small percentage of the total trips in the area. The rail service will make it unnecessary for capacity additions to the highways along the corridor (SH 6, SH 105, FM 1774 and SH 249).

Rail Access and Alignment

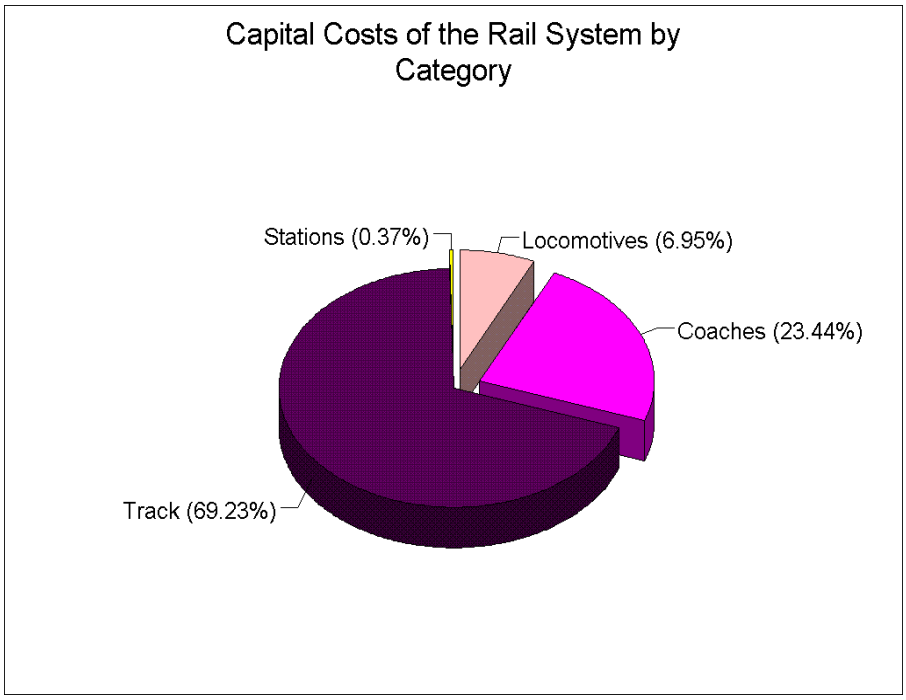
Alignment

A dedicated rail alignment is proposed to connect Texas A&M University, the research park, and Houston. The proposed rail line would parallel State Highway 6 from College Station to Navasota, go around Navasota and parallel SH 105 to Plantersville. The line would then follow FM 1774 to SH 249, and then follow SH 249 to Beltway 8, and terminate at Bush Intercontinental Airport. Rail is a critical component of the corridor project because it will decrease travel times between Texas A&M University, the research park, and Houston. To facilitate intermodal transportation, the rail would also link to Bush Intercontinental Airport. Park staff, visitors, College Station to Bush Intercontinental Airport travelers, and College Station to Houston commuters would all use the rail line.

Capital costs were calculated using figures from the *Florida Transportation Almanac*. Florida was chosen because the climate is similar to the area of Texas where the rail line will be. Florida labor costs are also more similar to Texas than costs in the northeast and California.

Table 2: Estimated Capital Expenditures for the Corridor Rail				
Item	*Quantity*	*Cost*	*Capacity*	*Total*
Locomotives	6	$3,136,887.00	n/a	$18,821,322.00
Coaches	42	$1,511,033.00	110	$63,463,386.00
Rail (per mile)	180	$1,041,241.00	n/a	$187,423,380.00
Stations	4	$250,000.00	n/a	$1,000,000.00
Total*			4620	$269,708,088.00
Federal Share**				$215,766,470.40
Local Share**				$53,941,617.60
* Capital costs of stations are not included in the total **Assuming an 80/20 split between Federal and Local shares				

The figures for rail do not include right of way acquisition costs, because the rail line will run in right of way that is already owned by the state. It is assumed that the capital cost of the rail line will most likely be shared with the Federal Government. The split will be 80-20 with the Federal Government picking up 80 percent of the capital funding. Possible sources for funding the local share of the construction of the rail line include, but are not limited to, sales tax revenue and a special tax district. The cost of land for stations and the stations is expected to be paid by the local entities where the stations are located. Because the rail line will be a benefit to the communities it connects, and a necessity in the research park, it is logical to assume that they will donate land for stations, and build the stations.



