

Report
of
The Washington Advisory Group, LLC
on
Research Capability Expansion
for
The University of Texas System

The University of Texas at Tyler

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The Washington Advisory Group, LLC

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**Report of The Washington Advisory Group on
Research Capability Expansion for
The University System of Texas
At Brownsville/Texas Southmost College (UTB/TSC), Pan American (UTPA),
of the Permian Basin (UTPB), and at Tyler (UT-Tyler)**

INTRODUCTION

The Washington Advisory Group (WAG) was engaged by the University of Texas System (UT System) to examine the research capacities and potential for expansion at eight of the UT System institutions. WAG divided the eight institutions into two groups and established teams to work with each of the two groupings. This report is the second of two reports and focuses on the four smaller, developing institutions listed in the report title.

As in its review of the larger institutions, our WAG team was asked to review information provided by the universities as well as information gathered independently before and after each visit. Appendix 1 details the scope of work for this study, including six questions to be addressed for all of the universities and four questions specific to each of the developing institutions reviewed in this report.

We held meetings with administrators, an array of faculty from many disciplines, community and business leaders, and periodically with students. Based on our review, the discussions and materials, and reports developed by each team member around the university he or she visited, we developed the individual reports that examine similar factors at each of these developing institutions.

Appendix 2 contains the biographical sketches of the team of individuals that carried out this project. We selected the members of this team based on criteria tailored to a review of developing institutions, including knowledge about university research and federally funded research; broad experience at and knowledge about community colleges, which are critical to each of the universities we visited; small college backgrounds; strong interests and expertise in minority-related issues and programs; and experience with economic development issues. We also chose at least some team members with specific backgrounds related to Texas. The goal was to provide a review team with the collective judgment, background, experience, and expertise to offer the UT System an authoritative review and assessment. Appendix 3 provides the dates and a broad overview of each of the visits to the four universities covered in this report.

Overview

The developing institutions we studied have varied strengths, but will have to make considerable strides to attain national and international research stature. According to the National Science Foundation's rankings of universities, only one of the four institutions in this report ranks among the top 589 colleges and universities in research expenditures for FY2000. With total research expenditures of \$1.6 million that year, UT-Pan American (UTPA) ranks 378th. By contrast, the four larger Texas universities WAG studied all rank among the top 250 universities. Clearly, the four developing or emerging campuses occupy a different range on the research spectrum. The research expenditures of the smallest of the larger campuses (UT-San Antonio), for example, totaled \$11.3 million in FY2000, while research expenditures at the largest of the emerging campuses (UTPA) totaled approximately \$2 million.

Using FY2002 data, the Texas Higher Education Coordinating Board more recently provided a basis for reviewing several developing universities in Texas (see Table 1 below). In FY2002, UTPA research expenditures totaled \$2.6 million; UT-Brownsville/TSC's (UTB/TSC) reached \$1.3 million, and UT-Permian Basin (UTPB) and UT-Tyler's reached \$980,000 and \$375,000, respectively.

Table 1. Research Effort and Sponsored Programs
(Total Expenditures for Research and Other Research-
Related Sponsored Programs by Source of Funds, FY02)¹

University	Total
Stephen F. Austin	\$5,583,051
UT-Brownsville/TSC	\$1,286,638
UT-Permian Basin	\$ 980,905
UT-Pan American	\$2,605,758
University of Houston Downtown	\$1,270,494
Texas A&M International	\$ 677,346
UT-Tyler	\$ 375,821
Texas A&M Commerce	\$ 629,496

It is also worth considering the status of the four institutions' research strength in terms of the Carnegie Foundation classifications.² UTPA is the farthest along with its doctorate program in business and imminent doctoral program in education. Its next doctoral programs are likely to be in science/engineering, as a new dean is actively focusing on adding to the strength of the research faculty. This focus is worthwhile for its own sake and is relevant to the Carnegie rankings.

Research activity could perhaps be most enhanced via collaboration with co-located Regional Academic Health Center (RAHC) facilities. The new UT System executive vice

¹ Source: Texas Higher Education Coordinating Board, *Research Expenditures (FY02)*, Total Expenditures for Research and Other Research-Related Sponsored Programs by Source of Funds, FY02, Institutional Research and Planning, 09/25/03.

² The Carnegie classifications can be found at: <http://www.carnegiefoundation.org/Classification/>. They are as follows:

Doctorate-granting Institutions

Doctoral/Research Universities-Extensive : These institutions typically offer a wide range of baccalaureate programs, and they are committed to graduate education through the doctorate. During the period studied, they awarded 50 or more doctoral degrees per year across at least 15 disciplines.

Doctoral/Research Universities-Intensive : These institutions typically offer a wide range of baccalaureate programs, and they are committed to graduate education through the doctorate. During the period studied, they awarded at least ten doctoral degrees per year across three or more disciplines, or at least 20 doctoral degrees per year overall.

Master's Colleges and Universities

Master's colleges and Universities I: These institutions typically offer a wide range of baccalaureate programs, and they are committed to graduate education through the master's degree. During the period studied, they awarded 40 or more master's degrees per year across three or more disciplines.

Master's Colleges and Universities II: These institutions typically offer a wide range of baccalaureate programs, and they are committed to graduate education through the master's degree. During the period studied, they awarded 20 or more master's degrees per year.

chancellor for health affairs should make considering such opportunities a priority. In fact, in their strategic review, the System chancellor and vice chancellors might consider whether the RAHC located at UTPA, the one located on the UTB campus, and the RAHC in nearby Harlingen could jointly collaborate with research programs at both UTPA and UTB. Such an arrangement could significantly boost the research activity of all parties on a mosaic of projects. With a successful outcome, both UTPA and UTB could achieve the Carnegie classification of Doctoral/Research Universities-Intensive within a ten-year planning horizon.

Similarly, a significant opportunity for research collaboration between UT-Tyler and UT Health Center-Tyler (UTHC-Tyler) is under discussion at the highest levels of their administrations. The UT-Tyler report covers the details of this discussion and its robust potential for both institutions. Although the level of externally funded research at UT-Tyler is quite low, the institution has already positioned itself for a quantum leap in active research projects via collaborations with UTHC-Tyler. Our optimism about this potential growth is based in part on UT-Tyler's track record in research collaborations with other more distant research partners, including Texas A&M University, Stephen F. Austin University, and the National Aeronautics and Space Administration. While the metrics for UT-Tyler do not yet show their full impact because these collaborations are credited to the partner institutions, the collaborations provide UT-Tyler with a growing and effective means to bootstrap its research future. UT-Tyler could well achieve Doctoral/Research Universities-Intensive Carnegie classification within a decade. All UT System institutions would benefit if the system began facilitating and rewarding such collaborations in its strategic planning.

In the two Carnegie classifications for Master's Colleges and Universities, all four of the campuses seem positioned to exceed the minimums.³

In general, these emerging institutions recruited their faculty to deal with the crush of entering undergraduate students in several of the most economically challenged regions of the state: East Texas, West Texas, and particularly South Texas. These are largely non-traditional students, meaning students who are employed in part- or full-time jobs, daily commuters to campus, or supporting families, in addition to often being first-generation college students. As a result, the enrollment at these institutions continues to increase rapidly, and students face extreme pressures in meeting the time commitments of college work, whether for instruction or research. Yet, in all four of the emerging institutions, some faculty have dealt with the instructional loads and successfully developed and sustained nationally competitive research projects. These exemplary faculty provide a benchmark for the research future of the four emerging campuses.

It is important for these four developing institutions to pursue research at the same time that they must succeed in educating a population so desperately requiring a college education. An institution that makes its primary contribution to a community by educating its children—children for whom education is the primary hope for a better life—may believe that research activities detract from its mission. This education brings value to the students and their futures, as well as the futures of their families and communities. UTPA and UTB/TSC, for example, provide a vital service to Texas with their work on its southern border, albeit a perhaps different service than more research-intensive institutions in the UT System. So why should the same institutions that provide this crucial educational service also focus on research? We suggest there are several answers:

³ See Carnegie definitions in footnote 2.