Operations

The length of the corridor is about 90 miles, with a research park near the middle. The corridor would include dual track and be divided into two sections.

The proposed operation would initially run four trains along the corridor between College Station and Bush Intercontinental Airport during peak hours. Using existing rail technology, the trains would run at about 90 mph, with four trains total, two in each section of the corridor, with headways (the time between arrivals) of about 30 minutes. As rail technology improves, speeds along the corridor can increase, decreasing headways. Also, as passenger traffic along the corridor increases, more trains can be added, further decreasing headways. For example, in the optimistic scenario, peak hour headways are reduced to 20 minutes, because there are six trains running. During off-peak hours, trains will be reduced, but headways will never exceed one hour. For a more detailed breakdown of headways and trains, refer to the scenarios in the attached tables.

Stops would be limited to three to five stations to keep commute times low. Navasota on the College Station side and Tomball on the Houston side of the corridor could be stops, but due to low anticipated intermediate demand, there will be only stops at College Station, the research park, suburban Houston, and Bush Intercontinental Airport. Travel time on the rail is critical to the success of the research park. The suburban Houston stop will be a large park and ride, possibly located somewhere near the intersection of SH 249 and Beltway 8, and will have approximately 4,000 parking spaces. Further research will have to be conducted to determine the optimum location for the park and ride and the exact amount of parking spaces.

A 60-40 split is assumed for peak and off-peak usage. The peak usage is divided into two three-hour peaks, one in the morning, and another in the evening. Because of the flexible work schedules associated with research parks, three-hour peaks were assumed.

Table 3: Operating Costs per Mile and per Hour For Existing Commuter Rail Systems

City	*Operating Expense*	*Revenue Miles/Yr*	*Revenue Hours/Yr*	*Speed*	*Cost/Mile*	*Cost/Hour*
Boston	$108,717,901	15,482,442	492,015	31.47	$7.02	$220.96
Chicago	$321,896,167	34,345,148	1,064,471	32.26	$9.37	$302.40
Hartford	$6,173,648	470,745	11,647	40.42	$13.11	$530.06
Los Angeles	$56,732,511	4,540,486	109,493	41.47	$12.49	$518.14
Maryland	$37,287,370	4,648,317	117,358	39.61	$8.02	$317.72
New Jersey	$332,146,355	41,483,525	1,175,033	35.30	$8.01	$282.67
NY (LIRR)	$634,086,969	55,676,294	1,744,421	31.92	$11.39	$363.49
NY	$469,243,343	40,975,775	1,103,771	37.12	$11.45	$425.13
Philadelphia	$142,839,237	12,707,057	461,971	27.51	$11.24	$309.20
San Francisco	$42,944,898	3,781,032	115,724	32.67	$11.36	$371.10
Virginia	$14,230,410	1,494,880	43,284	34.54	$9.52	$328.77
Total	$2,166,298,809	215,605,701	6,439,188	33	$10.05	$336.42

Operating costs were calculated by selecting a commuter rail system that is similar to the proposed rail serving the research park**.** Hartford's commuter rail was selected because its revenue hours (11,647) closely matched the projected hours (12,000 for the 20 percent mode share scenario) of the research park rail line. It was also chosen because it ran at an average speed of 40 mph, which was the second highest commuter rail speed (approximately half the speed of the proposed research park train). Due to the disparity in speeds between the commuter rail and the corridor rail (40 mph vs. 90 mph) the estimated operating costs for the proposed College Station to Houston rail are not exact, however they are adequate for this level of planning. Actual costs may be higher than the estimates, because the train will be running about twice as fast as the system the operating costs were taken from. However, out of the 11 systems surveyed, Hartford's has the highest operating cost per hour and per mile. The per mile cost was used to minimize distortion in the cost estimates due to the differences in speed.

Some possible sources for funding the operation of the rail line include fare box recovery, sales tax revenue, and a special tax district. Fare box recovery runs about 40 percent nationwide, for all modes of transit. Rail systems have a slightly better fare box recovery, they come in at about 50 percent. The cost of an unlinked trip on the proposed research park rail system is $3.54, in the base, 20 percent mode share scenario. Taking the rail system from College Station to Houston will be two unlinked trips, because of the transfer at the research park, so the total cost will be $7.08. Other trip costs for the different mode shares and ridership numbers can be found in the scenario tables.

Fare policy is beyond the scope of this document, but some possible ideas are deep discount monthly passes, discounted special events fares, and discounted student passes. A sales tax would be voted on by the citizens along the rail corridor. Sales taxes could vary by jurisdiction, for example College Station might impose a tax on the whole city, because the rail line will improve their access to Houston and the research park. Houston is a much larger city than College Station, and citizens in the southeast portion of the city may not be willing to support a city wide tax that will not benefit them very much. In a special tax district, the beneficiaries of the rail line would be identified and taxed in proportion to how much they benefit from the rail line.

Airport connection

The rail line would connect to Bush Intercontinental Airport. Connection to the airport would allow for convenient and rapid travel between College Station and the airport as well as the research park and the airport. A hypothetical trip between the airport and College Station would take about an hour, one way. In the base scenario, the assumption is that there will be no airport passengers from Easterwood Airport riding the train to Bush Intercontinental Airport. For the base scenario, airport passengers were assumed to not ride the rail and continue to fly out of Easterwood. Train ridership figures for the airport in the optimistic scenario were calculated by shutting down Easterwood Airport and diverting all of the passengers to the train. Passengers wanting to fly to Dallas will take the train to Bush Intercontinental Airport and then fly to Dallas. Overall, the amount of airport passengers does not really matter, as they are insignificant compared to the trips made by employees of the research park. But it is important to include

them in the projections so they do not cause a shortage in train capacity. Other airport passengers may be the people that would normally drive from College Station to Bush Intercontinental Airport, but elect to take the train instead. There is no data available on the amount of these trips, but preliminary estimates show that they will not affect the amount of trips enough to cause a shortage of capacity.

CBD extension

In the future, if travel demand warrants, Harris County Metro could extend the rail line into the Houston central business district (CBD), but that is beyond the scope of this study.

Conclusion

Houston and College Station are both growing towards each other. A research park in the middle will be able to link and provide significant benefits to both areas. The park will allow synergies to be created between Texas A&M University, high-technology businesses and researchers in the park, and businesses and people in Houston. To allow the research park to achieve its maximum buildout, a rail line connecting it to College Station and Houston will be necessary to carry the amount of people who will be commuting to and from the park. Also, the rail will reduce the travel time between the research park and Texas A&M University to facilitate the interaction between the two. The rail line also provides accessibility to Bush Intercontinental Airport for the research park and College Station and may extend into the CBD of Houston in the future.

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The Corps of Cadets and Vision 2020

Introduction

Texas A&M University consistently has been nationally ranked in one area since its beginning in 1876 - producing military and civic leaders. Accolades for Texas A&M military leaders are evident from the Spanish American War through Desert Storm. The list of Aggie leaders in industry and public service is equally distinguished. The organization that prepared these leaders, shaped their character and nourished their dreams is the Corps of Cadets.

For more than 100 years the Aggie Corps of Cadets has sought to inculcate those essential values and traditions we all cherish - honor, commitment, service – and in the process forged a special loyalty between cadets and Texas A&M. These strong bonds are an essential part of what makes Texas A&M distinct, and comprise a treasured endowment for this University and the State of Texas. Former cadets are among Texas A&M University's most generous supporters.

In 1963, Texas A&M embarked upon a broadly-supported and successful program to improve academic standards, open up opportunities to women, and make participation in the Corps of Cadets elective. The success of these changes has been widely remarked, and is a source of great pride to the Aggie family. In the years since, the Corps successfully implemented its own program to create the deep, constructive changes needed to adapt its time-honored mission to a new world of rising standards and enrollment caps, and later on, declining military requirements as the Bush Administration successfully concluded the Cold War.