- First, these regions of Texas face major issues research can address including health, K-12 education, and indigenous business development. Three of the four campuses, for example, reside near parts of the UT Health Center complex. All three of these health-related centers can multiply their beneficial affects to the state via selected collaborative research projects with neighboring UT campuses, both in public health areas and through the eventual commercialization of intellectual property that the sponsored research will likely generate. To be specific, UT-Tyler is near the UT Health Center-Tyler; UTPA is co-located with RAHC facilities associated with the UTHSC-San Antonio; and the RAHC at UTB/TSC is affiliated with the UTHSC-Houston.
- Second, educational research conducted and applied with the schools of the region—particularly if it focuses on improving the quality and quantity of college-prepared high school graduates—will directly improve the region’s economic strength and vitality. Virtually all of the students entering these institutions have graduated from the region’s high schools or community colleges; most will choose to remain in the area. Students at these campuses have also had many opportunities to pursue higher learning in part because of early outreach programs, including GEARUP⁴, TRIO⁵, and similar national programs designed to improve educational effectiveness with at-risk populations, and these programs often get implemented through cooperative projects between schools or colleges of education and K-12 school systems. Further, virtually all of the teachers in the K-12 schools around these developing institutions received their education and professional training at regional UT campuses.
- Finally, the colleges of business at these emerging campuses can have a disproportionately positive effect on the success of businesses in their regions. For example, these colleges can influence practice through research that speeds the development of new businesses and improves the competitiveness of existing businesses. The College of Business at UTPA is already engaged in such research through its doctoral program. In addition, the UTPB business dean, one of the most published scholars at that University, has set a standard of research and refereed research publication that is a model for her colleagues across the campus.

We should also note that the civic and political leaders of each region expect the local university to play a critical part in their community’s growth and development. This was clear in the personal meetings the WAG team held with the community leaders in each region. It is no wonder they feel so strongly. Each university ranks as one of the largest employers and purchasers of goods and services in its region, and educates or provides professional certification for many if not most of the indigenous workers in the region.

But the mutually beneficial research projects in health, education, and business relate by no means exclusively to the state’s three less-developed regions. As the reports indicate, each campus has a number of other research bright spots. The detailed campus reports describe other

⁴ The GEARUP (Gaining Early Awareness and Readiness for Undergraduate Programs) program is a discretionary grant program funded by the U.S. Department of Education designed to increase the number of low-income students who are prepared to enter and succeed in post-secondary education.

⁵ TRIO refers to a series of programs funded under Title IV of the Higher Education Act of 1965 to help low-income Americans enter college, graduate and move on to participate more fully in America’s economic and social life.

benchmark opportunities in the sciences, engineering, and mathematics—as well as humanities and the arts.

In summary, we would prioritize the ideal objectives of each of the emerging campuses as follows:

1. Educate largely non-traditional students.
2. Continually develop selective, high-quality research programs.
3. Actively participate in the economic development of their communities.
4. Engage in programs of community service for the citizens of their region with special needs.

The campuses must succeed at the first priority to achieve the second. Success in the latter two priorities also requires success in both the first and second. All four campuses are making transitions in dealing with these priorities and would benefit from the UT System's advice and support.

The campuses will probably face their toughest decisions when choosing which areas of research they can develop to a competitive level while maintaining the high quality of their educational programs. They will have to choose carefully to avoid research tracks in which they are unlikely to be competitive. But it is doubtful the educational programs can approach or maintain competitiveness without a critical mass of relevant and respected research programs. Without such a critical mass, neither the best senior faculty nor the best young faculty can be recruited or will stay. The same goes for the best students, a pool of talent these regions should fight to keep.

Some Aggregated Perspectives

The four developing institutions covered in this report and the four larger UT institutions reviewed separately share some similarities. In the report on the larger universities, under “The Path to Tier 1 Status,” we note several issues that will determine how institutions will progress and succeed in reaching the Tier 1 goal. While the institutions covered in this report do not seek that lofty accomplishment, the issues addressed for the larger institutions apply as well to these developing institutions, if to a lesser degree. For example, the point about the need for a strategic plan in the larger institutions also applies to the emerging institutions. Likewise, since the emerging institutions are unlikely to see increases in state appropriations, they also must identify new resources to fund increased research capacity. Similarly, because of state resource constraints, the emerging institutions must also seek increased funds from the same sources as their larger peers, including the federal government, industry, alumni and foundations, and tuition and fees.

All UT institutions also face the same pressures in recruiting faculty and competing with other institutions inside and outside the state for talent. No matter the campus, it is costly to recruit faculty. And the emerging institutions, like their larger peers, must encourage and foster a faculty research culture. In this respect, the System might consider establishing a research professorship program to provide additional supplemental support and statewide recognition to all campuses attempting to hire outstanding research faculty.

As noted with the larger institutions, unproductive competition and historical strife seriously hinder relationships between the institutions, particularly UTPA and UTB/TSC. Their

individual and collective future would improve if collaboration replaced virtual non-communication. New leadership at UTPA offers that possibility. The WAG teams agree that, no matter how large the institution within the UT System, it would benefit from research and educational collaborations. The emerging institutions have fine examples of such activities, including with community colleges, other academic institutions, industry, federal agencies, and state and local governments. We strongly encourage collaborations, not least because they foster intellectual breadth and lead to stronger proposals for support and stronger final projects.

Our team and the individual reports also lead us to conclude that new graduate programs at the emerging institutions, particularly at the Ph.D. level, should develop in a highly selective fashion. Professional master's degree programs should only be instituted where they can be justified. In several instances, the emerging institutions have programs of national stature and distinction, such as gravitational wave physics at UTB/TSC; nursing at UT-Tyler; and the arts facility at UT-Permian Basin to name a few. But issues of national recognition are less paramount with the emerging institutions. These institutions would be more likely to achieve success and add optimum value within their region and Texas by focusing on programs the region needs rather than on the national stage.

Though technology transfer will play a more significant part in the immediate future of the larger and more developed institutions, the developing institutions also may well have opportunities to commercialize intellectual property and potentially stimulate the creation of new companies. If they do so, the developing institutions could have a more significant impact on both the type and scale of economic development in their regions.

The reports on the developing institutions in the UT System that follow discuss each of the four institutions in substantial detail.

THE UNIVERSITY OF TEXAS AT TYLER (UT-Tyler)

Overview and Mission

The University of Texas at Tyler is a relatively young institution. It was founded in June 1971 as an upper-division college that offered both undergraduate and graduate degrees. In 1975, it changed its original name, Tyler State College, to Texas Eastern University. In September 1979, it became part of the UT-System. Beginning in the fall 1998 semester, the Texas legislature authorized the university to enroll freshmen and sophomore students. The initial limit of 50 full-time student equivalents was lifted four years later, and a larger incoming class was accepted in the fall 2002 semester.

The University serves a 14-county area in East Texas, referred to as the East Texas Planning Region, with a population of approximately 850,000. The racial/ethnic mix of the area served by the University is 74.1 percent White, 16.5 percent African American, 8.4 percent Hispanic, and 1.0 percent other. The poverty rate for the area is 12.7 percent, but it varies significantly among families from different racial/ethnic groups:

- 8.5 percent for Whites,
- 29.3 percent for African Americans,
- 26.9 percent for Hispanics, and
- 13.4 percent for Asian Americans

The main campus sits on 207 acres in Tyler. The University has two other campuses, in Longview and in Palestine. The UT-Tyler campus, which we visited, is comprised of 18 buildings that provide approximately 700,000 square feet of space. All UT-Tyler buildings are less than 25-years old.³³ Because the university was originally created as an upper-division university, the classrooms and buildings were designed to accommodate smaller numbers of upper-division undergraduate or graduate students. Few rooms can seat 90 or more students.

UNIVERSITY MISSION AND STRUCTURE

The mission statement specifies

The University of Texas-Tyler will be nationally recognized for its excellent programs in the professions and in the humanities, arts, and sciences. Guided by an outstanding and supportive faculty, its graduates will be known for the quality of their knowledge and for their integrity, leadership ability, communication skill, technological competence and global awareness.

Our discussions with faculty and students convince us that UT-Tyler, with its unique focus on “The UT-Tyler Tradition,”³⁴ has taken a large step forward in developing and instilling a high-quality and unique undergraduate experience.

³³ *UT-Tyler: Administrative and Governance Structure in Context of Research*, pp.1-2. Materials provided to WAG for site visit, October 2003.

³⁴ The “UT-Tyler Tradition” is a core curriculum emphasizing broad learning in the humanities, arts and sciences (UT-Tyler Office of the President *Strategic Plan – New Millennium Vision*, August 16, 2000).

The university is organized as follows:

- A group of vice presidents and staff report to the president, including the provost and vice president for academic affairs; the vice president for student affairs and external relations; the vice president for business affairs; the executive director for university advancement; and the executive director for information technology and institutional research.
- UT-Tyler has five colleges: arts and sciences; business and technology; education and psychology; engineering and computer science; and nursing and health sciences. One of the five deans was serving on an interim basis when we visited the campus.³⁵

The University has not yet conferred its own Ph.D. degree, although the university and Board of Regents have approved a Ph.D. in human resource development (HRD). The Higher Education Coordinating Board (HECB) failed to approve this degree at its January 29, 2004 meeting. (We will comment on this decision later in this report). The University currently offers the HRD degree jointly with Texas A&M University.