With the loyal support of former cadets and the Association of Former Students, the Corps of Cadets in recent years has restored its academic vitality, renewed its growth, and won the broad respect of non-Corps students and faculty for the outstanding leaders it produces and the unique, inclusive traditions we carry on for Texas A&M University.

We must build on this remarkable success in order to truly ensure the future of the Corps of Cadets. To do so, we must grasp the special opportunity before us to create an even better Cadet Corps, one of pre-eminent national rank that combines the best of a top ten university education with formal, credentialed leadership and character development training of the first order. No other institution in America has this opportunity.

This is our vision for the year 2020.

The Vision

On the foundation of restored academic vitality and renewed growth, the Corps of Cadets has a special opportunity to create a nationally prominent student program that combines the best of a Top 10 University educational experience with formal, credentialed leadership and character development training of the first order.

With appropriate support, we believe Texas A&M can realistically create a showcase leadership and character development program that would be qualitatively competitive with the U.S. Service Academies. It is our vision, moreover, that we can uniquely design our program to meet the needs of all our Cadets – those choosing military careers, as well as those going into business, government service or the academic community who today comprise 70% of our junior and senior Cadets.

Key Areas

Our vision involves substantive program improvement and significant investment in five key areas:

- Academic Enrichment

  It is our conviction that the Corps' distinctive history and cherished traditions will remain most vibrantly alive, and rest most securely, if they are founded upon the bedrock of first class academic performance. In order to strengthen our academic foundation, we envision creating an endowment for Academic Enrichment that will focus on two issues vital to our Cadets' future.

  First, we envision a substantially greater commitment to academic counseling and tutoring.

  Secondly, we envision engaging our faculty and college deans in a more mutually rewarding fashion. We aim to cooperatively develop internships that deepen Cadet learning experiences while enhancing academic reputations. Active educator involvement will also be sought in order to assist our Cadets' transition from undergraduate life into the worlds of graduate study, the professions and industry. The endowment would provide the requisite resources to fund this work, and also provide appropriate recognition and monetary awards to the key educators who provide this important help.

- Formal Leadership Training and Character Development

  Our objective is to prepare the average Cadet for life better than any other student. Texas A&M University will benefit while our cadets are on campus, as will the state and nation after graduation. We envision a formal program that will lead to a credential having significant academic worth and practical value in the marketplace.

- Increased Scholarship Funding

  The Corps is required to offer competitive financial incentives to attract the kind of top students who are seeking to enroll in similar high-challenge programs that include the service academies and our senior military college competitors. We envision a substantial scholarship endowment that will enable the Corps to offer a scholarship to every entering member that is equal to the current Sul Ross award. We also envision being able to offer competitive, and now customary, financial incentive packages to four year ROTC scholarship recipients in order to increase their enrollment .

- Competitive Facilities

  The Corps needs state-of-the-science facilities in order to compete for the kind of student who is seeking a challenging program and expecting a quality, high-tech living arrangement with attractive, modern dining and multi-purpose athletic facilities in close proximity.

- Increased Recruiting Resources/Retention Improvement

  To execute this program, the Corps requires increased resources in order to aggressively recruit highly-qualified prospects seeking high-challenge programs. We need to be able to support a program to appropriately communicate, educate, and prepare qualified prospects, which will lead to substantial improvement in Cadet retention.

On the back of such a commitment to excellence, we envision that the Corps of Cadets will continue in the future as a significant, distinguishing feature of Texas A&M University, and will stabilize at a new strength between 3,600 – 4,000 young men and women.

Each element of our vision is consistent with Texas A&M's goal of national pre-eminence in undergraduate education and leadership development. In our view, the Corps of Cadets provides Texas A&M a unique platform to showcase its commitment to a credentialed student leadership program, at a nationally prominent level.

Key Areas and Recommendations

Key Area 1

Academic Enrichment

The Corps' determined efforts to improve classroom performance and academic vitality, especially over the last dozen years, have stimulated growth and increased our ranks. This commitment must be greatly strengthened and nurtured in order to sustain our progress and lay the foundation for 21st Century success.

It is our conviction that the Corps' distinctive history and cherished traditions will remain most vibrantly alive and rest most securely if they are founded upon the bedrock of first class academic performance. To strengthen our foundation, we envision creating an endowment for academic enrichment that will focus on two issues vital to our Cadets.

First, we envision a substantially greater commitment to academic counseling and tutoring. We aim to be actively engaged with our Cadets' academic careers, and be in a position to provide the resources to help each Cadet achieve our shared academic goal – success in all subject matter, by all classes of Cadets.

Specifically, we envision a program requiring mandatory tutoring for all cadets, regardless of class, that fail to meet a minimum GPR of 2.75. Freshmen and sophomore Cadets, moreover, will be required to attend tutoring for core courses anytime their class average falls below a "C" during the semester.

Second, we envision engaging our faculty and college deans in a more constructive, mutually rewarding fashion. To do so effectively, the Corps will need the resources to work in concert within our educators to:

- Cooperatively develop internship opportunities in industry and the research laboratory that will deepen our Cadets' classroom experiences and enhance the reputation of our Colleges and graduates.

- Actively engage our Cadets regarding the transition from their undergraduate career toward their respective next steps into graduate studies, professional school, industry or the armed services.

We envision having the requisite staff and financial resources to properly build and coordinate these activities, and just as importantly, to provide appropriate professional recognition and financial awards to the key educators who provide this important help.

Key Area 2

Formal Leadership Training and Character Development

We envision building on the Corps' strong legacy of producing leaders by developing a more formal, intensive program of leadership training and character development. Upon successful completion, each Cadet would receive a credential having significant academic worth and practical value in the market place.

Ideally, our program will engage the body, mind and spirit of all Cadets and build within each a deep appreciation for a model of leadership based on responsibility and care for subordinates. Practical, experiential training requirements, based on military structure, will be developed that challenge Cadets to increase their skills and confidence as they move from their freshman

beginnings to upper class status. Relevant training situations will include mental and physical challenges, ethical dilemmas, and issues of humanitarian concern, among others.

We envision the means to accomplish this work will be provided by the establishment of the Corps Leadership Center, and with it, an endowed Chair of Corps Leadership. The endowment will be geared to fund a program director who is focused on developing and executing experience-based Cadet training modules, augmented by participation from distinguished visiting speakers from the military, industry and the academic communities.

The role of the Corps Leadership Center will be to:

- Develop performance measurement tools and techniques.
- Develop case studies from Corps, military, business and civic activities.
- Provide one-on-one and small group counseling and development sessions.
- Conduct monthly leadership dialogues, specifically targeted for each class level.
- Provide each class with leadership experiences at successively higher levels of intensity.
- Assist in developing a class leadership theme that will be expanded upon during each of the Cadet's four years, with a resulting class exercise and well-developed leadership paper.
- Provide input to the Office of the Commandant, military branches, business, civic and Cadet leadership on issues of leadership selection, performance measurements, incentives, rewards and corrective measures.
- Act as a research and training arm on a fee basis for military, business and civic entities.
- Ensure ethical and moral standards are embedded in every leadership activity.
- Serve as the official Corps leadership laboratory and library.

To provide appropriate on-campus mentoring and encouragement, we envision that each major Corps unit will have a Training Officer or Noncommissioned Officer (NCO) assigned in order to ensure training schedules are developed, met and performed at or above standard. Training will include close-order drill, athletics, physical conditioning, self-defense, confidence training, marksmanship, land navigation and humanitarian endeavors. Units will compete against each other in every training category in order to instill a competitive spirit, build leadership and foster camaraderie. **The backbone of Corps training will be vested at the junior level, with execution of the training regimen residing at the sophomore level – but rigorously supervised by juniors and seniors.**

In addition to traditional military billets, leadership positions will be designated for areas such as recruiting, scholastics, athletics, and training. All positions will be evaluated regularly with formal feedback, and will be subject to change based on performance and evaluation. Periodic changes will increase leadership opportunities available to Cadets, and provide motivation for those that just barely missed the assignment on the last selection cycle. Selection will be based on objective criteria to include scholastics, demonstrated leadership skills, extracurricular participation, ethical and humanitarian behavior, and mastery of drills and training skills - all without regard for contract or drill and ceremony status.