In 2001-2002, 15 percent of the degrees awarded were at the master's level and 85 percent at the bachelor's level.³⁶

The University has 190 full-time faculty, 78 percent of whom hold the terminal degree in their field. Approximately 100 of the full-time faculty were hired in the past four years. The University has approximately 95 part-time faculty.

The University takes pride in the quality of its teaching and the fact that lower-division students have a good chance of being taught by a full professor. The focus has been on teaching, and faculty members regularly teach four three-credit courses a semester, many times with four different preparations. While some faculty members are pursuing research activities, the University has little free laboratory space for immediate expansion for large, new research initiatives by the faculty. But a lack of existing research space is no reason to fail to pursue research opportunities. Research space is rarely available until the funded project demands it.

STUDENT DEMOGRAPHICS

Enrollment in 2002 was 4,254 students: 3,409 undergraduates and 845 master's students. For the last four years, enrollment has exceeded projections, principally because the university developed an enrollment management plan, increased advertising, and expanded its academic scholarship program. Many of the graduate students work off-campus, some of them full-time. More than 50 percent of the students are first-generation college students. Female students constitute more than 60% of the student body. The recent demographics of the student population was

- 82.0 percent White
- 9.3 percent African American
- 4.6 percent Hispanic
- 1.4 percent Asian
- 1.5 percent Other

³⁵ *UT-Tyler: Administrative and Governance Structure in Context of Research*, pp. 2-3.

³⁶ *UT-Tyler Factbook 2002-03*, p. 21 and p. 34.

This is a relatively homogeneous student body, compared to the local area served by UT-Tyler, which is about 25 percent minority. (Estimates state that the population of East Texas is 16.5 percent African American and 8.4 percent Hispanic, and that in the near future, 50 percent of the Texas population will be Hispanic.) The Hispanic and African American population of the UT-Tyler community is also increasing.

The UT-Tyler community also ranks lowest in the state based on percentage of college-age individuals who attend college. Only 5.2 percent of all people in East Texas between the ages of 18-34 attend four-year colleges, or 13 percent below the statewide average of 6 percent.³⁷

Students admitted to UT-Tyler attend without any probationary status. We were told that the average test scores for incoming freshmen are 1070 on the SAT and 22 on the ACT.

THE TRANSITION FROM COMMUNITY COLLEGE TO UNIVERSITY: IMPLICATIONS FOR STUDENT RECRUITMENT

A significant number of the students have transferred from community colleges in the area. Within a 35-mile radius of the UT-Tyler campus there are five colleges or junior colleges. They account for about 60 percent of UT-Tyler's enrollment.³⁸ To be specific, in fall 2003 UT-Tyler enrolled

- Almost 1,000 students from Tyler Junior College (enrollment 8,700),
- 368 students from Kilgore Junior College (enrollment almost 4,200),
- 266 students from Trinity Valley Community College in Athens (enrollment more than 5,000), and
- More than 50 students each from Jacksonville College and Lon Morris.

UNIVERSITY LEADERSHIP TEAM

In our view, UT-Tyler is fortunate to have in President Rodney Mabry a dynamic and visionary leader who recognizes targets of opportunity for strengthening the institution and increasing its contributions to the UT System as well as to the East Texas region and state. We particularly commend the strong working relationship the President has developed with Dr. Kirk Calhoun, President of the University of Texas Health Center in Tyler (UTHC-T). This collaboration can make a tremendous difference to the health needs of East Texas, and could also, in our judgment, provide the foundation for highly productive and effective research and education that greatly benefits the university, UTHC-T, and community.

We were impressed as well with the relationships President Mabry has established with numerous community leaders we had an opportunity to meet. This distinguished group of leaders persuaded us of their commitment to UT-Tyler, to President Mabry's efforts, and to providing whatever is needed to move the academic and educational activities of UT-Tyler forward.

³⁷ Ibid., pp. 12-21.

³⁸ Data requested and email received from Mr. Jesse Acosta, executive assistant to the UT-Tyler president, November 4, 2003.

UT-Tyler Model: A Strong Undergraduate Institution with Challenges for Research Growth

As it transitions from being an upper-division college, the University faces the challenge of accommodating an increasing number of lower-division students. The enrollment surge affects space, facilities, services, and the pervasive teaching-load problem. At the same time, the institution is feeling pressure to increase its graduate programs and degrees and to become more research-intensive.

In our judgment, the University should retain its focus on undergraduate and master's level instruction and research. UT-Tyler should only selectively pursue doctoral programs. A realistic goal for research expenditures over the next several years might be \$5 million per year. Attaining this goal would amount to a major increase over current levels.

The University's focus on the UT Tyler Tradition is among its most significant strengths. This core curriculum fosters rigorous intellectual and academic growth in all disciplines. Through this tradition, and a faculty that works closely with students engaged in learning, UT-Tyler can offer an outstanding educational experience to its undergraduates.

But UT-Tyler faces a challenge in its atypical undergraduate population. Students largely live off-campus (residence hall opportunities are limited), hold outside jobs, and attend UT-Tyler part-time. Many students we met face tremendous financial and time pressures. These circumstances not only could impede their learning experience, but could also limit UT-Tyler's capacity to build a strong educational and research base for the future.

The graduate student population is also atypical, while the lack of faculty time and limited extramural funding in most areas prevent any focus on graduate programs. In our judgment, only with carefully prioritized, implemented, and monitored development should select doctoral programs emerge.

The faculty seems comprised of two groups: an older, tenured group hired under a mission that focused heavily, if not exclusively, on teaching, and a second group of mostly younger faculty often hired under an evolving direction to teach, but also to initiate or continue research activities. In either group, faculty who want to conduct research face limitations that are difficult to overcome. Weak departmental leadership in some areas exacerbates the situation. Many of these leaders, who are often senior faculty, lack the vision or history of research output to lead UT-Tyler to the next level. The impact shows itself in hiring decisions that have not brought in top-quality faculty. We also saw no evidence of a plan for rotating departmental leadership or encouraging strong external hiring of talented new faculty. The University must surmount these overriding limitations to have any realistic chance of becoming a significant regional research university in the near future.

Current Research and Educational Strengths and New Opportunities

We met an extraordinary set of younger faculty as well as a number of active and determined members of the senior faculty. But we also met some faculty who had little desire to change their exclusive focus on teaching. Given its overwhelming teaching loads, UT-Tyler might benefit by shifting more teaching hours to such faculty and thereby freeing up time for other faculty who wish to pursue active research programs.

We were informed that there has been fairly extensive hiring recently. As of 2002, the faculty numbered 44 full professors, 49 associate professors, and 62 assistant professors. Future hiring must be focused if UT-Tyler hopes to identify viable research areas and meanwhile balance its faculty's teaching loads. On a related point, the University should consider rotating several of the more senior departmental leaders and replacing them with faculty who recognize the importance of integrating research in select areas into the educational tradition. Such a change would help maximize opportunities to invigorate departments and provide leadership that moves them forward aggressively.

These assessments and remedial actions should also be undertaken quickly. We talked with a number of strong junior faculty who may soon be forced to seek other career opportunities if they are not rescued from the teaching overloads, lack of academic mentorship and entrepreneurial role models, and poor research support infrastructure.

ENGINEERING, COMPUTER SCIENCES, MATHEMATICS, AND BIOLOGY

The overlap of engineering, computer science, biological sciences, and mathematics offers research opportunities. Engineering faculty have a varied and valuable background in industry, government, and academia. Research, while ongoing, is not the department's focus. The departmental faculty should agree on an area or two as research priorities and commit resources to them.

In departments such as mathematics, the leadership structure may present insurmountable obstacles to faculty wanting to become more involved in research. We have mentioned in other sections the processes by which changes could be made in chairmanships and deanships, and we believe UT-Tyler should consider similar approaches, such as rotating or replacing existing Deans and Chairs on a periodic basis to encourage new ideas and new approaches.

The master's program in engineering with areas of sub-specialization reflects UT-Tyler's strengths. An effective approach, it might be expanded to include the biological sciences and mathematics. Many computer science and mathematics departments, for example, now house computational biology programs. Connections with the UTHC-T should be pursued with such a goal in mind. But pursuing such goals would require the mathematics department to undertake an extensive hiring effort in statistics, biostatistics, and probability.

The math department should also pursue a joint plan for both research and expanded or enhanced undergraduate courses with the College of Nursing, the Computer Science Department, and the UTHC-T. To do so, it would have to retrain young mathematics faculty in areas related to the health sciences or engineering. Some faculty might be given training to qualify to hold joint appointments in these departments. A university with a relative small faculty and limited resources can develop a foundation for interdisciplinary research programs in this fashion without weakening its faculty's strong educational role with undergraduates. But UT-Tyler should also consider hiring a faculty member or two with a strong physics background who could teach undergraduate physics to augment the engineering or mathematics areas.

MATHEMATICS, SCIENCES, AND EDUCATION

The model mentioned above—involving several departments—may also be applied here. Such efforts might build on the current Teaching Excellence in Mathematics and Science (TEMS) program, which involves faculty from the College of Engineering and Science as well as the College of Arts and Sciences. The program aims to develop successful teacher preparation

programs for science and mathematics teachers, provides support programs for local teachers, and will assist in recruiting a more diverse group of students into the teaching profession.

Teacher preparation or teacher professional development should certainly remain a priority given the incredible need for mathematics and science teachers within this region, Texas, and the nation. Competitive funding from such federal sources as the National Science Foundation, the National Aeronautics and Space Administration, and the U.S. Department of Education (DOE) should be pursued to further enhance such initiatives.

Indeed, TEMS is the only federally funded activity we discovered in this area: It recently received an earmarked grant of \$348,000 from the DOE, and additional funding may be forthcoming. While earmarked funding will not make an institution competitive over the long term, it can provide capacity-building resources to assist in that process. With wise use of these funds, the university will have a foundation for future competitive proposals.

PARTNERSHIP WITH UTHC-T KEY TO UT-TYLER'S FUTURE

If this partnership can grow and mature, it will be one of the key forces in the future of UT-Tyler and will greatly expand opportunities for both research and educational excellence. UTHC-T's new director, Dr. Kirk Calhoun, has a vision for his institution and a first-rate staff to implement it in Steve Bidell, director of research, and Anne DeWitt, the chief nursing officer. Dr. Calhoun and Dr. Mabry and their leadership teams are working together to effect a meaningful collaboration. If collaboration with the health center succeeds, UT-Tyler's research program will be enhanced. We commend the outstanding leadership of both institutions for seeking and expanding this partnership, and applaud the recent decision by UT-Tyler and UTHC-T to develop a joint Institute for Biotechnology and Health Science. This institute—with joint faculty appointments and graduate degree programs, along with the added potential for collaborative research projects—can lead to enhanced opportunities for both institutions. -

We had discussions with and later received a letter from Dr. Calhoun (dated November 12, 2003) on the research directions at UTHC-T. They include childhood lung diseases, gerontology, pulmonary diseases, biotechnology, environmental sciences, molecular biology, and community health. Moreover, the health center plays an impressive role in educating and training the physicians, nurses, allied health professionals, and students, which should be strengthened. These areas, and the specific ones noted in Dr. Calhoun's letter, offer excellent opportunities for collaboration, including the UTHC-T centers or institutes that Dr. Calhoun's letter mentioned. For brevity, we will only note a small number.

- *Texas Lung Injury Institute*: Focus is on lung injury and repair. Strong record of external funding through NIH for several projects. Given the increase in the geriatric population of East Texas, its focus on aging patients would allow valuable partnerships.
- *Center of Pulmonary and Infectious Disease Control (CPIDC)*: Extensive education and outreach functions related to TB and other infectious diseases. Close ties with Texas Department of Health and local hospitals. Opportunities for expanded protocols and joint research on identifying new therapeutic targets to treat TB and atypical mycobacterial diseases. It seems worthwhile to expand this area given national security concerns about the transmission and management of infectious diseases such as anthrax and smallpox.
- *Southwest Center for Agricultural Health, Injury Prevention, and Education*: One of the 10 agricultural education centers with funding from NIOSH. Has community health focus and could work closely with several UT-Tyler outreach programs.

- *East Texas Center for Rural Geriatric Studies*: Designated by Texas in 2003, this center will focus on numerous aspects of aging. It will provide collaborative opportunities for faculty in nursing, the sciences, several social science areas, and areas that employ innovative technologies. Support from the UT System for both UTHC-T and UT-Tyler to hire joint faculty, possibly a senior, research-oriented geriatrician, would boost external funding possibilities for this new effort.

New hires that could serve in joint capacities in areas such as epidemiology, statistics, biology, and biochemistry would provide a strong foundation for such collaborations. Improved use of existing mathematics and other faculty could also assist in these areas. Partnerships might, for example, lead to an experimental program that brings post-doctoral students to UTHC-Tyler for research with the promise of full-time tenure-track positions at UT-Tyler after some period and assuming they meet certain other qualifications. Creating such an opportunity could help recruit research staff, provide them opportunities for limited teaching, and move them into faculty lines with their research career well established. The disciplines in which recruiting is successful—potentially joint recruiting—will determine which of the areas below should be given top research priority.

Our meetings with faculty and Dr. Calhoun's letter suggest collaborations might also prove highly productive in these areas:

- Cystic fibrosis and childhood lung diseases, areas of expertise for UTHC-T
- Community health epidemiology and minority health disparities. NIH made them funding priorities, and UT-Tyler has efforts underway in both areas.
- Cell aging and blood coagulation and clotting
- Evidence-based practice that allows UT-Tyler's talented and innovative nursing faculty to become more involved with training and development of hospital staff

Specific areas that could be explored include bioengineering, biostatistics, mathematical biology (epidemiology, immunology, genetics, and physiology), environmental sciences and genomics (including connections to ecology and systematics), public health, clinical psychology, and community health. UT-Tyler should consider recruiting a senior cell biologist or molecular biologist to enhance some of these research capacities.

Further, the research park being considered near UTHC-T will be a magnet for research growth and has substantial local economic development potential. Such investments would make it possible to create numerous research and training projects and programs with UTHC-T.

In addition, UT-Tyler should establish partnerships with the East Texas Center for Biotechnology and Information Technology Education.

The success of the UT-Tyler/UTHC-T partnership, however, will largely determine whether UT-Tyler advances in research and improves its trademark undergraduate offerings as well as its exemplary program in nursing, its community health programs (including the East Texas Rural Fiscal and Physical Outreach Program), and the presently ill-fated human resource development Ph.D. program. We should add that this latter Ph.D. proposal was an outstanding sustained effort to collaborate with another institution to increase UT-Tyler's academic capacity, integrate several disciplines into the proposal, and give the UT-Tyler/UTHC-T partnership a strong program through which to train new hospital and health professionals. We hope that the coordinating board will reconsider this decision. The HRD doctoral program would generate

immediate demand and produce graduates who are a commodity nationally in the health management field.

More than that, this collaboration could be a model for how health centers located near universities can engage in biomedical research, education, and training rapidly and efficiently. It could also dramatically improve both the medical center and UT-Tyler. Our group urges the Regents to charge UT System's new executive vice chancellor for health affairs with overseeing the medical centers in the system and reviewing this collaborative opportunity.

COLLEGE OF NURSING AND APPLIED HEALTH

The most innovative college we visited was the College of Nursing and Health Sciences. It is a national leader in long-distance and web-based education. The creativity and enthusiasm of the nursing faculty were among the highlights of our visit. The faculty members want to publish more and become better known. This area deserves considerable credit for its accomplishments—both in research and educational delivery systems—and should be further supported. It is one of the outstanding programs of its kind in the country.

It is critical that UT-Tyler find a way to provide tangible release time to selected members of this college so that their creativity can flourish and remain at the cutting edge of teaching and educational research. UT-Tyler should strengthen the M.S. programs here and carefully examine the impact that competitive support to graduate assistants for both teaching and research could have. UT-Tyler should also find a way to provide enhanced library support, additional faculty, and competitive assistantship support to this faculty. Their relationship with the business program and the local clinics provides a great starting point for an innovative research program on community health.

Given the faculty's level of teaching responsibilities, it may be a serious challenge to develop a Ph.D. program. In fact, pursuing this program immediately might harm the outstanding quality of the undergraduate and master's programs. This should not be allowed to happen, as this program and its innovative use of technologies are educational gems. But collaborations with other nursing programs around the state might provide faculty with the needed time to plan effectively for further advanced degrees.

New Opportunities for Potential Expansion

UT-Tyler could become a key undergraduate university for East Texas and the state if it gave appropriate emphasis to strengthening already-strong undergraduate programs and focused on selective master's degree areas and limited Ph.D. programs. We would summarize our view of the major opportunities for UT-Tyler as follows:

- First, develop a major collaboration with UTHC-T. The high quality of leadership and personal chemistry between Presidents Mabry and Calhoun are crucial to success in this area.
- Second, in collaboration with the UTHC-T, nursing could contribute greatly in educational, training, and research areas. The University and the UT System should expand this effort by adding faculty, support services, and funding. Because of its strengths, we encourage the nursing program to seek numerous collaborations with other universities as well as UTHC-T.