Finally, we believe that Cadets must be afforded other practical opportunities to refine and develop their skills in meaningful work and service situations. As an example, Cadets have traditionally held a large, disproportionate number of student leadership roles on campus; we will continue to strongly encourage active participation – and use of this training. We also aim to develop real opportunities to refine leadership skills – in community service or other activities that showcase our program and benefit others – so that even more opportunities to lead will be widely available for Cadets.

Looking to our Cadets' futures, **we also envision a robust program of mentoring and internship at a level at least equal in quality to the military summer camp experiences of our ROTC Cadets.** We envision collaborating with our educators on campus and former Cadets in order to create meaningful opportunities to work and explore career options that deepen the educational experience and enhance our reputation. Such an endeavor will imbue the Corps experience with substantial practical benefits to Cadets as well as deepen ties to the civic and business communities that support the Corps and Texas A&M University.

Key Area 3

Increased Scholarship Funding

In order to attract top students for our program**, we believe the Corps of Cadets will be required to offer every entering member (freshman or transfer student) a scholarship at least equal to the current Sul Ross Scholarship of $500 a semester.** Each scholarship renewal will be provisional, based on achieving academic, leadership and physical performance standards. In additional to the Sul Ross Scholarship or equivalent, we will offer four year Rudder Leadership Awards (new), that are equivalent to the Presidents Endowed Scholarships.

We will aggressively pursue ROTC scholarship recipients and award added scholarship support and other financial incentives, thus providing the kind of highly attractive, and now customary, financial packages our competitors design and use to attract the nation's top students.

In order to achieve these scholarship goals, two fundamental steps must be taken: (1) The Texas A&M Foundation and the Corps Development Council must raise $140 million during the next twenty years to endow and provide for ongoing administration of these scholarships; and, (2) Texas A&M University must be able to accept an unlimited number of ROTC scholarships recipients who desire to participate in the Corps of Cadets. Today the number is effectively capped by the military services.

Key Area 4

Competitive Facilities

The Corps must have state-of-the-science housing, training, athletic, drill, dining and recreational facilities. The current facilities, while ideally situated at the heart of the campus, simply do not meet the requirement of today's student from either a technology or lifestyle

perspective. To attract and retain the highest quality students, a new, technologically-advanced Corps housing area must be planned, funded and built.

Corps Dorms should be designed with shower and toilet facilities between rooms to accommodate the growing population of women. Hallways must remain internal to the building since this is clearly a training and socialization area. All dorm rooms must be equipped for the latest communication capabilities (currently fiber optics), and more importantly, built in a manner that will allow expansion of next generation systems and equipment without costly renovation**. Each dorm room must be large enough to accommodate computers and other electronic devices likely to be used by students, but should also be uniform with proper military construction and furnishings.**

Integral with the facilities must be a dining center capable of serving at least two meals per day family style, with high quality cuisine. The dining area should also accommodate dances, serve as an auditorium, and disaster recovery center. Training grounds for the band and the drill field for Cadets should be all weather and located in close proximity to the dormitories. Athletic fields should be adjacent to the dorms to avoid wasted time traveling to intramural sports events. A confidence course and field training obstacle course should also be included in the design. A transportation center should be incorporated to save space and provide access to student vehicles.

The facility design should be world-class and accommodate up to 4,000 Cadets. The design must promote good order and discipline, while serving as a showcase for Cadets, prospective Cadets, family and former students.

Key Area 5

Increased Recruiting Resources/Retention Improvement

To execute this vision, the Corps will require sufficient resources to competitively recruit and retain the top-quality students who desire a high-challenge, high-payoff experience.