- Third, UT-Tyler must continue to emphasize undergraduate teaching and balance the growing pressures to become more research intensive. At the same time, we commend the work to develop the new Ph.D. program in HRD and hope it will eventually receive approval from the Coordinating Board.
- Fourth, UT-Tyler should pursue collaborations outside UTHC-Tyler to provide opportunities for its students to spend summers conducting research at larger, research-intensive partner institutions. Partnerships could be sought, for example, with nearby Historically Black Colleges and Universities, an arrangement that would allow UT-Tyler faculty to compete for sheltered funding (lacking the HSI designation that some of the other developing institutions have) and create an opportunity to attract minority students to study in Tyler. This latter opportunity would help redress the minority student shortfall in UT-Tyler's enrollment. UT-Tyler can also develop partnerships with institutions such as UT-Dallas and Arlington—for example, feeding them good undergraduates for their growing graduate programs. The UT System might assist in this partnership.
- Finally, UT-Tyler urgently requires a strategic planning effort that re-affirms the priorities of developing the best undergraduate programs possible along with the pursuit of selected master's and Ph.D. programs.

Junior Colleges: The Missing Partner

As an upper-division college, UT-Tyler depended on junior colleges for students. Its continuing evolution into a university makes quality and quantity of transfer students a major issue. If UT-Tyler hopes to become a premier undergraduate educational institution, it must forge new relationships with local junior colleges.

In the materials we received prior to our visit, the list of “Major Collaborative Projects for UT-Tyler” did not include a collaborative initiative with local junior colleges. (After our visit, we did receive a proposal that involved junior colleges.) The only reference to community colleges came from faculty who mentioned the uneven preparation of students who transfer from community colleges.

As UT-Tyler accepts more first-time-in-college students as incoming freshmen, it must work from a full understanding of the quality and quantity of its transfer students. It receives many such students. It needs as quickly as it can possibly be generated an analysis of these students and a plan of action to address related issues and faculty concerns.

Better partnerships between UT-Tyler and the local junior colleges could impact local economic development. Already, some efforts seem to be underway, involving technician training in areas related to software engineering, IT project implementation, computer science, and biotechnology. These efforts could evolve into effective partnerships between UT-Tyler, the junior colleges, the East Texas Workforce Center, and the private sector.

In many parts of Texas and indeed the nation, junior colleges are significant partners in helping communities formulate and implement plans for economic development. Moreover, junior colleges across the country are preparing technicians to work in biotechnology areas as part of a group called Bio-Link, Advanced Technological Education Center for Biotechnology. This NSF Center of Excellence is housed at City College of San Francisco. It might be instructive to review its programs and activities as planning for the East Texas Center progresses.

As previously mentioned in the discussion of UTB/TSC, the relationship between Arizona State University (ASU), the Maricopa Community Colleges, and economic development interests in Arizona is a specific example of a productive partnership with junior colleges. For years, the Phoenix area has been a force in manufacturing computer chips with the semi-conductor manufacturing industry. Companies such as Intel and Hewlett-Packard operate “fabs” that employ thousands of engineers, scientists, and technicians. The research capacities of ASU faculty in engineering, chemistry, biology, nano-technology, and other fields have provided intellectual capital to help support the state’s semi-conductor industry. A key to strengthening the educational offerings of this partnership was the Maricopa Advanced Technology Education Center, one of the national Centers of Excellence funded by the NSF. This center might be an interesting model to review.

The UTHC-T also has a biotechnology component that provides some training and a certificate for biological technicians that could include junior colleges. While this component supports the recommendations of Governor Rick Perry’s Biotechnology Council, and while we heard from the community group about the emphasis the Tyler Economic Development places on creating biotechnology jobs in this area, UT-Tyler should revamp the H-1B proposal currently being considered with other economic development groups and use it to create a true partnership between the university, the junior colleges, UTHC-T, and the community.

Significant Opportunities for Economic Development

One of the most exciting prospects of collaborating with UTHC-T is the community discussion about creating a 120-acre biotechnology research park, serviced by State Highway 155 and I-20 and adjacent to the UTHC-T facility. The long-term plan calls for constructing almost a dozen buildings in the 40-50,000-square-foot range as well as an incubator facility. This park, located next to UTCH-Tyler (with its 1,200 employees) would take advantage of a growing partnership in various research areas. As the partnership matured, the Bioscience Research Park could provide much needed space for corporate and other development activities to continue research progress and contribute to job development in Tyler and East Texas.

Another significant possibility for job creation that we heard about during our visit related to the L-3 Communications Integrated Systems (L-3 CIS), headquartered in Greenville, Texas. The Greenville facility, located within driving distance of Tyler, has about 3,000 employees. Of those, more than 600 are engineers who focus on a variety of intelligence, surveillance, and reconnaissance (ISR) systems and products; secure communications systems; avionics and ocean products; training devices and products; microwave components and telemetry instruments; and space and navigational products. Many of the products or services are provided for the Department of Defense, the Department of Homeland Security, or other defense and intelligent agencies and companies. Discussions regarding potential collaborations are underway between L-3 CIS and UT-Tyler’s College of Engineering faculty. Collaborative research might emerge from working with the L-3 CIS BAA (Basic Agency Agreements) Review Board to identify potential joint federal research projects for funding, and by working with L-3 CIS engineers in the areas of signal detection and identification, mathematical modeling and computer simulations, software engineering, systems engineering, aircraft electrical power distribution, and heat transfer. There have also been discussions between UT-Tyler and L-3 staff about a cooperative program for students to work and study in areas such as electrical, mechanical, and civil engineering, and about training and degree programs for L-3 CIS employees. There also might be some consideration of L-3 engineers serving in an adjunct faculty role at UT-Tyler.

This partnership could provide engineering and computer science faculty and students with valuable research opportunities, summer internships for students, placement potential when students graduate, training and degree programs for L-3 employees, and adjunct faculty for the university. It is worth pursuing aggressively.

Tyler and Smith Counties are the largest and most significant population centers in this part of the region. The population that is 18 years of age or older—the primary age for employment—in East Texas exceeds 550,000, or almost 75 percent of the total East Texas population. It is estimated that the East Texas Workforce Development Area will increase by over eight percent by 2010 and more than 16 percent by 2020. This demographic and population growth provides the human capital, if properly trained and educated, for employers who would see East Texas as an area for economic growth and expansion in high-technology areas.

Other Issues to Be Addressed

IMPACT OF STUDENT POPULATION GROWTH

UT-Tyler must determine how it can carry out an expanded research program at a time when double-digit growth rates in undergraduate enrollment create tremendous demand for teaching faculty. Exacerbating this situation is the view of some faculty who see the institution's teaching mission as predominant almost to the exclusion of acknowledging an appropriate role for research activities. A few senior faculty members see the pressures for more teaching hours as an obstacle for research while others, particularly some in the humanities, feel dual pressures to increase research while maintaining their hallmark excellence in undergraduate teaching. Student population growth and the development of courses such as the freshmen seminar have placed added constraints on the faculty's ability to increase research activities. While there is little doubt that such a critical thinking and writing course is essential, its implementation has simply overwhelmed the humanities faculty and several other groups as well. UT-Tyler should review its impact on teaching loads and consider changes from current practice.

LACK OF UNDERGRADUATE RESEARCH

The lack of both undergraduate and graduate students to engage in research severely limits UT-Tyler's research prospects. The external funding environment for supporting research is becoming increasingly more competitive. Only the addition of strong undergraduate and graduate students to conduct the research with faculty will allow UT-Tyler to build research where it chooses to do so. As UT-Tyler students conduct more research with faculty, they will be stronger candidates for any graduate program at major research universities. A laudable goal UT-Tyler could set for itself might be to serve as an outstanding regional undergraduate university and strive to become an important feeder institution for those selected students who wish to pursue a post-baccalaureate research-oriented graduate program.

Research activities often cluster around several strong research faculty in one or more disciplines. At major research-intensive universities, such research centers are not simply created. Instead, they emerge from groups of faculty who write joint proposals and get their proposals funded. The development of research efforts that compete for funds and then establish centers around funded research or interdisciplinary graduate programs must become the established procedure at UT-Tyler in its selected areas of research strength or potential.

Actions That Could Strengthen Research and Education Efforts

The University, the UT System, or both should undertake a number of actions in the near future, including the following:

- UT-Tyler faces continued growth for the foreseeable future. We discussed some of those trends earlier in this report. Given the opportunities that exist to hire additional faculty, we recommend creation of an internal committee with several key external members to assess the priority areas for UT-Tyler and recommend to the Provost and the President how faculty lines should be allocated among these priority areas to enhance both research and education, including new educational emphases and undergraduate curricula offerings as outlined above. The priorities have evolved from the selected opportunities for significant research growth and should be balanced with the need to dramatically reduce the teaching loads in order to strengthen the educational offerings in key undergraduate areas.
- We have noted the changing undergraduate student body at UT-Tyler and how the junior colleges contribute to the number and quality of upper-division students. The University needs an immediate review and plan of action in this area. Discussions should involve faculty, students, community leaders, and junior college administrators/faculty.
- The planning effort should include a careful review of how UT-Tyler can become a regional university, serving East Texas and beyond. The University should seek to augment research at the undergraduate, graduate, and faculty levels, while enhancing UT-Tyler's tradition of outstanding undergraduate instruction and learning.
- Space is required for teaching and research. Immediate attention should be given to the design of the new engineering and science building. Dedicating space for research laboratories can be justified on strategic grounds but not on the basis of current research activity.
- Start-up costs for new faculty engaged or wishing to engage in research should be sought. This should include appropriate financial resources as well as release time to initiate or continue an active research program. Release time from teaching should be provided to recognize research potential or accomplishment as well as to develop a distinctive undergraduate course. The institution should review how the freshman seminar is counted as part of an instructor's teaching load and reconsider the practice of treating it as an add-on assignment.
- The University should institute a review of class size and available and potential instructional space and develop a plan for selectively hiring faculty to strengthen the undergraduate curriculum and opportunities for undergraduate research, reducing class size as appropriate in certain areas.
- The University should seek out opportunities for increased undergraduate and graduate research activities, including developing competitive levels of support for assistantships and internships.

- The University's curriculum committee should review how such critical components of an undergraduate curriculum that are currently lacking (such as physics and economics) can be provided by other departmental faculty as part of the efforts to enhance the UT-Tyler educational experience. Some physics at the undergraduate level is critical if UT-Tyler is to become a viable feeder institution in the sciences to outstanding graduate universities.
- The University should review existing master's degree programs to determine if any others might need to be added, consistent with the research priority areas proposed in this report. For example, chemistry might be a candidate for a master's degree in light of the collaboration with UTHC-T. We repeat, however, that a major expansion of master's degree programs into many more areas is not the intent of this recommendation.
- Successful closure of the search for a new Provost. This is one of the most important hires the university will make for the foreseeable future. This individual must have a broad understanding of both teaching and research activities in higher education, sufficient research experience to understand what is necessary for faculty to conduct substantive research, and a vision of how to move the university toward research excellence in selected areas. An individual with an academic background in the sciences would complement the business background of President Mabry. We encourage the UT System to watch this selection carefully.
- The research infrastructure must be strengthened. This should include hiring individuals who can identify opportunities and more generally assist faculty in preparing proposals and facilitating administrative activities related to purchasing, billing, etc. Consider joint activities with UTHC-T in this arena. It is worth considering as well adding grant-writing capacities to the academic units with the most potential.
- The deans and Provost should review each of the department chairs and consider rotating chairs to bring in new perspectives and views. Also, include younger faculty on important institutional and departmental committees involved with curricula and recruiting, as a means of grooming them for eventual academic leadership positions.
- UT-Tyler should carry out an aggressive recruitment and retention effort, including strong academic and personal support with a robust financial aid effort, to add significant racial/ethnic diversity to the student body. Such an effort would also increase the college-going proportion of students attending college in the East Texas region. As the region is home to a significant percentage of the state's African American population and to a growing percentage of the state's Hispanic population, UT-Tyler can and should do better in this regard.

How Might UT-Tyler Look in Five Years?

Over the next five years, we see the student population at UT-Tyler approaching 6,000 students. An increasing number of the new freshmen arrive at UT-Tyler for their first college experience. More are seeking opportunities to reside on-campus to take advantage of the growing number of campus-centered activities. The campus has grown and expanded in size as more space was designated for residential housing developments, and the new focus on making UT-

Tyler one of the best undergraduate experiences available anywhere for the cost is well-received. Efforts to increase the availability of financial aid for undergraduates have paid dividends and more students are able to take full-time academic loads. Many are being drawn from more diverse backgrounds and finding increased opportunities for involvement in undergraduate research activities. This development is only now showing itself in the rising number of science and engineering majors, as well as the rising number of students exploring graduate opportunities in their majors at UT-Tyler and other universities across the state and beyond.

The campus is teeming with new construction, including new residence halls, a new building with instructional state-of-the-art technology, and substantial new research space for the growing science faculty collaborating in biomedicine with UTHC-T. A new building nearing completion at the UTHC-T campus has substantial research space for UT-Tyler faculty with joint appointments in a number of the academic areas; faculty are working closely with their medical center colleagues on new federally-supported research projects. Research activities at UT-Tyler are expanding and springing up in disciplines across the campus. Undergraduates have become more heavily involved in campus activities and research and receive support from major grants at UTHC-T, and many of these research activities are subcontracted to UT-Tyler. New federally funded training initiatives have begun, and UT-Tyler's nursing program training dozens of nurses and re-training nurses across the state via the new technologically advanced training center at the UTHC-T campus. New opportunities for research and internships are developing with small biotechnology companies emerging near the health center complex.

Yet the hallmark of this fine university is its pride and success in producing the high-quality undergraduate student who, upon graduation, contributes to East Texas in many ways or increasingly opts to pursue additional academic work at some of Texas' and the Southwest's finest research universities. They strengthen the local economy and the strong future of Texas and its citizens.

APPENDIX 1

SCOPE OF WORK

The Consultant shall perform the following Work in connection with the development of a detailed plan (the “Plan”) to significantly expand the research capabilities of the following eight (8) academic institutions (the “Institutions”) of the University:

Group A

The University of Texas at Arlington
The University of Texas at Dallas
The University of Texas at El Paso
The University of Texas at San Antonio

Group B

The University of Texas at Brownsville
The University of Texas – Pan American
The University of Texas of the Permian Basin
The University of Texas at Tyler

In accordance with Section 4.d. of this Agreement, Consultant shall assemble two teams of individuals to perform the Work:

- One team, composed of seven or eight members, shall conduct and supervise the Work at the Group A Institutions.
- A second team, composed of six members, shall conduct and supervise the Work at the Group B Institutions.
- Team members shall include nationally recognized leaders with demonstrated competence, knowledge and experience in developing research capabilities for scientific, technological or higher education enterprises.

Consultant, through its teams, shall:

- Review background information provided by the Institutions as well as information developed independently, and shall request additional information from Institutions as the Work progresses.
- Visit Institutions during September 2003, October 2003, November 2003, December 2003 and January 2004. Analyze and evaluate the information gathered and formulate strategies to significantly expand the Institutions’ research capabilities.
- During January 2004 and February 2004, both teams shall identify their major findings and conclusions, answer questions in this Exhibit, and provide recommended strategies and tactics for using current resources to greater effect and for future development of the Institution, and for significantly expanding the Institutions’ research capabilities, in light of constraints and opportunities described in this Exhibit.

Consultant shall include the following work product in the Plan:

- 1) A set of strategies and tactics for using current resources to greater effect and for future development of each Institution.
- 2) Highly focused solutions to significantly expand the research capabilities of each Institution that are aligned with national and state research priorities.

Consultant shall address the following questions concerning each Institution in the Plan:

- 1) What are the current research strengths of the Institution?
- 2) What are the possibilities for further expansion of the research profile at the Institution, using its existing strengths?

- 3) What are the next high-opportunity research areas that the Institution could develop? Explicit recommendations concerning numbers of faculty, target departments, and specific disciplines or sub-disciplines shall be addressed.
- 4) What are the additional resources that the Institution needs to pursue its high-opportunity research possibilities? Specifics of support personnel, graduate students, space, and equipment shall be provided.
- 5) In what order should actions be taken to develop research at the Institution? What is the set of priorities, and why are these the priorities? What is a likely time frame for the research enhancement?
- 6) Are there partners (local, state, or national) who could help the Institution increase its research profile?

Consultant shall address the following questions for the group of Institutions as a whole in the Plan:

- 1) To what extent do the strengths of the Institutions overlap?
- 2) Are there obvious opportunities for collaboration among the Institutions that should be pursued?
- 3) Are there shared resources that should be developed for the Institutions?
- 4) What are the high potential possibilities for collaboration with a nearby medical or health science campus?

Consultant shall address the following constraints in the Plan:

- 1) Each Institution's enrollment is expected to grow. Largest growth is anticipated at U.T. Arlington and U.T. San Antonio. With the exception of U.T. Dallas, the Institutions do not currently pursue selective admissions policies. The pressure of enrollment, however, may lead to greater selectivity at all campuses over the next five years.
- 2) The principal basis for state appropriations is formula funding, based on semester credit hours of instruction, with a two-year lag. The formula provides additional funding for graduate and upper-division courses, and the formula also funds engineering and science courses at a higher rate. Because of the lag in formula funding, increased growth will not pay for itself in the short term.
- 3) The State faces a current revenue shortfall of approximately \$9 billion. Part of this shortfall will be met with a budget cut in appropriated funds. Even when the economy improves, it is not realistic to expect substantial increases in state appropriations.
- 4) Although six of the Institutions are entitled to share in the proceeds of the Permanent University Fund ("PUF") endowment, recent losses in the stock market make additional distributions from the PUF unlikely in the short term.
- 5) Current State law does not permit the University to waive tuition for graduate students. Research and teaching assistants who are appointed at least half time have been eligible to pay resident (in-state) tuition, and, were eligible for staff benefits, including health benefits. Recent legislative changes impact this eligibility. Funds available for graduate fellowships are quite modest.