The population of potential Cadets we can target with our program is much larger than is currently being tapped. Approximately 14,000 applications are received annually by each of the three major service academies, and from this number at least 10,000 meet the minimum qualifications. The top 3,500 are selected as the candidate pool with about 1,000 ultimately enrolled in each academy. The non-selects are often ideal candidates for Texas A&M University and the Corps of Cadets**. Additionally, we must get our congressional leaders to ensure the military services do not "cap" (limit) nationally selected ROTC scholarship students from attending Texas A&M University.**

To successfully recruit among this talented group, our approach and programs must be competitive nationally, and indeed internationally, with the service academies as well as our direct senior military college competitors such as VMI, The Citadel, and Norwich.

The heart of the Corps recruiting process lies in a highly focused marketing campaign, coupled with creating a "farm system" to begin the preparation process as early as the ninth grade. Our program must have highly skilled recruiting professionals who work with a well-coordinated Corps Leadership Outreach Program, comprised of former Cadets, who recruit prospects worldwide. We must have collateral advertising programs that are current, multimedia in format, and professionally produced in order to inform prospects and their parents. The "spend the night with the Corps" program must be further developed in such a manner that it will enhance the prospect's desire to attend Texas A&M and participate in the Corps. **Prospects would be targeted based on scholastic achievement, athletic participation, extracurricular activities and an expressed interest in a disciplined lifestyle rich with leadership opportunity**.

The highly selective program we envision includes tiered recruiting. We will begin by offering freshmen in high school the opportunity to attend field days and "Aggie Camp" in order to build their pride, increase their desire to be a Cadet, create aspirations to academic excellence, and build their knowledge of the admission process to the Corps and Texas A&M University. Specific programs will target each class, from freshmen through seniors at Texas high schools. We will also seek promising students in Junior Colleges who have successfully completed one or more semesters and who want to continue their education in a challenging environment. Rapport will be built with junior ROTC programs nationwide. Specific programs and scholarship guarantees will be offered to high school level military academies.

Additionally, Texas A&M has a reputation to maintain and even enhance in the international arena. We will provide scholarships and actively recruit 100 international students to participate in the Corps annually. The Corps of Cadets has a special opportunity to lead this University in cultural, ethnic, and gender diversity.

Through intelligent recruiting, we aim to improve retention dramatically**. Specifically, we want to reduce our loss rate to no more than 10% annually at each class level**. In our view, proper prospect and parental education and information will be the keys to improved retention. To do so, we intend to have entering freshmen and their parents hosted by the Corps Leadership Outreach at University-sponsored orientation programs. Each admit would receive a briefing with step-by-step actions to help prepare him/her for the rigors of the fish year. Each will receive a video or CD-ROM of academic expectations, physical requirements, and campusology, The Standard, tips on uniform preparation and appearance, a guided tour of the campus, and inspiring messages from the President, Commandant, current Cadets and business leaders will also be provided. With extensive preparation, and a more patient, nurturing environment, early Corps dropouts can be sharply curtailed.

Conclusion

Achieving this vision will be demanding and require substantial investment. We believe, however, that the time-honored legacy of the Corps provides a compelling platform for Texas A&M University to build a showcase leadership program that pays rich dividends.

Today, Texas A&M has a special opportunity to create a preeminent Corps of Cadets. We envision providing our Cadets a uniquely well-rounded undergraduate experience – steeped in credentialed leadership training and character development, while still keeping all of our rich traditions and providing the benefits of a Top 10 University education. In our vision, the Corps experience at Texas A&M will bring national appeal and will be uniquely competitive with the U.S. Service Academies. **The value to Texas A&M that would result from executing this vision – including more top quality students and national visibility – is immense.**

Our vision for 2020 is also a commitment to truly ensure the future of the Corps for succeeding generations, and properly respects the legacy and sacrifice of all those Aggies upon whose shoulders we stand to peer into the 21st Century. **Former Corps members have contributed generously to this University in a way that no other school in the world enjoys. In our view, this happens for a reason – for many, the Corps was a profoundly formative experience in their life and has become, for them, a spiritual home.**

Let us honor their commitment, and act with conviction, to build a 21st Century Corps of Cadets that is able to rise to the challenges of the year 2020 and produce the leaders of competence and character that our State and Nation will need in the next generation.