Consultant shall address the following opportunities in the Plan:

- 1) The local communities are very supportive of the Institutions.
- 2) There may be philanthropic support from foundation or individuals for research expansion.

- 3) The Texas Legislature recently deregulated tuition. Authority for setting tuition, for the first time, will be delegated to the Board of Regents, allowing for a more differentiated tuition structure.
- 4) The state legislature recently approved legislation that will allow the Institutions to retain all of their indirect costs reimbursements. Formerly, these Institutions were permitted to retain only 50% of their indirect costs.
- 5) There is a possibility of some special item funding from the Governor's Office.

In addition to the forgoing questions, constraints and opportunities, the Consultant shall identify and respond to any additional issues relevant to the specific challenges of each Institution.

Further, the following questions were posed for each of the developing institutions:

The University of Texas at Brownsville/Texas Southmost College:

- What are the next steps UTB/TSC should take to improve its educational effectiveness with its current student body?
- What are the most promising academic areas for research expansion or for research collaboration with other institutions?
- What are the next academic degree programs that should be developed for UTB/TSC?
- How can UTB/TSC best align itself with opportunities for economic development in South Texas?

The University of Texas – Pan American:

- What academic areas are appropriate for the next doctoral-level program?
- UTPA has identified four areas of regional significance for academic focus. These areas are bilingualism; biomedical sciences and engineering; border life and international relations; and subtropical environment and ecology. Are these appropriate areas? Are other areas equally suitable or more promising?
- What academic or professional areas best align with further economic development in the South Texas area?
- What steps should UTPA take next to improve its effectiveness in educating its distinctive student body?

The University of Texas of the Permian Basin:

- What are the next steps UTPB should take to improve its educational effectiveness with its current student body?
- What are the most promising academic areas for research collaboration with other institutions, such as Odessa College or the other institutions within the UT System?
- What are the next academic degree programs that should be developed for UTPB?
- How can UTPB best align itself with opportunities for economic development in West Texas?

The University of Texas at Tyler:

- What are the next steps UT-Tyler should take to improve its educational effectiveness with its current student body?
- What are the most promising academic areas for collaboration with the University of Texas Health Center-Tyler?
- What are the next graduate and professional degree programs that should be developed for UT-Tyler?
- How can UT-Tyler best align itself with opportunities for economic development in East Texas?

APPENDIX 2

THE WASHINGTON ADVISORY GROUP TEAM

Dr. Raymond Bye has spent his career at the NSF and Florida State University (FSU) in areas related to scientific and engineering research, research administration, U.S. science policy, and legislative and public affairs. Beginning in 1972, he served over two decades at the NSF, with more than a dozen years as director of the Office of Legislative and Public Affairs. Following his service at NSF, he was named associate vice president for research at FSU in 1994. In 1999, he was named interim vice president for research and, after a national search, was named FSU's vice president for research in 2000. In that position, his responsibilities included sponsored research administration, technology transfer activities, the FSU Research Foundation, oversight of research regulatory issues, research communications programs, and several interdisciplinary research programs (such as the National High Magnetic Field Laboratory, the FSU Center for Advanced Power Systems, the Institute for Science and Public Affairs, and the FSU Marine Laboratory). In June 2003, FSU's new president asked that he assume expanded federal relations responsibilities along with leading the university's activities related to economic development. In this capacity, he serves as the lead university official in all federal and Congressional relations activities. Dr. Bye has served on a number of boards and commissions, including as president of the FSU Research Foundation; a member of the Oak Ridge National Laboratory Board of Governors and the Board of Oak Ridge Associated Universities; Chair of the National Association of State University and Land-Grant Colleges' (NASULGC) Council on Governmental Affairs; and as a member of the Board of Directors for the NASULGC. Dr. Bye has received a number of awards, including the NSF Distinguished Service Award and the President's Meritorious Executive Award.

Dr. Raúl Cárdenas served as vice chancellor for student development and community affairs for the Maricopa Community College District in Phoenix, Arizona prior to his recent retirement. He is the immediate interim chancellor of the district, the past president of Paradise Valley Community College and the founding president of South Mountain Community College, both in the Maricopa system. His active retirement assignment with the Maricopa Community College District will have him working at the Mesa and Scottsdale Community Colleges. His professional career spans three decades and all levels of education—as an elementary, junior high and high school teacher, a high school vice principal and community college dean of students in El Paso, and as an assistant vice chancellor for student affairs at the University of California at Berkeley. Dr. Cárdenas' participation in national organizations is quite extensive and includes having served as member of the Board of Directors for the American Association of Community Colleges and the American Council on Education; member of the President's Academy Executive Committee of the American Association of Community Colleges; chair of the Executive Committee of the Hispanic Association of Colleges and Universities; and member of the American Council on Education Commission on International Education. He is currently a member of the Coordinating Council for the Hispanic Border Leadership Institute, Executive Committee of the International Consortium for Education and Economic Development, Fundación Solidaridad Mexicano Americana, and other higher education organizations. Dr. Cardenas received his M.Ed. from the University of Texas-El Paso, and a Ph.D. in educational administration/student personnel from the University of Arizona.

Dr. Carlos Castillo-Chavez, a native of Mexico who immigrated to the U.S. 28 years ago, holds joint appointments in the Departments of Statistics, Biological Statistics and Computational Biology and Theoretical and Applied Mechanics at Cornell University, where he is also a member of the graduate fields of applied mathematics, biometry, epidemiology, ecology and

evolutionary biology, statistics and theoretical and applied mechanics. In 1996 he established the Mathematical and Theoretical Biology Institute (MTBI), which fosters research activities primarily among underrepresented minority undergraduate students who are enrolled at non-selective U.S. universities, but also mentors and supports underrepresented minority undergraduate and graduate students from various universities who are working in the mathematical or statistical sciences. He received a Presidential Award for Excellence in Science, Mathematics and Engineering Mentoring in 1997, in part, for the work that he carried out at MTBI. In 1997 he founded the Cornell-Sloan fellowship program in the mathematical and statistical sciences at Cornell University, a program that he has directed ever since. Dr. Castillo-Chavez has received various awards including two White House Awards (1992 and 1997), a QEM Giant in Science Mentoring Award (2000), and SACNAS distinguished senior scientist award (2001). In addition, he was named Profesor Plenario by the Universidad de Belgrano (Argentina, 1996); and held a Catedra Patrimonial by the Institute of Applied Mathematics (IIMAS) at National University in Mexico (UNAM, 1998). He was selected as the 2003 Ulam Scholar by the Center for Nonlinear Dynamics (CNLS) at Los Alamos National Laboratory. He has published over one hundred research articles, edited four volumes, and co-authored a textbook on mathematical biology with Fred Brauer (2001).

Dr. Thomas Winston Cole, Jr. served as the first president of Clark Atlanta University from 1989 until his retirement in 2002, after serving simultaneously as president of both Clark College and Atlanta University prior to their historic consolidation. Previously, he was chancellor of the West Virginia Board of Regents, the second and one of only four African Americans to head a state system of public higher education, and had served as president of West Virginia State College. Prior to these appointments, he taught at Atlanta University where he was chairman of the Department of Chemistry, Fuller E. Callaway Professor of Chemistry, and provost and vice president for academic affairs. He also served as director of the Atlanta Resource Center for Science and Engineering, the first of three centers established in the United States by the National Science Foundation. Nationally recognized for his scholarly contributions to science and his leadership in higher education administration, Dr. Cole has served as chairman of the Council of Presidents of the Member institutions of the College Fund/UNCF; chairman of the Council of Presidents for the College Fund, the Atlanta University Center; and the Black College Fund of the United Methodist Church. He currently serves as the chair of the Board of Directors of the Quality Education for Minorities (QEM) Network, and holds memberships on the Executive Committee for Project Kaleidoscope, and the General Board of Higher Education and Ministry of the United Methodist Church. He is a past member of the Executive Council, Commission on Colleges, Southern Association of Colleges and Schools. A Texas native and graduate of Wiley College, Dr. Cole has been awarded numerous honors in recognitions of his scientific, educational and community contributions.