Required Endowments and Facilities

To survive and grow, the Corps of Cadets must have state-of-the-art housing, training, athletic, drill, dining and recreational facilities. The current facilities, while ideally situated in the heart of the campus, simply do not meet the requirements of today's student from either a technology or lifestyle perspective. In order to attract and retain the highest quality students, new technologically advanced Corps facilities must be planned, funded, and built.

Timetables and Estimated Required Investment			
Facility	**Timetable**	**Costs**	**Notes**
Academic Enrichment	Immediate	$3,7000,000	
Leadership Center, with Endowed Chair	Immediate	$6,000,000	
Scholarships	1999-2020	$140,000,000	
Review Stand on Simpson Drill Field	2001	$300,000	
*****Dormitories	2002-2012	$300,000,000	Modern; space for up to 4,000 gender-mixed Cadets
Drill, Athletic, Multi-Purpose Field	2006	$2,000,000	All-weather, artificial surface; close to dormitories; at least football field size.
Academic/Office Building (new Trigon)	2006	$16,000,000	Classrooms and offices should be part of the Dormitory Complex on the Quad
Dining Facility (new Duncan Hall)	2012	$12,000,000	Able to serve at least two high quality meals per day family style. Multi-purpose dining area, i.e. for dances, receptions, banquets, and disaster recovery.
TOTAL		**$480,000,000 ****	

*** The current twelve dormitories in the "Corps Area" were dedicated in 1939**. They have stood well the test of time. The latest, major renovation, $15M, was completed in 1994. **The new Corps dorms should be designed with shower and toilet facilities between rooms to accommodate the growing population of women**. Hallways must remain internal to the building since this is clearly a training and socialization area. All rooms must be equipped for the latest communication capabilities (currently fiber optics) and built to allow expansion for next generation systems and equipment without costly renovation. Each room must be large enough to accommodate computers and other electronic devices likely to be used by Cadets, but should also be uniform with proper military decorum and furnishings.

**** The cost seems large, it is!** Creative financing, to say nothing of extensive fund-raising, will be required. Selling bonds may be possible. Changing dorms to "leadership classrooms" might allow academic funds to be expended vice housing funds. Designating certain facilities for disaster recovery might release federal funds. In order to achieve our goals, creative and innovative financing as well as extensive fund-raising will be required!

Intercollegiate Athletics and the Texas A&M University Mission

Intercollegiate athletics are an important part of Texas A&M's history, and intercollegiate athletics can and should play an overwhelmingly positive role in the University's future destiny. The athletic department's goal is to recruit students who have the full potential not only for college work but to make positive contributions to society through leadership, example and involvement. The coaches in our programs see themselves as teachers not only of athletic skills, but as builders of character and discipline. Their goal is to empower student athletes with a first-class education and the tools and sense of team they will need to be productive human beings after their athletic days are over.

To build character, three issues are emphasized:

- **Integrity:** A person's deeds should equal his words and his habits should be consistent with a positive set of values. An appreciation for the importance of trust is developed.
- **Maturity:** Development in student athletes of the courage to face and overcome adversity and challenges, while remaining considerate and compassionate human beings, is of utmost importance.
- **Personal responsibility/accountability:** Student athletes must take responsibility for their own actions; self-supervision in their personal development is encouraged.

To build discipline and commitment in the achievement of goals of excellence, emphasis is placed on:

- Developing athletic skills through both thought and action in a positive and constructive way that can be useful in later life.
- Emphasizing the importance and benefits of "team" and "community."
- Assisting in the development of realistic goals, and the process of relating effort and focus to the probability of goal achievement.

Intercollegiate athletics has a broad and unique opportunity to add to the diversity of Texas A&M while increasing unity on campus. Athletics can be a focal point for encouraging former students to be actively involved in the institution. The University can be assisted by athletics in achieving a more positive national prominence. thletics can play a major role in the spirit of the university while setting enviable standards for educational and character development. A number of our best peer institutions have demonstrated the reality that, properly managed with an appropriate set of core values and beliefs, there is no dichotomy between excellence in academics and athletics. Texas A&M intends to be among that groups of admired and respected institutions and we advocate being held to those high standards.

--Athletic Department