Dr. Shirley McBay assumed the position of president of the Quality Education for Minorities (QEM) Network in July 1990, following ten years as dean for student affairs at the Massachusetts Institute of Technology (MIT) and three years as director of the QEM Project, an MIT-based initiative supported by the Carnegie Corporation of New York. Previously, she served as a program manager/director in the Science Education Directorate of the NSF, where she directed two national programs designed to increase minority participation in science and engineering. Prior to joining NSF, she spent 15 years at Spelman College, including as professor of mathematics, department head, division chair, and associate academic dean. At QEM, Dr. McBay has served as the director of several science and engineering-focused projects. These include NSF-supported projects focused on states with significant minority populations, the Historically Black Colleges & Universities (HBCU)-Undergraduate Program, the Math and Science Partnership Program, and the Faculty Early CAREER Development Program; faculty

development projects, including the Teagle Foundation-supported Scholarly Productivity Projects for Science and Engineering Faculty at HBCUs and the NASA-supported Scholarly Technical Assistance Project for Principal Investigators of NASA's Faculty Awards for Research Program; the Annenberg/CPB Math and Science Project-supported Minority Mathematics and Science Teacher Leadership Corps; the NSF- and NASA-supported Summer Science Internship Program for undergraduate and graduate students; NASA's residential Summer High School Apprenticeship Research Program (SHARP PLUS); and the GE Fund-QEM Seamless Pathway Project, a pilot initiative in three low-income areas offering a continuum of support for talented mathematics and science students, from middle school to college.

Dr. Alfredo G. de los Santos, Jr. has served as research professor at Arizona State University and as a Senior League Fellow of The League for Innovation in the Community College since his retirement as vice chancellor for student and educational development at the Maricopa Community Colleges. During the 1990s, Dr. de los Santos was principal investigator for a number of grants funded by the NSF, including the Phoenix Urban Systemic Initiative (\$15 million) and the Maricopa Advanced Technology Education Center (\$5 million). He is the founding president of El Paso Community College and served as a dean at Northampton County Community College (PA) and Florida Keys Junior College (FL), and as a librarian at Laredo Junior College (TX). Dr. de los Santos serves on the board of trustees of the Tomas Rivera Policy Institute, Jobs for the Future Inc., National Center for Public Policy and Higher Education, and the Council for Higher Education Accreditation. He is co-principal investigator for two programs funded by the NSF, including the Technical Education Initiative at the Accreditation Board for Engineering and Technology. He has served on the board of the Carnegie Foundation for the Advancement of Teaching, the American Association of Community Colleges, the American Association for Higher Education, the American Council on Education, the United States Open University, and the College Board, among others. He is the recipient of numerous honors and awards, including recognition by the American Council on Education, McGraw-Hill, the Hispanic Association of Colleges and Universities, and the National Science Foundation. Dr. de los Santos earned his associate of arts degree from Laredo Junior College and B.A. (English), M.L.S. and Ph.D. (educational administration) degrees from the University of Texas at Austin.

Joe B. Wyatt is a WAG principal who advises on strategic planning and governance in academia, management and planning of academic R&D organizations, and corporate-academic partnerships. He is chancellor emeritus of Vanderbilt University, having served as chancellor from 1982 to 2000. As chancellor, Mr. Wyatt led Vanderbilt's ascent into the top tier of U.S. teaching and research universities, overseeing the expansion of the university's academic offerings and diversity of the student body and the increase of Vanderbilt's endowment from \$170 million to more than \$2 billion. Previously, Mr. Wyatt was a member of the faculty and administration at Harvard University, serving as vice president for administration from 1976 to 1982. During this period, he led EDUCOM, a consortium of 450 universities that developed computer networks and systems for sharing information and resources. In addition Mr. Wyatt co-authored the book, *Financial Planning Models for Colleges and Universities*, and wrote extensively in the fields of technology, management and education. He has conducted research for the NSF, the Ford Foundation, the Office of Naval Research, and the Eli Lilly Foundation, among others. He is a patentee and consultant in computer system design and computer networking. Mr. Wyatt co-founded the Massachusetts Technology Development Corporation in 1978, a public venture capital group that has financed a large number of successful technology-based companies in Massachusetts. He is currently chairman of the board of the Universities Research Association of Washington, DC and chairman of the Government University Industry Research Roundtable of the National Academy of Sciences. He holds degrees in mathematics from Texas Christian University and the University of Texas at Austin.

APPENDIX 3

CHRONOLOGICAL SITE VISITS

I. University of Texas-Pan American (October 1-3, 2003)

Site visitors from the Washington Advisory Group:

Mr. Joe Wyatt, Team Leader	Dr. Carlos Castillo-Chavez
Dr. Raymond Bye, Jr., Coordinator	Dr. Thomas W. Cole
Dr. Raúl Cárdenas	Dr. Shirley McBay

Visit Overview:

Joe Wyatt, a principal of The Washington Advisory Group, led the site visit to UTPA. The group included a coordinator, Dr. Raymond Bye, and the four additional consultants listed above. The team at times divided into two subgroups (not always including the same individuals at each meeting), which conducted interviews with 14 different groups during the visit. We drew these groups primarily from faculty in a range of academic disciplines. We conducted a special interview with a large group of students involved in research (both graduates and undergraduates). In addition, we had working dinner discussions with deans as well as both initial and final meetings with the university's leadership (the president and several members of his leadership team).

II. University of Texas-Tyler (October 27-29, 2003)

Site visitors from the Washington Advisory Group:

Mr. Joe Wyatt, Team Leader	Dr. Thomas W. Cole
Dr. Raymond Bye, Jr., Coordinator	Dr. Alfredo G. de los Santos, Jr.
Dr. Carlos Castillo-Chavez	Dr. Shirley McBay

Visit Overview:

After a review of the relevant materials provided by UT-Tyler, our team, led by Joe Wyatt, visited the campus October 27-29, 2003. The group included a coordinator, Dr. Raymond Bye, and the four additional consultants listed above. The group met with 16 distinct groups and conducted our meetings and discussions either as an entire team or in two subgroups. We drew the 16 groups primarily from faculty in a broad selection of academic disciplines. We also included undergraduate and graduate students in many of the discussions. In addition, we had working dinner discussions with deans and with the president and his vice presidential team. We also had an opening meeting with the president and several members of his leadership team. Because of a commitment in Austin, President Rodney Mabry was not on-campus on the day of our departure. Mr. Wyatt and Dr. Bye conducted a final telephone de-briefing with the president several days later (November 5). Our conclusions and recommendations are based on this single visit, as well as materials received before and afterward.

III. University of Texas-Brownsville/Texas Southmost College (December 1-3, 2003)

Site visitors from the Washington Advisory Group:

Mr. Joe Wyatt, Team Leader	Dr. Carlos Castillo-Chavez
Dr. Raymond Bye, Jr., Coordinator	Dr. Thomas W. Cole
Dr. Raul Cardenas	Dr. Shirley McBay

Visit Overview:

Mr. Joe Wyatt led our team on this visit. The team was composed of its coordinator, Dr. Raymond Bye, and the four additional consultants listed above. The group met with 14 distinct groups and conducted the meetings and discussions either as an entire team or in one of our two subgroups of three consultants. These UTB/TSC groups consisted primarily of faculty drawn from a broad selection of academic disciplines. In addition, we had a meeting with a community-based group of leaders. We had working dinner discussions with the deans and another with the President Juliet García and Provost José Martín and several of her board of trustee members. In addition, we had an opening meeting with the university leadership, including the president and provost. On the last day of our visit, we held a final debriefing with President García and Provost Martín.

IV. University of Texas at the Permian Basin (December 17-19, 2003)

Site Visitors from the Washington Advisory Group:

Mr. Joe Wyatt, Team Leader	Dr. Thomas W. Cole
Dr. Raymond Bye, Jr., Coordinator	Dr. Alfredo G. de los Santos, Jr.
Dr. Carlos Castillo-Chavez	Dr. Shirley McBay

Visit Overview:

After a review of the relevant materials provided our team, a December 17-19, 2003, The Washington Advisory Group, led by Mr. Joe Wyatt, conducted a site visit to the University of Texas at the Permian Basin. The team included its coordinator, Dr. Raymond Bye, and the four additional consultants listed above. The WAG team met with 15 distinct groups. We conducted the meetings and discussions either as an entire team of six or in one of our two subgroups of three. These UTPB groups consisted primarily of faculty drawn from a broad selection of academic disciplines as well as a group of support staff. In addition, we met with a group of community leaders that included an elected official and leaders of the local Chambers of Commerce in Midland and Odessa, including the Mexican American and Black Chambers. We had working dinner discussions with the deans and another with President David Watts and Vice President for Academic Affairs William Fannin. In addition, we had an opening meeting with the university's leadership, including the president and vice presidents. On the last day of our visit, we held a final debriefing with President Watts, the vice presidents, deans, and assistant vice president for graduate Studies and sponsored research.